11th AACR Conference on

THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED

In Association with the AACR Minorities in Cancer Research Council

November 2-5, 2018 | Sheraton New Orleans Hotel | New Orleans, LA

CONFERENCE COCHAIRS

Ivis Febus-Sampayo
SHARE Cancer Support, New York, NY

Laura Fejerman
University of California San Francisco School of Medicine, San Francisco, CA

Scarlett Lin Gomez
University of California San Francisco, San Francisco, CA

Augusto C. Ochoa
Louisiana State University Health Sciences Center-Stanley S. Scott Cancer Center, New Orleans, LA

Brian M. Rivers
Morehouse School of Medicine, Atlanta, GA

Program and Proceedings

Continuing Medical Education (CME) Activity—AMA PRA Category 1 Credits™ available

AACR.org/Disparities18
AMERICAN ASSOCIATION FOR CANCER RESEARCH

JOIN US IN THE GLOBAL CONQUEST OF CANCER!

THE ESSENTIAL ASSOCIATION FOR YOU AND YOUR COLLEAGUES!

The AACR Special Conference “The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved” will advance the understanding of, and ultimately help to eliminate, the disparities along the cancer continuum that represent a major public health problem in our country. Reflecting this transdisciplinary field, professionals from academia, industry, government, and the community are brought together to promote the exchange of novel ideas, discuss the latest findings in the field, and stimulate the development of new research on health disparities.

A Special Invitation is extended to “The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved” nonmember attendees to join the AACR and work with other professionals to discuss the latest findings and to stimulate development of new research. Nonmember attendees who join are eligible for FREE AACR membership through December 31, 2019, with no need to obtain nominators in support of membership. All completed applications must be returned to the AACR Membership Department by November 30, 2018.

Elimination of Annual Dues for Associate Members (Predoctoral Students and Postdoctoral and Clinical Fellows)
Graduate students, medical students, residents and postdoctoral and clinical fellows who are enrolled in education or training programs that could lead to a career in cancer research will no longer be required to pay annual membership dues as of 2018.

Review the many exclusive member benefits, determine which category best fits your qualifications, and become an AACR member today!

WHY YOU SHOULD JOIN:

- Substantially reduced registration rates for AACR Annual Meetings and Special Conferences
- Privilege of sponsoring an abstract for AACR Annual Meetings
- Early access to housing reservation for AACR Annual Meetings
- Exclusive discounts on subscriptions to AACR’s eight renowned peer-reviewed scientific journals
- Funding and award opportunities, including career development resources, research fellowships, scholar-in-training awards, and travel grants
- Professional development for early-career investigators and professionals, including education and professional advancement sessions
- Opportunities to network and join any of our Association and Scientific Working Groups
- Free online access to Cancer Today magazine. A resource for cancer patients, survivors, and their family members and friends.
- Collaboration and resources through our Survivor and Patient Advocate initiatives

Contact the AACR Membership Department with any questions at membership@aacr.org or 215-440-9300.

A Message from Margaret Foti, PhD, MD (hc)
Chief Executive Officer
American Association for Cancer Research (AACR)

Defeating the global scourge of cancer will require a global effort. The AACR is on the front lines of this fight. Our membership spans 120 countries and we have longstanding partnerships with cancer research organizations around the world to help facilitate the innovative international collaborations we need to achieve the scientific breakthroughs that will lead to future cures.

JOIN US IN OUR MISSION
JOIN AACR TODAY!
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Welcome</td>
</tr>
<tr>
<td>4-5</td>
<td>Chairs and Committees</td>
</tr>
<tr>
<td>6-9</td>
<td>Awards</td>
</tr>
<tr>
<td>10-14</td>
<td>General Information</td>
</tr>
<tr>
<td>15-16</td>
<td>Continuing Medical Education (CME)</td>
</tr>
<tr>
<td>17-18</td>
<td>Supporters and Grants</td>
</tr>
<tr>
<td>19-25</td>
<td>Conference Program and Schedule</td>
</tr>
<tr>
<td>26</td>
<td>Upcoming Conferences</td>
</tr>
<tr>
<td>27-256</td>
<td>Proceedings</td>
</tr>
<tr>
<td>27</td>
<td>Invited Abstracts</td>
</tr>
<tr>
<td>46</td>
<td>Proffered Abstracts</td>
</tr>
<tr>
<td>58</td>
<td>Poster Session A</td>
</tr>
<tr>
<td>126</td>
<td>Poster Session B</td>
</tr>
<tr>
<td>190</td>
<td>Poster Session C</td>
</tr>
<tr>
<td>257-285</td>
<td>Indices</td>
</tr>
<tr>
<td>257</td>
<td>Author Index</td>
</tr>
<tr>
<td>278</td>
<td>Subject Index</td>
</tr>
<tr>
<td>286-289</td>
<td>Disclosures of Financial Relationships</td>
</tr>
</tbody>
</table>
MINORITIES IN CANCER RESEARCH (MICR)

Working to increase diversity in the field of cancer research by expanding the participation, visibility, and recognition of minority scientists.

Join us in New Orleans for the following events organized by the Minorities in Cancer Research Council:

**Minorities in Cancer Research Distinguished Lectureship Series**
Thursday, November 1 • 3:00 p.m.-5:30 p.m.
Louisiana Cancer Research Building, Louisiana State University

**Minorities in Cancer Research Council Meet and Greet**
Friday, November 2 • 4:00 p.m.-5:00 p.m.
Grand Chenier, Sheraton New Orleans Hotel

**Minorities in Cancer Research Professional Advancement Session: “Emerging Priorities in Cancer Disparities Research: Preparing the Next Generation”**
Saturday, November 3 • 12:30 p.m.-2:00 p.m.
Grand Ballroom D, Sheraton New Orleans Hotel

**MICR Parade, Fundraiser, and Networking Event**
Sunday, November 4 • 7:00 p.m.-10:00 p.m.
Visit the MICR Networking and Resource Center for more information

Visit the MICR Networking and Resource Center
Open During Conference Hours
Grand Chenier, Sheraton New Orleans Hotel

The MICR Networking and Resource Center provides meeting attendees with a comfortable environment to network one-on-one and in small groups while learning about AACR and MICR programs, as well MICR membership and committee service opportunities.

Congratulations Scholars!
Congratulations to the AACR-MICR Minority and Minority-Serving Institution Faculty Scholars and the AACR-MICR Minority Scholars in Cancer Research at this conference. Learn more about these outstanding investigators on page 7.

Please contact us for more information:
Minorities in Cancer Research
Website: www.AACR.org/MICR
Email: micr@aacr.org
Dear Colleagues,

On behalf of the American Association for Cancer Research and the Minorities in Cancer Research Council of the AACR, it is our pleasure to welcome you to New Orleans for the 11th AACR Conference on The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved.

We are all here because we are passionate about reducing or eliminating the cancer burden in racial/ethnic minorities and the medically underserved. This conference provides a perfect venue to discuss basic, population, clinical, and transdisciplinary research related to health disparities in cancer. We are grateful to the 16 members of the Program Committee for their expert assistance in developing the scientific program for this conference. We also thank the Scientific Review Committee for reviewing the 360 submitted abstracts, the most submitted in the history of the conference.

We are honored to have Dr. Norman E. Sharpless, Director of the National Cancer Institute, join us to present a keynote lecture during our opening session. Our opening session will also feature the Ninth Annual AACR Distinguished Lectureship on the Science of Cancer Health Disparities supported by a generous grant from Susan G. Komen®.

Important scientific updates will be covered and provocative questions will be raised during the plenary sessions and concurrent sessions. This year we are pleased to highlight the important role of advocates and the community in cancer health disparities research, and the conference features advocate speakers in several key sessions. Four educational sessions will provide fantastic updates on tools, techniques, and resources for disparities research. This year three special Recent Discoveries and Hot Topics in Cancer Health Disparities sessions will feature the top submitted abstracts and highlight groundbreaking research from some of the most innovative abstracts submitted for this year’s conference.

The AACR extends its thanks to the National Cancer Institute Center to Reduce Cancer Health Disparities, Susan G. Komen®, and Janssen for their general support of this meeting. In addition, we extend our thanks again to the National Cancer Institute Center to Reduce Cancer Health Disparities and Aflac, Inc. for providing travel awards for this conference. Finally, we would like to thank Astellas, AstraZeneca, Genomic Health, Lilly, Novartis, Pfizer, and Tesaro for their support of our professional education grants.

We are pleased that this meeting continues to provide a forum to identify risk factors and barriers to the reduction and elimination of cancer health disparities. We feel confident that you will find this to be an exciting and engaging meeting, and we look forward to your participation.

With best wishes for an outstanding meeting,

Ivis Febus-Sampayo, Cochair
Laura Fejerman, Cochair
Scarlett Lin Gomez, Cochair
Augusto C. Ochoa, Cochair
Brian M. Rivers, Cochair
CHAIRS AND COMMITTEES

Conference Cochairs

Ivis Febus-Sampayo, SHARE Cancer Support, New York, NY
Lauren Fejerman, University of California San Francisco School of Medicine, San Francisco, CA
Scarlett Lin Gomez, University of California San Francisco, San Francisco, CA
Augusto C. Ochoa, Louisiana State University Health Sciences Center-Stanley S. Scott Cancer Center, New Orleans, LA
Brian M. Rivers, Morehouse School of Medicine, Atlanta, GA

Scientific Program Committee

Matthew P. Banegas, Kaiser Permanente, Portland, OR
Gerardo Colón-Otero, Mayo Clinic College of Medicine, Jacksonville, FL
Darrell M. Gray, II, The Ohio State University, Columbus, OH
Barbara H. Jung, University of Illinois at Chicago, Chicago, IL
Sonia S. Kupfer, University of Chicago, Chicago, IL
Johanna W. Lampe, Fred Hutchinson Cancer Research Center, Seattle, WA
Maureen Y. Lichtveld, Tulane University School of Public Health, New Orleans, LA
Laura A. Martello-Rooney, SUNY Downstate Medical Center, Brooklyn, NY
Glenn M. Mills, Louisiana State University Feist-Weiller Cancer Center, Shreveport, LA
Adam B. Murphy, Northwestern University, Chicago, IL
Folakemi T. Odedina, University of Florida Health Cancer Center, Orlando, FL
Julie R. Palmer, Boston University, Boston, MA
Lewis R. Roberts, Mayo Clinic College of Medicine, Rochester, MN

Sanya A. Springfield, National Cancer Institute-Center to Reduce Cancer Health Disparities, Rockville, MD
Robert A. Winn, University of Illinois Cancer Center, Chicago, IL
Clayton C. Yates, Tuskegee University, Tuskegee, AL

Scientific Review Committee

Kimlin T. Ashing, City of Hope, Duarte, CA
Matthew P. Banegas, Kaiser Permanente, Portland, OR
Luis G. Carvajal-Carmona, University of California, Davis, CA
Gerardo Colón-Otero, Mayo Clinic Cancer Center, Jacksonville, FL
Shannon Conroy, Department of Epidemiology & Biostatistics, University of California, San Francisco, San Francisco, CA
Mindy L. DeRouen, University of California, San Francisco, San Francisco, CA
Julie Dutil, Ponce Health Sciences University, Ponce, PR
LaCreis R. Kidd, University of Louisville, Louisville, KY
Candyce H. Kroenke, Kaiser Permanente, Oakland, CA
Sonia S. Kupfer, University of Chicago, Chicago, IL
Marilyn L. Kwan, Kaiser Permanente Northern California, Oakland, CA
Maureen Y. Lichtveld, Tulane University School of Public Health, New Orleans, LA
Beverly D. Lyn-Cook, Food and Drug Administration-National Center for Toxicological Research, Jefferson, AR
Laura A. Martello-Rooney, SUNY Downstate Medical Center, Brooklyn, NY
Adam B. Murphy, Northwestern University, Chicago, IL
Folakemi T. Odedina, University of Florida Health Cancer Center, Orlando, FL

Sung-Shim L. Park, University of Southern California, Keck School of Medicine, Los Angeles, CA

Veronica Wendy Setiawan, USC Norris Comprehensive Cancer Center, Los Angeles, CA

Salma Shariff-Marco, University of California San Francisco, San Francisco, CA

Mariana C. Stern, USC Norris Comprehensive Cancer Center, Los Angeles, CA

Jennifer Tsui, Rutgers-The Cancer Institute of New Jersey, New Brunswick, NJ

Jeffrey N. Weitzel, Cancer Screening and Prevention Program Network, City of Hope, Duarte, CA

Cheryl L. Willman, University of New Mexico Comprehensive Cancer Center, Albuquerque, NM

Robert A. Winn, University of Illinois Cancer Center, Chicago, IL

2018-2019 AACR Distinguished Lecture on the Science of Cancer Health Disparities, funded by Susan G. Komen® Selection Committee

Smita Bhatia, Institute for Cancer Outcomes and Survivorship, University of Alabama at Birmingham, Birmingham, AL

Gerardo Colón-Otero, Mayo Clinic Cancer Center, Jacksonville, FL

Ethan Dmitrovsky, Leidos Biomedical Research, Inc., Frederick, MD

Elena Martinez, UCSD Moores Cancer Center, La Jolla, CA

Augusto C. Ochoa, Louisiana State University Health Sciences Center-Stanley S. Scott Cancer Center, New Orleans, LA

Gloria M. Petersen, Mayo Clinic College of Medicine, Rochester, MN

Brian M. Rivers, Morehouse School of Medicine, Atlanta, GA

Beti Thompson, Fred Hutchinson Cancer Research Center, Seattle, WA
Scholar-in-Training Awards

Thirty-six presenters of meritorious abstracts have been selected by the Conference Chairs to receive an award to attend this conference. All graduate and medical students, postdoctoral fellows, and physicians-in-training who are AACR members were eligible for consideration. The names of the Scholar-in-Training awardees, affiliations, and poster numbers are provided below. The AACR sincerely thanks the Center to Reduce Cancer Health Disparities (CRCHD) of the National Cancer Institute and Aflac, Inc., for their support of these awards.

AACR Scholar-in-Training Awards—Supported by the Center to Reduce Cancer Health Disparities (CRCHD) of the National Cancer Institute

Adebola Adegboyega, University of Kentucky, Lexington, KY, B097
Muthana Al Abo, Duke Cancer Institute, Durham, NC, B050
Caitlin Gloeckner Allen, Emory University, Atlanta, GA, B090
Anusha Angajala, Tuskegee University, Tuskegee, AL, B052
Oluwole A. Babatunde, University of South Carolina, Columbia, SC, B075
Aleksandr R. Bukatko, Saint Louis University, Saint Louis, MO, B085
Leslie Renee Carnahan, University of Illinois at Chicago, Chicago, IL, A051, A052
Lindsay J. Collin, Emory University, Atlanta, GA, C053
Dibash Kumar Das, CUNY Lehman College, Bronx, NY, A109
Mart Angelo Dela Cruz, Boston University Medical Center, Boston, MA, C036
Narjust Duma, Mayo Clinic, Rochester, MN, A120
Megan C. Edmonds, Virginia Commonwealth University, Richmond, VA, A057
Mohamed M. Gad, Cleveland Clinic Foundation, Cleveland, OH, A110
Matthew E. Gaubatz, Saint Louis University School of Medicine, St. Louis, MO, A115
Priyatham Gorjala, Roseman University of Health Sciences, Las Vegas, NV, B017
Andreana Natalie Holowatyj, Huntsman Cancer Institute, University of Utah, Salt Lake City, UT, C079
Eejung Kim, University of Cincinnati, Cincinnati, OH, A122
Katie M. Marker, University of California Berkeley, Berkeley, CA, C051, PR05
Rachel Martini, University of Georgia, Athens, GA, B058
Jennifer K. McGee-Avila, Rutgers, The State University of New Jersey, Newark, NJ, B083
Khadijah A. Mitchell, Lafayette College, Easton, PA, A112
Maria Munoz-Sagastibelza, SUNY Downstate Medical Center, Brooklyn, NY, B059
Michelle K. Naidoo, Hunter College of the City University of New York, New York, NY, B068, PR09
Benjamin C. Onyeagucha, UT Health Science Center at San Antonio, San Antonio, TX, B066
Gargi Pal, CUNY Hunter College, New York, NY, B044
Neelima Panth, Duke University School of Medicine, Durham, NC, B088
Katherine Marie Polednik, Saint Louis University School of Medicine, St. Louis, MO, A117
Elizabeth J. Polter, University of Minnesota, Minneapolis, MN, B037
Emily Mae Rencsok, Harvard Medical School, Boston, MA, B022
Silvia J. Serrano-Gómez, Instituto Nacional de Cancerología, Bogotá, Colombia, C065
Jennifer C. Spencer, University of North Carolina at Chapel Hill, Chapel Hill, NC, B122
Shelbie D. Stahr, University of Arkansas for Medical Sciences, Little Rock, AR, C049
Dede K. Tetteh, City of Hope, Duarte, CA, A044
Milkie H. N. Vu, Emory University, Atlanta, GA, A066
Daniel V. Wakefield, University of Tennessee Health Science Center, West Cancer Center, Department of Radiation Oncology, Memphis, TN; Harvard T.H. Chan School of Public Health, Boston, MA, A098

**AACR Scholar-in-Training Award—Supported by Aflac, Inc.**
Eboney Nicole Butler, National Cancer Institute, Bethesda, MD, C016

**Minority and Minority-Serving Institution Faculty Scholar in Cancer Research Awards**
Full-time minority faculty and faculty of Minority-Serving Institutions (Historically Black Colleges and Universities [HBCUs], Hispanic-Serving Institutions [HSIs], American Indian Tribally-Controlled Colleges and Universities [AITCCUs], and other postsecondary institutions as defined by the U.S. Department of Education) who present a proffered paper at this conference are encouraged to apply for this meritorious scholar award. Supported by a generous grant from the Center to Reduce Cancer Health Disparities of the National Cancer Institute, the purposes of these awards are to increase the scientific knowledge base of minority faculty and faculty at MSIs, to encourage them in their research, and to assist in inspiring their students to pursue careers in cancer research. Only citizens of the United States or Canada or scientists who are permanent residents of these countries may receive one of these awards. The names of the Minority and Minority-Serving Institution Faculty Scholars, affiliations, and their poster or proffered presentation numbers are provided below.

DeLawnia Comer-Hagans, PhD, Associate Professor, Governors State University, University Park, IL

**Abstract Title:** Creating a mobile device-based educational intervention for African American women with hereditary breast cancer risk

**Poster Number:** A048

Avonne E. Connor, PhD, Assistant Professor, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

**Abstract Title:** The association between diabetes, plasma fructosamine, and risk of mortality after invasive breast cancer among Hispanic and non-Hispanic white women

**Poster Number:** C077

Shahnajyla K. Connors, PhD, MPH, Assistant Professor, University of Houston-Downtown, Houston, TX

**Abstract Title:** Exploring racial disparities in breast reconstruction after mastectomy at a NCI-Designated Cancer Center

**Poster Number:** B018

Tisha M. Felder, PhD, Assistant Professor, University of South Carolina, Columbia, SC

**Abstract Title:** “She was like, ‘I’m done. I’m not taking this anymore’”: Health care provider perspectives about breast cancer survivors’ nonadherence to adjuvant endocrine therapy

**Poster Number:** A069
Constance B. Hilliard, PhD, Professor, University of North Texas, Denton, TX

Abstract Title: Ecological model links Proto-oncogene to high susceptibility of Blacks to TRPV6-expressing metastatic cancers

Poster Number: B069

Laundette P. Jones, PhD, Assistant Professor, University of Maryland School of Medicine, Baltimore, MD

Abstract Title: Planning for scale-up of an evidence-based intervention in community settings: Project HEAL insights from the SPRINT Initiative

Poster Number: A024

Adana A.M. Llanos, PhD, Assistant Professor, Rutgers School of Public Health, Piscataway, NJ

Abstract Title: Associations of leptin and leptin receptor protein and gene expression with breast cancer clinicopathologic features

Poster Number: C063

Gilberto Lopez, ScD, Assistant Professor, University of Rochester, Rochester, NY

Abstract Title: The relationship between migration and integration stressors and tobacco use in a migrant Mixteco community

Poster Number: A094

Khadijah A. Mitchell, PhD, Assistant Professor, Lafayette College, Easton, PA

Abstract Title: Integrative epigenomic and transcriptomic analyses of kidney cancers from African Americans and European Americans

Poster Number: A112

Nosayaba Osazuwa-Peters, PhD, Assistant Professor, Saint Louis University School of Medicine, St. Louis, MO

Abstract Title: Disparities and factors associated with 30-day mortality following surgical treatment for squamous cell head and neck cancer with or without adjuvant therapy

Poster Number: B014

AACR-MICR Minority Scholar Awards in Cancer Research

Presenters of a proffered paper who are full-time predoctoral (graduate or medical) students, residents, and clinical or postdoctoral fellows who are engaged in cancer research or have the training and potential to make contributions to this field are encouraged to apply for this meritorious scholar award. Supported by a generous grant from the Center to Reduce Cancer Health Disparities of the National Cancer Institute, this program applies only to racial/ethnic minority groups that have been identified by the NCI as being traditionally under-represented in cancer and biomedical research, i.e., African American/Black, Alaskan Native, Hispanic/Latino, Native American, and Native Pacific Islander. Only citizens of the United States or Canada or scientists who are permanent residents of these countries may receive one of these awards. The names of the Minority Scholars, affiliations, and their poster or proffered presentation numbers are provided below.

Jennifer I. Alexander, PhD, Graduate Student, Drexel Univ. College of Medicine, Philadelphia, PA

Abstract Title: Loss of cytoskeletal protein palladin desensitizes pancreatic cancer associated fibroblast to TGFβ1-dependent desmoplastic induction

Poster Number: B070
Julia Adele Devonish, MD, PhD, Postdoctoral Fellow, Roswell Park Comprehensive Cancer Center, Buffalo, NY

**Abstract Title:** Community outreach navigation of minority and medically underserved women in rural Arkansas to mammography facilities: Evolution and experiential results of the National Witness Project® from the last decade

**Poster Number:** A018

Abdi T. Gudina, MPH, Graduate Student, Kent State University, Kent, OH

**Abstract Title:** Racial/ethnic disparities in inflammatory breast cancer survival in the Michigan Cancer Surveillance Program

**Poster Number:** C106

Carol Y. Ochoa, MPH, Graduate Student, University of Southern California, Los Angeles, CA

**Abstract Title:** Parental health communication and satisfaction with medical providers of childhood cancer survivors: Differences by race/ethnicity and language

**Poster Number:** A013

Xavier E. Ramos-Cardona, BS, Graduate Student, Purdue University, West Lafayette, IN

**Abstract Title:** Canine CAR T-cells therapy for mammary carcinoma in dogs

**Poster Number:** B021

Crystal S. Seldon, MD, Resident, Wellstar Kennestone Hospital, Marietta, GA

**Abstract Title:** Gender diversity in academic oncology programs

**Poster Number:** A075

Brandi P. Smith, MS, Graduate Student, Univ. of Illinois at Urbana-Champaign, Urbana, IL

**Abstract Title:** A machine learning-based approach to identify biomarkers of environmental toxicant exposures relevant to liver cancer disparities in rural Illinois

**Poster Number:** C003

Jeronay K. Thomas, MS, Graduate Student, Morehouse School of Medicine, Mableton, GA

**Abstract Title:** Antibody microarray analysis of signaling networks regulated by the CCR9/CCL25 axis in African American and Caucasian American triple-negative breast cancer

**Poster Number:** C113

Odalys J. Torres-Luquis, BS, Graduate Student, Purdue University, West Lafayette, IN

**Abstract Title:** Lymph circulating tumor cells are phenotypically different from tumor cells circulating in the blood

**Poster Number:** C114

Nikita D. Wright, BS, Graduate Student, Georgia State University, Atlanta, GA

**Abstract Title:** Lack of HER4 signaling predicts poor prognosis among triple-negative breast cancer patients of African descent: A multi-institutional study

**Poster Number:** C026
Certificates of Attendance and Receipts

Certificates of attendance and receipts for conference registration fees are available at the conference registration desk.

Conference Registration

Registration will be held in the Grand Ballroom Foyer on the following schedule:

- Friday, November 2 1:00 p.m.-9:30 p.m.
- Saturday, November 3 7:00 a.m.-8:00 p.m.
- Sunday, November 4 7:00 a.m.-6:30 p.m.
- Monday, November 5 7:00 a.m.-1:45 p.m.

Social Media

While we encourage your use of social media in and around AACR conferences, we remind you to adhere to the AACR’s social media guidelines and accepted social media etiquette. Please be aware of the following guidelines:

Do

- Follow us on Twitter @AACR and use the hashtag #AACRdisp18 for this conference.
- Follow us on Facebook at facebook.com/aacr.org.
- Blog about the conference and what you are hearing and seeing (but without sharing details of any data presented: follow journal rules about data sharing).
- Converse with other attendees.
- Provide feedback to AACR staff and the program committee—discuss topics of interest and/or speakers for future conferences.
- Communicate with respect, being mindful of diversity and tolerant of differences you may encounter. Keep criticism constructive, and listen carefully to others to understand their perspectives.

Don’t

- Capture, transmit, or redistribute data presented at the conference. This may preclude subsequent publication of the data in a scholarly journal—please do not jeopardize your colleagues’ work!
- Engage in rudeness or personal attacks.

Meeting Policies and Procedures

Photography. Conference attendees may take photographs during oral or poster presentations provided that the photographs are strictly for personal, noncommercial use and are not to be published in any form. Attendees are prohibited from using flash photography or otherwise distracting the presenters or members of the audience.

Social Media. Conference attendees may share information from presentations on social media provided that they respect the wishes of presenters. Oral presenters may label any or all slides in their presentations with “DO NOT POST.” Similarly, poster presenters may label their posters with “DO NOT POST.” Attendees must respect the presenters’ requests in these instances and refrain from posting any images from these designated slides or posters on social media.

The AACR thanks its meeting attendees for adhering to these policies. AACR leadership will evaluate these policies annually and will adjust them as deemed necessary.

- In accordance with the Resolution adopted at the 1968 Annual Meeting of the AACR, registrants must refrain from smoking in all meeting rooms. This regulation applies to all session rooms, including the poster area.
- Children under 12 years of age are not permitted in any scientific session or poster session at any time. Children cannot be left unattended or unsupervised.
- Cell phones, pagers, and other electronic devices must be turned off or placed on “silent” mode before entering a session.
- Lost and Found: Attendees may contact the AACR Registration Desk for any lost items.
- Poster presenters are solely responsible for placing their poster on the assigned poster board and removing their
poster according to the schedule provided. The AACR cannot be responsible for any posters that are not removed at the designated time. Posters left in the poster hall after that time may be discarded.

• Poster presenters should not leave any items at their poster board unattended, including poster tubes, meeting bags, programs, personal items, etc. The AACR is not responsible for any items left in the poster hall.

Membership

With over 40,000 members in 120 countries around the world, the AACR is a dynamic and vibrant organization that offers its members programs and activities that promote the exchange of timely scientific information, and excellent opportunities to participate more fully in the global conquest of cancer by fostering important relationships and collaborations with cancer scientists internationally. Six individual categories of membership are available in the AACR to support each aspect of our members' professional development and enhancement in cancer research. AACR is also eager to support the exchange of knowledge and research with investigators who are located in countries with emerging economies. Significantly reduced membership dues are available for these investigators.

Special Invitation

The AACR is pleased to extend a special invitation to "The Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved" nonmember attendees to join the AACR and work with other professionals to discuss the latest findings and to stimulate development of new research. **Nonmember attendees who join are eligible for FREE AACR membership** through December 31, 2019, with **no need to obtain nominators** in support of membership. All completed applications must be returned to the AACR Membership Department by November 30, 2018.

Elimination of Annual Dues for Associate Members (Predoctoral Students and Postdoctoral and Clinical Fellows)

The AACR fully supports the education, training and professional development of early-career investigators. Graduate students, medical students, residents and postdoctoral and clinical fellows who are enrolled in education or training programs that could lead to a career in cancer research will no longer be required to pay annual membership dues as of 2018. Learn more and apply for Associate membership today!

For your convenience, an AACR membership application is provided in your conference bag. Simply review the information on the form and submit a completed application to AACR staff at the conference or send via email to membership@aacr.org. Candidates may also apply online at myaacr.aacr.org. Join our mission and apply for AACR membership today!

Poster Sessions

Poster Sessions will be held in the Napoleon Ballroom according to this schedule, and must be removed immediately following each session:

<table>
<thead>
<tr>
<th>Poster Session Date</th>
<th>Time</th>
<th>Set Up/Preparation:</th>
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<tbody>
<tr>
<td>Friday, November 2</td>
<td>6:45 p.m.-8:45 p.m.</td>
<td>After 1:00 p.m. on November 2</td>
</tr>
<tr>
<td>Saturday, November 3</td>
<td>6:00 p.m.-8:00 p.m.</td>
<td>After 4:00 p.m. on November 3</td>
</tr>
<tr>
<td>Sunday, November 4</td>
<td>12:30 p.m.-2:30 p.m.</td>
<td>After 10:30 a.m. on November 4</td>
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Refreshments will be provided during Poster Sessions A and B, and lunch will be provided during Poster Session C.
GENERAL INFORMATION

Room Locations

Registration
Grand Ballroom Foyer • Fifth Floor

Plenary Sessions
Grand Ballroom ABC • Fifth Floor

Educational Session 1
Grand Ballroom DE • Fifth Floor

Educational Session 2
Grand Ballroom ABC • Fifth Floor

Concurrent Session 1
Grand Ballroom ABC • Fifth Floor

Concurrent Session 2
Grand Ballroom DE • Fifth Floor

Recent Discoveries and Hot Topics in Cancer Health Disparities Sessions
Grand Ballroom ABC • Fifth Floor

Educational Session 3
Grand Ballroom ABC • Fifth Floor

Educational Session 4
Grand Ballroom DE • Fifth Floor

Concurrent Session 3
Grand Ballroom ABC • Fifth Floor

Concurrent Session 4
Grand Ballroom DE • Fifth Floor

High School Program
Grand Ballroom D • Fifth Floor

MICR Resource Room
Grand Chenier • Fifth Floor

NCI Resource Room
Gallier AB • Fourth Floor

Poster Sessions
Napoleon Ballroom • Third Floor

Scientist↔Survivor Program
Maurepas • Third Floor

Receptions and Meals

Opening Reception: All registrants are invited to attend the Opening Reception on Friday, November 2, from 6:45 p.m.-8:45 p.m. in the Napoleon Ballroom on the third floor. Each registrant will receive one drink ticket that may be redeemed for beer, wine, or a nonalcoholic beverage. Conference badges are required.

Continental Breakfast: Continental breakfast with mentoring roundtables will be held Saturday through Monday from 8:00 a.m.-9:00 a.m. in the Napoleon Ballroom on the third floor. All attendees and registered guests are invited to attend. Please wear your conference badge.

Breaks: All breaks will be held in the Grand Ballroom Foyer on the fifth floor on the following schedule:

Saturday, November 3
10:30 a.m.-11:00 a.m.
4:00 p.m.-4:30 p.m.

Sunday, November 4
10:30 a.m.-11:00 a.m.
4:30 p.m.-5:00 p.m.

Monday, November 5
10:30 a.m.-10:45 a.m.

Friday, November 2, Grand Ballroom D • 8:30 a.m.-2:00 p.m.

The AACR is committed to the education and training of the next generation of able and dedicated cancer researchers and to facilitating and nurturing their careers in cancer research or cancer-related biomedical science. The leadership of the AACR feels strongly that it is important to stimulate excitement and enthusiasm about cancer research at an early stage when young science students are making career decisions.

The Special Program for High School Students promotes interactions between senior cancer scientists and promising students in order to facilitate the contributions of these students to scientific research and the conquest of cancer. We are excited to welcome students and teachers from the New Orleans area to participate in this session.
Minorities in Cancer Research (MICR)

With almost 5,000 members, Minorities in Cancer Research (MICR) is a membership group within the AACR committed to preventing and curing cancer while meeting the professional needs and advancing the careers of minority scientists.

To facilitate its mission, MICR meets the needs of minority scientists by:

• Increasing the number, participation, visibility, and recognition of minority scientists in cancer research
• Developing programs that address the professional needs of minority scientists in cancer research
• Providing diversity in the field and within the AACR’s membership, programs, committees, and leadership
• Addressing the disparities in cancer incidence and mortality faced by minorities and the medically underserved
• Advocating for relevant, effective legislation pertaining to science and public policy in consultation with the Science Policy and Legislative Affairs Committee
• Assuming other such roles as are deemed necessary or appropriate to MICR’s mission

Volunteer for MICR Committee Service

MICR members are encouraged to volunteer for committee service.

MICR Council

The MICR Council acts as an advisory body to the AACR leadership on issues of concern to minority investigators and is responsible for spearheading the activities of MICR through its Committees. Council members are elected to serve for three-year terms and a Chairperson-Elect and new council members are elected annually.

Brian M. Rivers,  
Chairperson  
Morehouse School of Medicine, Atlanta, GA

John M. Carethers,  
Past Chairperson  
University of Michigan, Ann Arbor, MI

Laura Fejerman,  
Chairperson-Elect  
University of California San Francisco, Berkeley, CA

Kimlin Tam Ashing  
City of Hope, Duarte, CA

John D. Carpten  
Keck School of Medicine of USC, Los Angeles, CA

Luis G. Carvajal-Carmona  
University of California Davis, Davis, CA

Gerardo Colón-Otero  
Mayo Clinic Cancer Center, Jacksonville, FL

Beverly D. Lyn-Cook  
FDA-National Center for Toxicological Research, Jefferson, AR

Mary Jackson Scroggins  
Pinkie Hugs, LLC, Washington, DC

Sanya Springfield  
National Cancer Institute CRHCD, Bethesda, MD

Mariana C. Stern  
USC Norris Comprehensive Cancer Center, Los Angeles, CA

Robert A. Winn  
University of Illinois Cancer Center, Chicago, IL

Clayton C. Yates  
Tuskegee University, Tuskegee, AL
GENERAL INFORMATION

Join us for the following events organized by the Minorities in Cancer Research Council

Minorities in Cancer Research Distinguished Lectureship Series
Thursday, November 1 • 3:00 p.m.-5:30 p.m.
Louisiana Cancer Research Building, Louisiana State University

This series brings together leading researchers who present the latest developments in cancer research to students and faculty at minority-serving institutions. These lectures are intended to inspire these young minority students and educators to pursue cancer research.

Minorities in Cancer Research Council Meet and Greet
Friday, November 2 • 4:00 p.m.-5:00 p.m.
Grand Chenier, Sheraton New Orleans Hotel

The MICR Meet and Greet will provide an opportunity for the MICR Council to meet informally to answer questions from MICR members, as well as conference attendees on issues related to award opportunities, programs sponsored by the MICR Council, and other topics of interest to attendees.

Saturday, November 3 • 12:30 p.m.-2:00 p.m.
Grand Ballroom D, Sheraton New Orleans Hotel

The Professional Advancement Session is intended to facilitate networking and the exchange of strategies for professional development among individuals representing academia, industry, government, and the community. This professional advancement session will provide an overview of the current training and funding priorities at the National Institutes of Health, National Cancer Institute (NCI), and National Institute on Minority Health and Health Disparities (NIMHD), focused on advancing research in cancer health disparities, and perspectives from a seasoned researcher on the future of cancer health disparities research and lessons learned from their career path. The presentations will highlight the current gaps in cancer health disparities research, emerging priority areas in training and research, available funding mechanisms, and advice in navigating a career in health disparities research. The goal of this session is to provide a forum for interactive discussions and offer strategies for early-stage investigators or established investigators transitioning into cancer health disparities research.

MICR Parade, Fundraiser, and Networking Event
Sunday, November 4 • 7:00 p.m.-10:00 p.m.
The Maison, New Orleans, LA

MICR invites all conference attendees to join us for a parade, fundraiser, and networking event taking place at The Maison, located in the historic French Quarter of New Orleans. Strut, meet, and network with fellow conference attendees during this event. All proceeds will support future MICR activities. Your $50 ticket includes a signature cocktail, buffet, and live entertainment. Visit the MICR Networking and Resource Center for more information and to purchase tickets.

Visit the MICR Networking and Resource Center
Open During Conference Hours
Grand Chenier, Sheraton New Orleans Hotel

The MICR Networking and Resource Center provides meeting attendees with a comfortable environment to network one-on-one and in small groups while learning about AACR and MICR programs as well as MICR membership and committee service opportunities.
CONTINUING MEDICAL EDUCATION (CME)

Accreditation Statement
The American Association for Cancer Research (AACR) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education activities for physicians.

Credit Designation Statement
AACR has designated this live activity for a maximum of 19.25 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Credit certification for individual sessions may vary, dependent upon compliance with the ACCME Accreditation Criteria. The final number of credits may vary from the maximum number indicated above.

Claiming (CME) Credit
Physicians and other health care professionals seeking AMA PRA Category 1 Credit(s)™ for this live continuing medical education activity must complete the online CME Request for Credit Survey by Monday, December 17, 2018. The Request for Credit Survey will be available via a link on the AACR website at www.aacr.org/disparities18cme and via email. Certificates will only be issued to those who complete the survey. Your CME certificate will be sent to you via email after the completion of the activity.

Statement of Educational Need, Target Audience, and Learning Objectives
Racial and ethnic disparities in cancer rates are well documented. Research shows that individuals from racial/ethnic minorities and medically underserved populations are more likely to be diagnosed with late-stage diseases that might have been treated more effectively or cured if diagnosed earlier. For example, the rate of new cancer cases in the US is highest among black men, followed by white, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native men. In comparison, for women, the rate of new cancer cases is highest among white women, followed by black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native women. Death rates are highest among black women and men, followed by white, American Indian/Alaska Native, Hispanic, and Asian/Pacific Islander women and men.

Data suggest that biologic and social determinants contribute to disparities across the cancer continuum. Cultural beliefs, as well as financial and physical barriers, are some of the issues that prevent individuals or groups from obtaining effective health care. However, other factors also play a major role. Among these factors are the genetic contribution to the incidence of certain cancers and cancer disparities, availability of effective interventions tailored to specific communities, the role of lifestyle and environmental factors in cancer risk in underserved populations, and tumor subtypes within racial/ethnic groups. Differences between populations regarding prevention, diagnosis, treatment, survivorship, screening guidelines, and access to multilevel interventions all play various roles in the risk, treatment, and survival of individuals in medically underserved populations.

To reduce the burden of cancer due to health disparities, there is a need to educate physicians on the role of the various factors involved in creating health disparities and how they impact the diagnosis, treatment, response, and survival of cancer patients from racial/ethnic minorities and medically underserved populations. This conference will bring together a wide range of physicians, scientists, health professionals, and health care leaders to discuss the latest findings in their fields, to foster collaborative interdisciplinary interactions and partnerships, and to stimulate the development of new research and clinical practices aimed to reduce cancer health disparities and provide the most appropriate care for a diverse patient population.

After participating in this CME activity, physicians should be able to:

1. Discuss the environmental, biologic, and genetic contributions to racial disparities in cancer risk and incidence

2. Assess the efficacy of various interventional approaches in specific populations to decrease cancer health disparities

3. Identify the impact of genetic susceptibility, socioeconomic factors, diet, and access to health care in the prevention and treatment of cancer
4. Identify factors that impact the development and treatment of cancers in patients from different populations

5. Distinguish how screening practices, testing, and biologic factors impact the survivorship and quality of life in cancer survivors from underserved populations

Disclosure Statement

It is the policy of the AACR that the information presented at AACR CME activities will be unbiased and based on scientific evidence. To help participants make judgments about the presence of bias, AACR will provide information that Scientific Program Committee members and speakers have disclosed about financial relationships they have with commercial entities that produce or market products or services related to the content of this CME activity. This disclosure information will be made available in the Program/Proceedings of this conference.

Acknowledgment of Financial or Other Support

This activity is supported by professional educational grants from Astellas, AstraZeneca, Genomic Health, Lilly, Novartis, Pfizer, and Tesaro. All others will be disclosed at the activity.

Questions about CME?

Please contact the Office of CME at 215-440-9300 or cme@aacr.org.
The AACR would like to thank the following organizations for their generous support of this conference.*

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*Funding for this conference was made possible (in part) by 1R13CA236113-01 from the National Cancer Institute. The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention by trade names, commercial practices, or organizations imply endorsement by the U.S. Government.
The AACR thanks the following organizations for their generous support of the travel awards provided at this conference.

**Award Supporters**

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**Friday, November 2**

**4:00 p.m.-5:00 p.m.**  
**MICR Council Meet and Greet**  
*Grand Chenier*

**5:00 p.m.-6:45 p.m.**  
**Welcome and Opening Session**  
*Grand Ballroom ABC*

**Keynote Presentation**

**How the National Cancer Institute is working to reduce cancer health disparities**

*Norman E. Sharpless*

National Cancer Institute,  
Bethesda, MD

Norman E. “Ned” Sharpless, MD, was officially sworn in as the 15th director of the National Cancer Institute (NCI) on October 17, 2017. Prior to his appointment, Dr. Sharpless served as the director of the University of North Carolina (UNC) Lineberger Comprehensive Cancer Center, a position he held since January 2014.

Dr. Sharpless was a Morehead Scholar at UNC–Chapel Hill and received his undergraduate degree in mathematics. He went on to pursue his medical degree from the UNC School of Medicine, graduating with honors and distinction in 1993. He then completed his internal medicine residency at the Massachusetts General Hospital and a hematology/oncology fellowship at Dana-Farber/Partners Cancer Care, both of Harvard Medical School in Boston. After 2 years on the faculty at Harvard Medical School, he joined the faculty of the UNC School of Medicine in the Departments of Medicine and Genetics in 2002. He became the Wellcome Professor of Cancer Research at UNC in 2012.

Dr. Sharpless is a member of the Association of American Physicians as well as the American Society for Clinical Investigation (ASCI), the nation’s oldest honor society for physician-scientists, and served on the ASCI council from 2011 to 2014. Dr. Sharpless was an associate editor of *Aging Cell* and deputy editor of the *Journal of Clinical Investigation*. He has authored more than 150 original scientific papers, reviews, and book chapters, and is an inventor on 10 patents. He cofounded two clinical-stage biotechnology companies: G1 Therapeutics and HealthSpan Diagnostics.

In addition to serving as director of NCI, Dr. Sharpless is chief of the Aging Biology and Cancer Section in the National Institute on Aging’s Laboratory of Genetics and Genomics, where he continues his research on the biology of the aging process that promotes the conversion of normal self-renewing cells into dysfunctional cancer cells. Dr. Sharpless has made seminal contributions to the understanding of the relationship between aging and cancer, and in the preclinical development of novel therapeutics for melanoma, lung cancer, and breast cancer.

**Ninth Annual AACR Distinguished Lectureship on the Science of Cancer Health Disparities, funded by Susan G. Komen**

**Towards understanding psychosocial and behavioral issues in cancer health disparities**

*Chanita Hughes-Halbert*

Medical University of South Carolina  
Hollings Cancer Center, Charleston, SC

The AACR Distinguished Lectureship on the Science of Cancer Health Disparities, funded by Susan G. Komen®, recognizes an investigator whose novel and significant work has had, or may have, a far-reaching impact on the etiology, detection, diagnosis, treatment, or prevention of cancer health disparities.

Dr. Hughes-Halbert is an internationally recognized expert in minority health. She possesses unique expertise across the cancer research spectrum, specializing in the characterization of psychosocial, behavioral, clinical, and genetic factors that contribute to cancer health disparities and precision disease prevention in medically underserved populations. More specifically, her research focuses on enhancing the participation of minorities in cancer research, developing tailored surveillance and intervention protocols to improve cancer outcomes in minority populations, and developing sustainable infrastructures for cancer prevention and control measures mediated by community-based research studies.

Given the complex nature of cancer health disparities, Dr. Hughes-Halbert’s research has steadily evolved from a concentrated focus on genetic counseling and testing for BRCA1 and BRCA2 mutations, to a transdisciplinary approach that now considers how a multitude of factors influence cancer outcomes in racial/ethnic minorities and medically underserved populations. Her ongoing research efforts continue to shape the field by facilitating the integration of emerging health care technologies with cancer prevention and control efforts to establish optimal precision medicine regimens for high-risk populations.
## Conference Program and Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:45 p.m.-8:45 p.m.</td>
<td><strong>Poster Session A and Opening Reception</strong></td>
<td>Napoleon Ballroom</td>
</tr>
<tr>
<td>8:00 a.m.-9:00 a.m.</td>
<td><strong>Breakfast with Professional Networking Roundtables</strong></td>
<td>Napoleon Ballroom</td>
</tr>
<tr>
<td>9:00 a.m.-10:30 a.m.</td>
<td><strong>Plenary Session 1: Ensuring Diversity in Precision Medicine Initiatives: Where Are We Now and What Are We Doing?</strong></td>
<td>Grand Ballroom ABC</td>
</tr>
<tr>
<td>11:00 a.m.-12:30 p.m.</td>
<td><strong>Plenary Session 2: Cancer Health Disparities in Louisiana</strong></td>
<td>Grand Ballroom ABC</td>
</tr>
<tr>
<td>12:30 p.m.-2:00 p.m.</td>
<td><strong>MICR Professional Advancement Session (Lunch on own for those not attending)</strong></td>
<td>Grand Ballroom DE</td>
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<tr>
<td>2:00 p.m.-3:00 p.m.</td>
<td><strong>Educational Sessions 1 and 2</strong></td>
<td></td>
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</tbody>
</table>

### Saturday, November 3

**Session Chair: Elena Martinez**, UCSD Moores Cancer Center, La Jolla, CA

**Ensuring diversity in precision medicine initiatives: Where are we now and what are we doing?**
Elena Martinez

**The All of Us Research Program and precision engagement**
Dara P. Richardson-Heron, National Institutes of Health-All of Us Initiative, Rockville, MD

**What doctors, patients, and the Latino community need to do to prepare for precision medicine**
Gregory A. Talavera, San Diego State University, San Diego, CA

**Advocate Perspective–Barriers to health care in minority communities**
Col. (Ret.) James E. Williams, Jr., Pennsylvania Prostate Cancer Coalition and Intercultural Cancer Council, Camp Hill, PA

**Exploring social determinants of cancer outcomes using multilevel spatial analysis**
Richard Scribner, Louisiana State University School of Medicine, New Orleans, LA

**Colorectal cancer in Louisiana: Disparities in incidence, mortality, and access to screening**
Jordan J. Karlitz, Tulane University School of Medicine, New Orleans, LA

**Biobanking and genomic research: Understanding and acceptance of individuals unrepresented in clinical trials**
Terry Davis, LSU Feist-Weiller Cancer Center, Shreveport, LA

**Understanding the molecular landscape of gastric premalignant lesions**
Jovanny Zabaleta, Louisiana State University Health Sciences Center, New Orleans, LA

**Progress in colorectal cancer screening: Past, present, and future**
Darrell M. Gray, II, The Ohio State University, Columbus, OH
Advocate Perspective—Title to be announced
Candace Henley, The Blue Hat Foundation, Chicago, IL

Follow-up of abnormal colorectal cancer screening: Challenges and solutions
Folasade P. May, UCLA David Geffen School of Medicine, Los Angeles, CA

Advocate Perspective—Improving outcomes for all colorectal cancer survivors
Judith Lee Smith, Centers for Disease Control and Prevention, Atlanta, GA

Educational Session 2: Training the Next Generation of Cancer Health Disparities Researchers
Grand Ballroom ABC

Session Chair: Sanya A. Springfield, National Cancer Institute-Center to Reduce Cancer Health Disparities, Rockville, MD

Emerging priorities for the Center to Reduce Cancer Health Disparities in diversity workforce training and cancer health disparities research
Sanya A. Springfield

The bridge less traveled: Diversity training in public health and social/behavioral research
Rena J. Pasick, UCSF Helen Diller Family Comprehensive Cancer Center, San Francisco, CA

Lessons learned from seventeen years of cancer research experiences program for under-represented high school and college students
Karen Burns White, Dana-Farber Cancer Institute/Harvard Cancer Center, Boston, MA

Title to be announced
Lorna H. McNeill, University of Texas MD Anderson Cancer Center, Houston, TX

North Carolina Central University and Duke Cancer Institute’s collaborative cancer research and education program: Connecting cancer disparities translational research, clinical trials operations, and community engagement
Nadine J. Barrett, Duke Cancer Institute, Durham, NC

3:00 p.m.-4:00 p.m. Concurrent Sessions 1 and 2

Concurrent Session 1: Using Emerging Approaches and Technologies to Increase Participation of Minorities, Rural Populations, and Small Oncology Centers
Grand Ballroom ABC

Session Chair: Brian M. Rivers, Morehouse School of Medicine, Atlanta, GA

Approaches to evaluating therapies in under-represented populations
Lola A. Fashoyin-Aje, Food and Drug Administration, Silver Spring, MD

Title to be announced
Chanita Hughes-Halbert, Medical University of South Carolina Hollings Cancer Center, Charleston, SC

Assembling study cohorts for molecular characterization from medically underserved populations: A view from the trenches
Kevin L. Gardner, Columbia University, New York, NY

Concurrent Session 2: Immigration and Refugee Populations and Cancer Health Disparities
Grand Ballroom DE

Session Chair: Deborah O. Erwin, Roswell Park Cancer Institute, Buffalo, NY

Understanding the unique experience among Chinese immigrant breast cancer survivors
Qian Lu, University of Texas MD Anderson Cancer Center Department of Health Disparities Research, Houston, TX

Engaging refugees and immigrants in breast health education
May Shogan, International Institute of Buffalo, Buffalo, NY

Effect of migration to the US on health characteristics of the African diaspora
Camille C. R. Ragin, Fox Chase Cancer Center, Philadelphia, PA

4:00 p.m.-4:30 p.m. Break
Grand Ballroom Foyer
CONFERENCE PROGRAM AND SCHEDULE

4:30 p.m.-6:00 p.m. Recent Discoveries and Hot Topics in Cancer Health Disparities 1
Grand Ballroom ABC

Session Chair: Adam B. Murphy, Northwestern University, Chicago, IL

Factors associated with dual use of electronic cigarettes among adult American Indians who smoke: A Cherokee Nation cohort study*
Dorothy Rhoades, Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK

Contextualizing the association between social isolation and smoking among socioeconomically disadvantaged adults: Psychosocial, life-contextual, and health care factors*
Kassandra Alcaraz, American Cancer Society, Atlanta, GA

Disparities in work status after treatment for breast cancer: A controlled, longitudinal study*
Victoria S. Blinder, Memorial Sloan Kettering Cancer Center, New York, NY

Engaging in physical activity after a cancer diagnosis: A Detroit ROCS Study*
Jennifer Beebe-Dimmer, Wayne University Karmanos Cancer Institute, Detroit, MI

A genetic variant at 6q25 associated with estrogen receptor-negative breast cancer subtypes in Peruvian breast cancer patients*
Katie M. Marker, University of California Berkeley, Berkeley, CA

Research on prostate cancer in men of African ancestry: Defining the roles of genetics, tumor markers, and social stress*
Ann Hamilton, USC Keck School of Medicine, Los Angeles, CA

6:00 p.m.-8:00 p.m. Poster Session B and Reception
Napoleon Ballroom

8:00 p.m. Evening Off/Dinner on Own

Sunday, November 4

8:00 a.m.-9:00 a.m. Breakfast with Professional Networking Roundtables
Napoleon Ballroom

9:00 a.m.-10:30 a.m. Plenary Session 3: ‘Omic Studies in Cancer Disparities
Grand Ballroom ABC

Session Chair: John D. Carpten, USC Keck School of Medicine, Los Angeles, CA

The role of genetics and microbiomics in colorectal cancer among African American patients
Hassan Ashktorab, Howard University, Washington, DC

Mechanistic differences in early-onset colorectal cancer
Nathan A. Ellis, University of Arizona Cancer Center, Tucson, AZ

Exploring the impact of African ancestry in tumor immune response, a possible role in disparate clinical outcomes
Melissa B. Davis, Henry Ford Health Systems, Detroit, MI

10:30 a.m.-11:00 a.m. Break
Grand Ballroom Foyer

11:00 a.m.-12:30 p.m. Recent Discoveries and Hot Topics in Cancer Health Disparities 2
Grand Ballroom ABC

Session Chair: Matthew P. Banegas, Kaiser Permanente, Portland, OR

Racial differences in financial toxicity among metastatic breast cancer patients*
Cleo A. Samuel, UNC Gillings School of Global Public Health, Chapel Hill, NC

*Short talk from proffered abstract
Higher expression of SATB2 gene in hepatocellular carcinoma of African American patients determines aggressiveness phenotypes than those in Caucasian Americans*
Rakesh K. Srivastava, Louisiana State University Health Sciences Center, New Orleans, LA

MicroRNA-1205 regulation of FRYL and aggressive prostate cancer in men of African ancestry*
Michelle Naiddoo, Hunter College of the City University of New York, Staten Island, NY

Fewer rural cancer patients treated with antineoplastic agents*
Cathy Bradley, University of Colorado, Aurora, CO

Racial differences in characteristics of early- vs. late-onset colorectal cancer among veterans*
Monalesia Chapman, University of North Carolina-Greensboro, Durham VA Healthcare System, Hillsborough, NC

CRC screening in rural community clinics using the fecal immunochemical test (FIT): Issues with repeat screening*
Connie C. Arnold, Feist-Weiller Cancer Center and LSU Health Sciences Center, Shreveport, LA

Intrinsic and extrinsic contributions of mitochondrial DNA to metastatic efficiency: A genetic explanation for disparities in metastasis efficiency?
Danny R. Welch, University of Kansas Cancer Center, Kansas City, KS

Novel nuclear and mitochondrial RNAs that are linked to key pathways and depend on sex, population origin, race, tissue, and disease
Isidore Rigoutsos

Educational Session 4: Progress in Liver Cancer: From Screening to Survivorship
Grand Ballroom DE

Session Chair: Lewis R. Roberts, Mayo Clinic College of Medicine, Rochester, MN

Liver cancer screening—How much progress have we really made?
Amit Singal, UT Southwestern, Dallas, TX

Advocate Perspective—Title to be announced
Donna R. Cryer, Global Liver Institute, Washington, DC

Systemic therapy in HCC: Making progress against a major cancer problem
Richard S. Finn, University of California Los Angeles, Los Angeles, CA

Surgical resection in liver and biliary cancers
Chee-Chee H. Stucky, Mayo Clinic Arizona, Phoenix, AZ

12:30 p.m.-2:30 p.m.  Poster Session C with Lunch
Napoleon Ballroom

2:30 p.m.-3:30 p.m.  Educational Sessions 3 and 4

Educational Session 3: Cancer Health Disparities: Emerging System-level Discoveries of the Molecular Drivers
Grand Ballroom ABC

Session Chair: Isidore Rigoutsos, Thomas Jefferson University, Philadelphia, PA

Advocate Perspective—Diversity in research: A missing link to eliminate health disparities
Barbara Segarra-Vazquez, University of Puerto Rico and Susan G. Komen, San Juan, PR

Racial differences in the lung cancer transcriptome: Insights from coding, noncoding, and alternative polyadenylated genes
Brid M. Ryan, National Cancer Institute, Bethesda, MD

*Short talk from proffered abstract
Lung cancer incidence and risk factors in never-smoking Asian American, Native Hawaiian, and Pacific Islander women: The development of a multilevel integrated dataset of EHR, cancer registry, and environmental data
Mindy C. DeRouen, University of California San Francisco, San Francisco, CA

Racial/ethnic differences in liver fat, an obesity-associated risk factor for liver cancer
Unhee Lim, University of Hawaii Cancer Center, Honolulu, HI

A family-focused lay health worker approach to promote smoking cessation, healthy eating, and physical activity among Asian Americans
Janice Y. Tsoh, University of California San Francisco Department of Psychiatry, San Francisco, CA

Advocate Perspective—Shaping survivorship in Hawaii
Lillian Kehau Matsumoto, Hawaii Comprehensive Cancer Coalition, Honolulu, HI

Concurrent Session 4: Global Cancer Health Disparities: How Much Focus on Precision Cancer Health Should/Can There Be in Low- and Middle-Income Countries?
Grand Ballroom DE

Session Chair: Laura Fejerman, University of California San Francisco School of Medicine, San Francisco, CA

Precision medicine in cancer: Opportunities and challenges in Latin America
Andrea S. Llera, Fundacion Instituto Leloir, Buenos Aires, Argentina

Addressing prostate cancer disparities through precision public health: The CaPTC experience
Folakemi T. Odedina, University of Florida, Gainesville, FL

Breast cancer and African ancestry
Lisa A. Newman, Weill Cornell Medicine, New York, NY

5:00 p.m.-6:30 p.m.  Plenary Session 4: Quality of Cancer Care, Health Care Costs, and Delivery
Grand Ballroom ABC

Session Chair: Michael T. Halpern, Temple University College of Public Health, Philadelphia, PA

Advocate Perspective—Disparities in access to and quality of cancer care
Shelley Fuld Nasso, National Coalition for Cancer Survivorship, Silver Spring, MD

Coverage ≠ access: State Medicaid policies and disparities in receiving high-quality cancer care
Michael T. Halpern

Medical financial hardship in the United States
K. Robin Yabroff, American Cancer Society, Atlanta, GA

Disparities in access and outcomes: Actions and consequences
Sandra L. Wong, Dartmouth-Hitchcock Medical Center, Lebanon, NH

6:30 p.m.  Evening Off/Dinner on Own

Monday, November 5

8:00 a.m.-9:00 a.m.  Breakfast with Professional Networking Roundtables
Napoleon Ballroom

9:00 a.m.-10:30 a.m.  Recent Discoveries and Hot Topics in Cancer Health Disparities 3
Grand Ballroom ABC

Session Chair: Mariana C. Stern, USC Norris Comprehensive Cancer Center, Los Angeles, CA
Geospatial analytics and sensitivity/specificity assessments to inform liver cancer prevention*
Shannon Lynch, Fox Chase Cancer Center, Philadelphia, PA

Do Latinas with breast cancer who live in ethnic enclaves have better or worse survival? Analysis of cancer registry data from California and Texas*
Salma Shariff-Marco, University of California San Francisco, San Francisco, CA
Sandi L. Pruitt, UT Southwestern Medical Center, Dallas, TX

Do segregated neighborhoods buffer the stressful effects of low coping among Black breast cancer survivors?*
Jesse J. Plascak, Rutgers, The State University of New Jersey, Piscataway, NJ

Investigating the determinants of racial disparities in ovarian cancer incidence: The OCWAA consortium*
Veronica Wendy Setiawan, USC Norris Comprehensive Cancer Center, Los Angeles, CA

The mediating role of unmet social support needs on the racial/ethnic disparity in psychosocial stress among breast cancer patients*
Carola Sánchez Díaz, University of Illinois at Chicago, Chicago, IL

Prognostic role of androgen receptor in triple-negative breast cancer: A global multi-institutional experience*
Shristi Bhattarai, Georgia State University, Atlanta, GA

Advancing cancer disparities research through data integration: The Multiethnic Cohort Study
Iona C. Cheng, University of California San Francisco, San Francisco, CA

Genetic testing, treatment and mortality after diagnosis of breast cancer or ovarian cancer: The SEER-GeneLINK Initiative
Allison W. Kurian, Stanford University, Stanford, CA

10:30 a.m.-10:45 a.m.   Break
Grand Ballroom Foyer

10:45 a.m.-12:15 p.m.   Plenary Session 5: Leveraging Big Data and Integrative Data Analysis to Address Cancer Health in Disparities in Small Populations
Grand Ballroom ABC

Session Chair: Lynne Penberthy, National Institutes of Health, Rockville, MD

Title to be announced
Lynne Penberthy

12:15 p.m.-1:45 p.m.   Plenary Session 6: Standardization of Tools and Measures for the Next Generation of Cancer Health Disparities Research
Grand Ballroom ABC

Session Chair: Richard P. Moser, National Cancer Institute-Division of Cancer Control and Population Sciences, Bethesda, MD

Federally supported tools and resources to support data integration efforts for health disparities research
Richard P. Moser

Tools for assessing social determinants of health
Scarlett Lin Gomez, University of California San Francisco, San Francisco, CA

Title to be announced
Kelly J. Devers, National Opinion Research Organization at the University of Chicago, Bethesda, MD

1:45 p.m.   Closing Remarks
Ivis Febus-Sampayo, SHARE Cancer Support, New York, NY
Laura Fejerman, University of California San Francisco School of Medicine, San Francisco, CA
Scarlett Lin Gomez, University of California San Francisco, San Francisco, CA
Augusto C. Ochoa, Louisiana State University Health Sciences Center-Stanley S. Scott Cancer Center, New Orleans, LA
Brian M. Rivers, Morehouse School of Medicine, Atlanta, GA

*Short talk from proffered abstract
UPCOMING CONFERENCES

EORTC-NCI-AACR Molecular Targets and Cancer Therapeutics Symposium
Scientific Committee Cochairs:
Charles Swanton, James L. Gulley, and Antoni Ribas
November 13-16, 2018
Dublin, Ireland

AACR-KCA Joint Conference on Precision Medicine in Solid Tumors
Program Committee Cochairs:
Tae-You Kim and Charles L. Sawyers
November 15-17, 2018
Seoul, South Korea

Tumor Immunology and Immunotherapy
Conference Cochairs: James P. Allison, Lisa M. Coussens, Ira Mellman, and Drew M. Pardoll
November 27-30, 2018
Miami Beach, FL

Innovation and Biomarkers in Cancer Drug Development: A Joint Meeting Presented By EORTC, NCI, EMA, and AACR
Organizing Committee Chairs:
Denis A. Lacombe and Roberto Salgado
November 29-30, 2018
Brussels, Belgium

Targeting PI3K/mTOR Signaling
Conference Cochairs: Lewis C. Cantley, David M. Sabatini, and Jean J. Zhao
November 30-December 3, 2018
Boston, MA

San Antonio Breast Cancer Symposium
Codirectors: Carlos L. Arteaga, Virginia G. Kaklamani, and C. Kent Osborne
December 4-8, 2018
San Antonio, TX

Targeting RAS-Driven Cancers
Conference Cochairs: Frank McCormick, Gideon Bollag, Karen M. Cichowski, and Shiva Malek
December 9-12, 2018
San Diego, CA

Melanoma: From Biology to Target
Conference Cochairs:
Elizabeth A. Grimm, Mario Sznol, and Jedd D. Wolchok
January 15-18, 2019
Houston, TX

Eleventh AACR-JCA Joint Conference on Breakthroughs in Cancer Research: Biology to Precision
Conference Cochairs: José Baselga and Hitoshi Nakagama
February 8-12, 2019
Mai, HI

Modernizing Population Sciences in the Digital Age
In association with the Molecular Epidemiology Working Group (MEG)
Conference Cochairs: Melissa L. Bondy, Marc T. Goodman, Peter Kraft, and Sophia S. Wang
February 19-22, 2019
San Diego, CA

CSCO-AACR Joint Conference on Immunotherapy
Conference Cochairs: Dung Le and Rui-Hua Xu
March 22-23, 2019
Shanghai, China

AACR Annual Meeting 2019
Integrative Cancer Science • Global Impact
• Individualized Patient Care
Program Committee Chair:
John D. Carpten
March 29-April 3, 2019
Atlanta, GA

AACR-AHNS Head and Neck Cancer Conference: Optimizing Survival and Quality of Life through Basic, Clinical, and Translational Research
Conference Cochairs: Christine H. Chung, Robert L. Ferris, David Raben, and James W. Rocco
April 29-30, 2019
Austin, TX

The Hippo Pathway: Signaling, Cancer, and Beyond
Conference Cochairs: Anwesha Dey, Fernando Camargo, and Kun-Liang Guan
May 8-11, 2019
San Diego, CA

Bladder Cancer: Transforming the Field
Conference Cochairs: Charles G. Drake, Jason A. Efstathiou, Donna E. Hansel, Dan Theodorescu, and Ellen C. Zwarthoff
May 18-21, 2019
Denver, CO

International Conference on Malignant Lymphoma (ICML)
Organizing Committee: Francesco Bertoni, Michele Ghielmini, Alden Moccia, Bertrand Nadel, Fedro Peccatori, Davide Rossi, Anastasios Stathis, Georg Stüssi, and Emanuele Zucca
June 18-22, 2019
Lugano, Switzerland

Environmental Carcinogenesis: Potential Pathway to Cancer Prevention
Conference Cochairs: Margaret L. Kripke, Ernest T. Hawk, and Timothy R. Rebbeck
June 22-24, 2019
Charlotte, NC

Immune Cell Therapies for Cancer: Successes and Challenges of CAR T Cells and Other Forms of Adoptive Therapy
Conference Cochairs: Patrick Hwu and Crystal L. Mackall
July 19-22, 2019
San Francisco, CA

Please visit AACR.org/meetingcalendar for additional conferences and program updates.
INVITED ABSTRACTS

IA01 How the National Cancer Institute is working to reduce cancer health disparities. Norman E. Sharpless, National Cancer Institute, Bethesda, MD, USA.

Disparities in cancer incidence and mortality among members of racial/ethnic minority groups continue to be a daunting public health challenge. While cancer disparities have been well documented, further efforts are needed to understand the factors that cause these disparities and to develop interventions. The National Cancer Institute (NCI) has had programs dedicated to addressing disparities for more than two decades, which now pursue a multipronged approach. Among the most recent NCI efforts is a stipulation included in all Cancer Moonshot funding opportunities that requires applicants to include information on how they will integrate data on populations affected by disparities or data on these populations into the proposed study. The Cancer Moonshot also includes specific disparities-related components, including those to fund the development of preclinical research models and screening programs that target specific racial/ethnic populations. More longstanding NCI efforts include those supporting a portfolio of studies, from basic to translational, that are unmasking biologic, socioeconomic, and cultural factors that contribute to disparities and identifying ways to directly address those factors through precision medicine and other approaches. Recent examples include the RESPOND study, which is focused on better understanding prostate cancer disparities in African American men. Other NCI programs are aimed at increasing the participation of people who are members of racial/ethnic minority groups in clinical studies, including innovative precision medicine studies. These include the NCI Community Oncology Research Program and the Partnerships to Advance Cancer Health Equity program that supports collaborations among institutions that serve large underserved populations and NCI-designated Cancer Centers. NCI also supports programs intended to improve the participation of under-represented populations in the cancer research and clinical workforce. This is helping to ensure that people from varied backgrounds can contribute their viewpoints and experiences to the cancer research enterprise and further deepen the talent pool from which research institutions can draw. From a clinical perspective, improving the diversity of clinicians/researchers can also improve trust among patients from racial/ethnic minority groups, which in turn can help increase the likelihood that these patients will consider participating in clinical studies. NCI programs that are helping to improve the diversity of the cancer workforce include the Continuing Umbrella of Research Experiences (CURE) that supports extramural research training and educational experiences for underrepresented individuals beginning in middle school and continuing through to first academic appointments through individual (F31 and K awards) and institutional (R25) grants, as well as the iCURE program that provides mentored research experiences within the NCI Intramural Research Program for students and fellows. Additional awards aid early-stage investigators in establishing themselves as independent investigators in the laboratory and clinical settings (R37, K23) and promote workforce diversity in basic cancer research (R21).

IA02 Ensuring diversity in precision medicine initiatives: Where are we now and what are we doing? Elena Martinez, University of California, San Diego, La Jolla, CA.

Precision medicine uses information about a person's genes, proteins, and environment to prevent, diagnose, and treat disease. The Precision Medicine Initiative (PMI) was launched by President Obama, with the goal of accelerating cancer discoveries. Although this initiative promises to result in substantial scientific advances, questions remain as to how members from diverse communities in the United States will become involved and benefit from discoveries resulting from the PMI. Participation of racial/ethnic, low-income, and rural populations in biospecimen and data sharing is vital to the success of the PMI. As part of the PMI, in his final State of the Union address, President Obama asked Vice President Biden to lead a new national effort to end cancer as we know it, now called the Beau Biden Cancer Moonshot Initiative. Recommendations from the Cancer Moonshot's Blue Ribbon Panel (BRP) attempt to ensure that traditionally under-represented populations benefit from the substantial discoveries that will be made through this landmark initiative. In doing so, the BRP identified cancer disparities as a cross-cutting and important theme, highlighting that disparities go beyond race and ethnicity to include individuals from urban and rural areas who are poor and medically underserved. It is imperative that all precision medicine efforts, including the exciting All of Us Research Program, ensure representation of underserved communities. The continued demographic shift in the United States population is projected to result in a majority-minority distribution by 2043. However, to date, there is marked under-representation of racial/ethnic minority groups in clinical trials and biospecimen banks. To address this inequity, an understanding of how to best include and engage individuals from traditionally under-represented groups will be required. Partnerships between academic institutions and safety-net health care settings offer an important strategy for enhancing participation of diverse racial/ethnic groups and underserved individuals. These partnerships will ensure that medically underserved
and rural populations benefit from the exciting discoveries that are yet to come from precision medicine and help prevent false discoveries that result from sampling from a homogeneous population. In this session, the All of Us Program’s goals, recruitment status, and initiatives to build trust and engage with community partners to ensure diverse representation will be presented. A presentation from a federally qualified health center will provide insights on important contributions that are possible by engaging with safety-net clinic settings to ensure representation of medically underserved communities. The advocate’s perspective will address building community trust and provide a blueprint for engaging communities in precision medicine efforts.

**IA03 The All of Us Research Program and precision engagement.** Dara Richardson-Heron. National Institutes of Health, Bethesda, MD.

Precision medicine is a revolutionary approach to disease prevention and treatment that takes into account individual differences in lifestyle, environment, and biology. Precision medicine will give clinicians tools to better understand the complex mechanisms underlying a person’s health, disease, or condition, and to better predict which treatments and prevention strategies will be most effective. Spearheaded by the National Institutes of Health, the All of Us Research Program seeks to engage one million or more volunteers living in the U.S. to contribute their health data over many years to improve health outcomes, fuel the development of new treatments for disease, and catalyze a new era of evidence-based and more precise preventive care and medical treatment. By taking part, participants will contribute to an effort to advance the health of generations to come. As promising as the concept of precision medicine truly is if we are to truly change the treatment paradigm and ensure that the medicines and prevention strategies people are using actually work for them, those who have traditionally been under-represented in research need to participate. These conversations are not easy and will take purposeful time and effort to build trust toward action—we need precision engagement. This talk will provide an overview of the All of Us Research Program and its goals; outline the All of Us transformational approach to diversity, participation, and data access; and describe the program’s approach to precision engagement to address value and build trust.

**IA06 Understanding the molecular landscape of gastric premalignant lesions.** Jone Garai1, Maria B. Piazuelo2, Maria C. Camargo1, Pelayo Correa1, Keith Wilson3, Jovanny Zabaleta1.

1Louisiana State University Health Sciences Center, New Orleans, LA, 2Vanderbilt University Medical Center, Nashville, TN, 3National Cancer Institute, Bethesda, MD.

Even though the incidence of gastric cancer has been declining over the years, it still has a very high mortality rate. The incidence and mortality of gastric cancer is, however, significantly higher in minority populations with African Americans and Hispanic individuals presenting 52% and 43%, respectively, more cases than Caucasians (data for male patients). Gastric adenocarcinoma has been strongly associated to infection with *Helicobacter pylori* (H. pylori). The infection triggers an inflammatory cascade, known as the Correa’s cascade, that changes the normal gastric epithelium into nonatrophic gastritis (NAG), multifocal atrophic gastritis (MAG), intestinal metaplasia (IM), dysplasia, and cancer. It is known that these events involve immune infiltration and damage to the gastric mucosa; however, there is still too much to learn about the gastric premalignant stages and the evolution of them over time. Over the years we have identified single-nucleotide polymorphisms (SNPs) and differential expression of genes associated with premalignant stages and with evolution of the disease over time. We found that African Americans have increased incidence of advanced premalignant lesions and have more prevalence of infection with *H. pylori* than Whites. In addition, we found that SNPs and haplotypes in the interleukin 1 b gene (IL1B) are associated with advanced gastritis in African American individuals. Interestingly, the frequency of these inflammatory SNPs and haplotypes is different among African American and Caucasian individuals. In terms of gene expression, we have also found that the increased expression of the gene deleted in malignant brain tumors 1 (DMBT1) is associated with the development of advanced gastritis while the expression of CD44 is associated with progression of the disease over time. Given that CD44 is a molecule involved in the homing of inflammatory cells, its association with progression of premalignant stages over time highlights the role of the immune response in the outcome of these lesions. Interestingly, these immune responses seem to be also modulated by *H. pylori* itself. We have shown that *H. pylori* components are able to modulate acquired and innate immune responses. In addition, we have also found a microRNA pattern associated with advanced premalignant gastric lesions in both African Americans and Caucasians. Understanding the molecular landscape of the gastric lesions may help us devise strategies to intervene and limit their progression into more advanced lesions, including gastric cancer.
IA07 Biobanking and genomic research: Understanding and acceptance of individuals unrepresented in clinical trials. Terry C. Davis1, Connie Arnold1, Glenn Mills1, Lucio Miele1. 1LSU Health Sciences Center-S, Shreveport, LA, 2LSU Health Sciences Centre-NO, New Orleans, LA.

Disparities exist in recruitment in clinical trials and biorepositories among minority groups, rural residents, and low-income individuals. The objective of this study to identify barriers and facilitators to awareness, understanding, and acceptance of clinical trials and biobanking among English- and Spanish-speaking safety-net patients and providers and African American (AA) and Hispanic social and church groups. We conducted 14 focus groups and 7 individual interviews January-May 2017 among English- and Spanish-speaking adults in urban and rural communities in Louisiana. In September 2018 we expanded the study to Hispanic adults. (This study is ongoing.) Sites included safety-net oncology and primary care clinics, social service agencies, Alzheimer support groups, and social and church groups. Themes were identified. The first study included 103 individuals: 78 patient and community participants and 25 providers; 24% lived in rural areas. Patients and community members’ age ranged from 45-88; 85% were female, 78% AA. Participants were aware of clinical trials and personalized medicine due to ads on TV. Low-income and minority patients were open to participating in genomic trials and biobanking even if it would not benefit them directly. Cancer patients and Alzheimer family caregivers were highly interested in clinical trials that might benefit them or their family. Community participants were less trusting of clinical trials than patients. All said information about clinical trials would be most effective if it comes from a trusted physician; however, community physicians lack appropriate information to give patients. Strategies to create understandable and actionable information that can be shared with community providers and the public are urgently needed.

IA08 Exploring social determinants of cancer outcomes using multilevel spatial analysis. Richard Scribner1, Denise Danos2, Claudia Leonardi1, Tekeda Ferguson1, Qingzhao Yu1, Neal Simonsen2, Xiao-Cheng Wu1. 1LSUHSC, New Orleans, La, 2Consultant, New Orleans, La.

Health disparities research increasingly relies on a social determinants of health approach, which focuses on identifying modifiable social and environmental factors that adversely affect health outcomes to create health disparities. We have used a multilevel framework that leverages cancer registry and US census data to examine the role of neighborhood social determinants in cancer incidence and survival in Louisiana. Multilevel studies of cases of colorectal, liver, and breast cancer reveal that differential exposure to unfavorable social and physical environments do contribute to racial disparities in cancer. In particular, we have observed that concentrated disadvantage, a robust measure of neighborhood environment, was positively associated with the incidence of colorectal cancer and hepatocellular carcinoma but not triple-negative breast cancer.

IA09 Colorectal cancer in Louisiana: Disparities in incidence, mortality, and access to screening. Jordan J. Karlitz. Tulane University School of Medicine, New Orleans, LA.

Louisiana has the fourth highest colorectal cancer incidence and third highest mortality rate in the country. Within the state of Louisiana, wide disparities exist with regard to colorectal cancer incidence, mortality, and access to screening tests. In this session, epidemiologic data will be explored in order to better understand these disparities and strategies will be discussed to decrease colorectal cancer rates and maximize access to life-saving screening tests, including colonoscopy and stool-based testing.
IA10 Progress in colorectal cancer screening: Past, present, and future. Darrell M. Gray II. The Ohio State University, Columbus, OH.

Colorectal cancer (CRC) is the third most commonly diagnosed cancer and second leading cause of cancer-related death among men and women in the US, but it is largely preventable with screening. The implementation of screening programs, in addition to risk factor modification and, to a lesser degree, improvements in treatment, have contributed to a downward trend in CRC incidence and mortality rates for greater than three decades. However, the burden of disease has and continues to be unequally distributed. Striking disparities by race, ethnicity, socioeconomic status, and geography persist. Such differences are multifactorial and are, in part, driven by variation in screening access, uptake, adherence, and abnormality follow-up. There is a growing body of evidence that outreach, patient navigation, provider education, and multilevel population health strategies to address these challenges are effective. Intensifying such efforts and promoting earlier initiation of screening in high-risk populations are other promising yet controversial approaches. A recent change in the American Cancer Society guideline recommendations to lower the age for initiation of screening from 50 to 45 is being heavily debated—one concern being the potential unintended consequence of exacerbating existing disparities in CRC outcomes. Moreover, there is a dire need for a risk-stratification model that will determine CRC risk and the age at which individuals should begin screening more accurately than our current guideline models of family and personal medical history. Personalized prescriptions for screening are the future, and we are getting closer to this being a reality. Yet, while these are necessary, it is unclear if they will be sufficient to eliminate the observed disparities.

IA12 Follow-up of abnormal colorectal cancer screening: Challenges and solutions. Folasade P. May. University of California Los Angeles; Veterans Health Administration, Los Angeles, CA.

Colorectal cancer (CRC) is the second leading cause of cancer-related death in the United States but is largely preventable by screening. Both observational and randomized control trial data demonstrate that screening for CRC with colonoscopy, flexible sigmoidoscopy, or stool-based studies can effectively identify and remove premalignant lesions, reduce incidence of CRC, and decrease CRC mortality. Stool-based screening modalities like high-sensitivity fecal occult blood testing (FOBT) and fecal immunochemical testing (FIT) are inexpensive, noninvasive, and accessible screening modalities that are commonly used in underinsured and underserved patient populations. A major challenge of these stool-based methods, however, is that abnormal (i.e., positive) results are common (5-14%) and warrant subsequent follow-up with diagnostic colonoscopy to avoid poor CRC outcomes. Currently, follow-up rates across health care settings range from 40% to over 80%. Safety-net populations have the lowest rates at 40% to 58%, substantially shy of the national benchmark to achieve colonoscopy in 80% of patients with abnormal results. These low rates reflect patient-, provider-, and system-level barriers to diagnostic colonoscopy after positive screening and a lack of clinical resources and optimal system processes to facilitate access to and patient utilization of diagnostic colonoscopy. The goals of this talk are to (1) provide an overview of low follow-up after abnormal CRC screening, with a focus on Federally Qualified Health Centers (FQHCs) and safety-net institutions; (2) summarize the available data on barriers to follow-up after an abnormal screening result; and (3) present an overview of effective interventions to improve the timelines of follow-up colonoscopy and colonoscopy follow-up rates. The presentation will also address directions for future research in follow-up after abnormal CRC screening.

IA13 Advocate Perspective: Improving outcomes for all colorectal cancer survivors. Judith Lee Smith. Centers for Disease Control and Prevention, Atlanta, GA.

Recent studies document striking differences in colorectal cancer (CRC) survival by race, stage at diagnosis, and state. These data demonstrate that more work is crucial to address persistent disparities in survival. Cancer survivors face many types of challenges following active treatment: physical, mental, emotional, financial, and psychosocial. CRC survivors share concerns similar to those of other cancer survivors but may also have CRC-specific concerns in survivorship due to medical interventions. Survivorship care plans (SCP) were identified as a possible way to ease the challenges experienced by cancer survivors, but results have been mixed. While some studies showed that CRC survivors appreciated a personalized SCP, many survivors needed additional detail about which providers were responsible for the varied components of their care. Importantly, diverse CRC survivors may be unaware of appropriate surveillance and follow-up recommendations. Survivors need to have the best information to support their health and well-being, and these information needs may change over time. However, there are multiple gaps in the literature, as most studies have focused
on first-time CRC survivors or survivors with no additional cancers. Consequently, less is known about the experience of CRC survivors who develop new primary cancers, recurrent cancer, or metastatic cancer. Further, more information is needed about the experiences of CRC survivors who present with or are diagnosed post-treatment with additional chronic conditions. Finally, while some recent studies exist, further research could explicate the needs of survivors who have been traditionally under-represented in CRC survivorship research. Self-management is a component of achieving and maintaining health and well-being in survivorship but is not sufficient. Interventions are warranted to improve system coordination that address pervasive social determinants of health. Improving outcomes for CRC survivors will require coordinated effort at many levels, tailored to patient needs and community context. Public health organizations and their partners can play an important role in meeting the needs of diverse CRC survivors, as well as advancing the application of proven strategies in communities with the lowest CRC survival and greater deleterious outcomes post-diagnosis. Our goal remains ensuring that all men and women diagnosed with CRC experience the highest possible survival and quality of life in survivorship.

**IA14 Emerging priorities for the Center to Reduce Cancer Health Disparities in diversity workforce training and cancer health disparities research.** Sanya A. Springfield, National Cancer Institute, Bethesda, MD.

This panel presentation will provide an overview of the current training and research funding priorities at National Cancer Institute’s (NCI) Center to Reduce Cancer Health Disparities (CRCHD). CRCHD is NCI’s focal point for the training of competitive cancer researchers from diverse populations and supporting cancer health disparities research across the cancer continuum. The NCI’s CRCHD’s Continuing Umbrella of Research Experiences (CURE), Intramural CURE (iCURE), and the Partnerships to Advance Cancer Health Equity (PACHE) will be highlighted as successful models for diversity training and cancer health disparities research. The CURE Program supports extramural research training and education experiences for under-represented individuals beginning in middle school and continuing through to first academic appointment. The newly launched iCURE Program supports mentored research experiences within the NCI Intramural Research Program for students and fellows. In addition, the PACHE Program supports cancer and cancer health disparities research, education, and outreach through partnerships between Minority-Serving Institutions and NCI-designated Cancer Centers. New and established NCI funding opportunities in cancer health disparities research, including opportunities supporting both basic and translational research addressing cancer health disparities, will also be presented. Additionally, strategies will be explored for navigating successful cancer research careers and for developing competitive grant applications.

**IA15 The bridge less traveled: Diversity training in public health and social/behavioral research.** Rena J. Pasick1, Marjorie Kagawa-Singer2, Sherry Kidd2, Vanessa Mercado1, Karen Llave1, 1University of California, San Francisco, San Francisco, CA, 2University of California, Los Angeles, Los Angeles, CA.

Cancer disparities are differences in incidence, survival, and survivorship due to societal inequities, all of which disproportionately affect people of color and those of low socioeconomic status. For over 3 decades, research across a broad spectrum of disciplines has sought to measure, explain, and reduce cancer disparities—with little impact. One reason is that most of the research is conceived and conducted not by members of the affected communities, but by “outsiders” who have the privileges of education and opportunities at the highest levels of science and policy. Because most NIH-funded research is conducted by Euro-Americans, and populations of color are greatly under-represented among students who seek and attain advanced degrees and who succeed in the world of competitive science, the NIH established large and long-standing programs to diversify the research pipeline—in the STEM fields. No such support exists, however, for the translational population sciences of public health and social-behavioral research. These are the disciplines with the theories and methods needed to engage and to, among many other functions, communicate effectively with patients and the public about health, medical care, and participation in research. In 1998, an investigator-initiated NCI training grant established the Minority Training Program in Cancer Control Research (MTPCCR), with the goal of increasing diversity among students at the doctoral level in public health and social-behavioral research and subsequently among those conducting cancer disparities research. Through 4 successive grants over 20 years, the program was conducted in two sites (UCSF and UCLA), and a replication was established at U Texas (Exit!). The program model includes a five-day Summer Institute (SI) and paid research internships for those SI participants for whom a match could be made with a role model (under-represented) preceptor or researcher working on cancer disparities. The SI is a place where participants’ ancestors and cultures are brought forward and honored, establishing
a strong emotional bond among participants and with the staff/faculty. This is further strengthened by a series of highly interactive sessions. The first three SI days address the need for under-represented researchers and the range of opportunities and disciplines through which one can have a lasting impact on disparities. The last two days provide tools for applying to doctoral programs. The MTPCCR also provides Doctoral Application Support Awards designed to offset costs of the doctoral application process. A total of 759 master’s-level students and professionals have participated in the MTPCCR. To date, 237 (33%) have entered doctoral programs (74 African American/Black, 6 American Indian, 82 Asian American, 45 Latino/Hispanic, 2 Native Hawaiian/ Pacific Islander, 9 Other, 18 mixed race/ethnicity, 1 White), 138 of whom have now graduated. A large majority report that the program strongly influenced their academic path.

IA16 Lessons learned from seventeen years of cancer research experiences program for under-represented high school and college students. Karen Burns White¹, Emily McMains¹, Diedra Wrighting², Joan Becker², Kathynie Hinds¹. ¹Dana-Farber/Harvard Cancer Center, Boston, MA, ²University of Massachusetts Boston, Boston, MA.

Background/Purpose: Increasing participation of under-represented minorities (URMs) in cancer-related fields is critical for eliminating disparities in prevention, incidence, prevalence, detection, treatment, survival, and mortality. Early engagement in scientific research is linked to retention of students in STEM programs and careers. Dana-Farber/ Harvard Cancer Center (DF/HCC) is one of the largest consortium comprehensive cancer centers in the world. As part of the mission to find new and innovative ways to combat cancer and eliminate cancer disparities in communities throughout the Northeast, we are shaping the development of a new, diverse, and educated workforce through the Continuing Umbrella of Research Experiences (CURE) program. CURE introduces high-school and college students from URM populations to the world of cancer research. The program aims to increase URMs successfully pursuing careers in biomedicine, cancer research, and/or health disparities, pursuing graduate degrees and/or professional training in these areas, and engaging in scholarly activity. Initially funded through a cancer center supplement, during the past two years DFHCC has expanded their programming by successfully obtaining two NCI R25 grants, Young Empowered Scientists for ContinUed Research Engagement (YES for CURE) Program (NCI CA221738) and Summer Program to Advance Research Careers (SPARC) Program (NCI CA214256).

Description: DF/HCC has engaged over 400 students in research experiences at its seven-member institutions. Building on a 17-year history of research training experience and a long-term partnership with the University of Massachusetts Boston (UMB), DF/HCC created programming that combines hands-on research experiences with professional development seminars, journal clubs, book clubs, social events, and individual project planning.

Evaluation: Students and mentors are surveyed each summer to identify opportunities for improvement. We also track academic and professional progress of our alumni annually.

Usefulness: Based on our 2017 survey with a 71% average response rate, 95% of our alumni have completed or are currently enrolled in post-secondary programs, with 72% completing college degrees so far. Of these, 83% graduated with STEM or health science degrees and 23% have additionally completed graduate degrees. Over two thirds of our alumni are currently working full- or part-time in STEM-related fields and almost 25% in cancer-related work. 15% are working in a health disparities-related field. Our alumni have coauthored more than 243 scientific publications. Our research education and training successfully engage the scientific curiosity and promote the academic success and future research careers of promising young URM scientists.

Learning Objectives: The participant shall be able to learn best practices for engaging high school and college students from under-represented backgrounds in hands-on cancer research.

References


INVITED ABSTRACTS

IA18 North Carolina Central University and Duke Cancer Institute's collaborative cancer research and education program: Connecting cancer disparities translational research, clinical trials operations, and community engagement. Kevin P. Williams1, Nadine J. Barrett2, Carla E. Oldham1, Holly Hough1, Artis Woodard1, Jennifer Freedman2, Gayathri R. Devi1, Steven R. Patierno1. 1North Carolina Central University, BRITE, Durham, NC, 2Duke Cancer Institute, Durham, NC, 3Duke University, Durham, NC.

Three interrelated contributors to cancer disparities include the lack of diversity among investigators contributing to cancer research, the deficiency of minority participation in clinical trials and bio-banking, and the need to advance community engagement as a vital component of the translational research spectrum. The North Carolina Central University and Duke Cancer Institute's Cancer Disparities Translational Research Partnership (NCCU-DCI CDTRP) (P20 PACHE), through its Cancer Research and Education Program (C-REP), provides a Translational Immersion Experience (TIE) that spans the full translational research spectrum, for traditionally under-represented PhD students, postdoctoral fellows, and early-stage investigators. The goals of TIE are to (1) provide cancer disparities research training with an emphasis on translational laboratory science including high-throughput screening/drug discovery, (2) equip trainees with unique training and education in the operational infrastructure that supports clinical research and trials, (3) highlight strategies to increase diverse participation in clinical trials and bio banking, and (4) learn and apply principles of community engagement through community-based programs and outreach. Using multimodal training techniques, the TIE program provides training and education in real-life settings that expose trainees to the full translational research spectrum across two diseases that disproportionality affect African Americans at significantly higher rates, prostate cancer and inflammatory breast cancer. The overarching goal is to bolster our trainees' experiences and training to contribute to innovative technologies and discoveries and provide access to training that spans beyond the traditional curriculum in areas of high need in translational cancer disparities research such as minority accrual and clinical trials operations. The program includes evidence-based workshops in healthy mentor-mentee relationships, building and sustaining resilience, and sharpening grantwriting skills coupled with ongoing external evaluation to provide real-time feedback on the program. We present the preliminary evaluation data based on the first cohort of the C-REP TIE program.

IA21 Assembling study cohorts for molecular characterization from medically underserved populations: A view from the trenches. Kevin L. Gardner, Columbia University, New York, NY.

Gathering relevant high-quality clinical data and biologic material to support cancer health disparities research in underserved populations can be a challenging task. During this session, I will briefly outline approaches that my group employs in collaboration with a small oncology center in rural North Carolina and pathologists at the Aga Khan University Hospital, Nairobi, Kenya, to study breast cancer cohorts. The discussion will include: 1) recruiting and engaging pathologists for tissue analysis; 2) using digital pathology and automated scoring platforms to increase throughput, accuracy, and reproducibility; 3) incorporation of real-time telepathology workflows to provide histopathology consultation, classifications, scoring, and validation; 4) dealing with missing data; and 5) recruiting and working with an informatics team for data abstraction from the medical records.

IA22 Understanding the unique experience among Chinese immigrant breast cancer survivors. Qian Lu1, Qiao Chu1, Krystal Warmoth2, Nelson Young3, Lucy Young4, Alice Loh4, Carol Wang4. 1University of Texas MD Anderson Cancer Center, Houston, TX, 2University of Exeter, Exeter, United Kingdom, 3Chinese University of Hong Kong, Hong Kong, Hong Kong, 4Herald Cancer Association, San Gabriel, CA.

Purpose: Little is known about the psychosocial barriers among immigrant Chinese American breast cancer survivors. The aim of the present study was to explore the psychosocial needs and challenges of Chinese American immigrant breast cancer survivors, and to develop and test culturally sensitive interventions to overcome these challenges.

Methods: Study one used the expressive writing approach to explore the experiences among Chinese immigrant breast cancer survivors. The participants were recruited through community-based organizations in Southern California, most of whom were diagnosed at Stages I and II (33% and 48%, respectively). Participants, on average, had been living in the USA for 19 years. Participants were asked to write three 20-minute essays related to their experience with breast cancer (in 3 weeks). Participants' writings were coded with line-by-line analysis, and categories and themes were generated. Study two used the expressive writing approach as an intervention among this population.
**IA23 Engaging refugees and immigrants in breast health education.** May Shogan¹, Frances Saad-Harfouche². ¹International Institute of Buffalo, Buffalo, NY, ²Roswell Park Comprehensive Cancer Center, Buffalo, NY.

Refugees and immigrants often come from countries where preventative medicine and cancer screening opportunities are neither attainable nor a priority. Often, preventative services like mammography are new concepts for immigrant and refugee women. Language barriers can decrease patients’ access to services, especially for screening tests. Barriers to health screenings include cultural belief factors along with limited knowledge, racial discrimination, embarrassment, fear of the test and/or diagnosis, and lack of culturally appropriate health resources. While barriers make it difficult for refugee and immigrant women to gain access to health services, the need to provide culturally sensitive health educational programs that address these issues in a culturally sensitive way is essential to ensure a healthy life style for this population. The International Institute has over 100 years of experience in serving refugees and immigrants in many capacities and is considered a reliable resource within the local immigrant and refugee community. The Institute worked closely with Roswell Park Comprehensive Cancer Center, local community health centers, and resettlement agencies to provide culturally tailored health education programming to over 1500 refugee and immigrant women and men, and screened approximately 400 women for mammography and clinical breast exams. Additionally, the institute has educated over 1,000 local health care providers working with the immigrant and refugee population on the importance of cultural competency in order to impact their cultural sensitivity in their current medical practices. Educational programs that train health care providers in cultural competency have been shown to improve patient-provider interaction. Successful methods used in working with the immigrant and refugee population include utilizing cultural and linguistic diverse staff, proficient interpreters and translators, and partnering with community-based agencies that also serve this population. Building trust and creating personal relationships with female attendees are crucial in working with the immigrant and refugee population. Fear of the cancer test and/or diagnosis is a major barrier for most immigrant/refugee women, and to freely discuss breast health and the importance of cancer screening is a novel concern, as the word “cancer” is taboo in most cultures and is not openly discussed. This presentation will discuss strategies used to engage this diverse population and discuss lessons learned from multiple community-based educational programs on breast health among immigrant and refugee females.

**IA24 Effect of migration to the US on health characteristics of the African diaspora.** Camille Ragin. Fox Chase Cancer Center, Philadelphia, PA.

People of African descent have migrated to Philadelphia since the 17th century. First arriving by forced migration and then voluntary migration, the current Black population is heterogeneous, consisting of individuals of US ancestry (direct descendants of enslaved Africans in the US) and individuals of African and Caribbean ancestry (descendants or individuals who have voluntarily migrated to the US post-slavery). While Africa is the common ancestral origin of these Black subgroups, migrants’ (whether newly arrived or settled) health characteristics usually differ from the health characteristics represented in their native country. Recent data from our US-based cohort of diverse Black participants (The Cancer Prevention Project of Philadelphia—CAP3) reveal distinct differences in health-related behaviors between US-born Blacks, Caribbean immigrants, and African immigrants. As length of time in the US increased, cancer screening habits, smoking, and BMI increase and suggest that as immigrants begin to assimilate with the dominant culture, they learn both positive and negative health behaviors.
IA25 The role of genetics and microbiomics in colorectal cancer among African American patients. **Hassan Ashktorab,** Hassan Brim. Howard University, Washington, DC.

Colorectal cancer (CRC) is the third cause of death in the USA and genomic and microbiomic alterations play an important role in its development. Much of the underlying genomic “cancer driver” mutations and microbiomic actors in sporadic CRC are still under investigation. Here, we report the identification of distinct novel variants from CRC patients in mismatch repair (MMR) genes (MSH2, MSH3, and MSH6), and APC. We used targeted sequencing in 138 colon tissues to examine 98.8% of the targeted exons and splice junctions at a depth of sequencing that allowed for high confidence variant calling. After alignment and variant calling, we annotated the variants with information from the 1000 Genomes Project, COSMIC, Polyphen2, and PFAM domain and transcription factor motifs. Excluding synonymous SNVs, 212 deleterious variants in adenoma, 760 in advanced adenoma, and 2624 variants in tumors were detected. Novel variants (1591 and 1363) were found in MMR genes (MSH6 and MSH3) and APC gene, respectively. We also evaluated the utility of fecal bacterial marker candidates identified by our metagenomic analysis for CRC diagnosis. We identified *Fusobacterium nucleatum* as a major marker when comparing cancer vs. matched normal tissue and adenoma patients' stools vs. healthy subjects' stools. We also identified a novel bacterium *Streptococcus* sp. VT_162 with high diagnostic value in stool samples of preneoplastic patients. In vitro experiments showed that this bacterium promotes several carcinogenic pathways and downregulates apoptotic functions. This bacterium's diagnostic value was validated in an independent CRC cohort. Together our findings highlight the relevance of APC gene in CRC onset but also the potential underestimation of the MSI-H phenotype, especially the one associating with MSH3 alterations that correlate with poor prognosis. Many of the so-called “uncertain significance” novel mutations in MMR genes detected here were of a deleterious nature with potential therapeutic impact. Functional analysis of the novel gene targets is needed to confirm their roles in associated carcinogenic pathways. The role of immune markers is an important player in MMR defective tumors (MSI) as a result of neoantigen formation and in response to microbiomic alterations. These findings might facilitate noninvasive screening for CRC.

IA26 Mechanistic differences in early-onset colorectal cancer. **Rosa Xirola**, Zarko Manojlovic, Gaius Augustus, Sonia Kupfer, Rajyasree Emmadi, Victoria Alagiozian-Angelova, Tim Triche, Sahla Bodour, John Carpente, Xavier Llor, Nathan Ellis, Yale University, New Haven, CT, University of Southern California, Los Angeles, CA, University of Arizona, Tucson, AZ, University of Chicago, Chicago, IL, University of Illinois at Chicago, Chicago, IL, Cook County Health and Hospital Systems, Chicago, IL, Van Andel Research Institute, Grand Rapids, MI.

African Americans (AAs) have higher incidence and mortality rates of colorectal cancer (CRC) compared to other US populations. AAs present with more right-sided, microsatellite stable disease, and they are diagnosed at earlier ages compared to non-Hispanic whites (NHWs). Data from the Chicago Colorectal Cancer Consortium (CCCC) suggest that the right-sided and early-onset CRCs are distinct diseases, because early-onset CRC arises more often in the distal colon (1). In addition, analysis of stage at presentation data from the SEER database suggests that early-onset CRC is on average a more rapidly developing disease that is less likely to be prevented by colonoscopy (2). To better understand these trends, we conducted exome sequencing (n=45), copy number (n=33), and methylation analysis (n=11) of microsatellite stable AA CRCs. Results were compared to data from The Cancer Genome Atlas (TCGA). In the 43 non-hypermutable tumors, only 27 (63%) contained loss-of-function mutations in APC as compared to 80% of TCGA NHW CRCs. Importantly, APC mutation-negative CRCs were associated with an earlier age of onset of CRC (p=0.01). In the TCGA, APC mutation-negative CRCs were also associated with an earlier age of onset of CRC (p=10^-9). In CCCC CRCs, APC mutation-negative CRCs were also associated with previous cancer, lower overall mutation burden, and fewer copy number variants. We conducted an analysis of DNA methylation patterns and found an epigenetic signature that was distinct from the CpG island methylator phenotype characterized in microsatellite unstable disease, referred to as CIMP. Included in the list of genes that were differentially hypermethylated in APC mutation-negative CRCs were genes that regulate the WNT signaling pathway, such as SOX9, GATA6, TET1, GLIS1, and FAT1. Using the most variable differentially methylated regions from the CCCC data, we found that these regions similarly clustered in APC mutation-negative CRCs from the TCGA. These data strongly suggest that a novel epigenetic mechanism accounts for cancer development in early-onset CRCs. Contrary to the mechanism that predominates in later-onset CRC, the early-onset mechanism does not depend on mutation in the APC gene but is associated with differential
methylations of WNT pathway regulating genes instead. Our data support the claim that early-onset CRC is driven by a distinct subtype of CRC that is associated with lack of APC mutation, microsatellite and chromosome stability, lower mutation burden, and distinctive DNAmethylation changes. CRC driven by epigenetic changes is consistent with the epidemiologic data suggesting that early-onset CRC develops as a more rapidly advancing disease. A deeper understanding is needed of the pathways affected by the epigenetic changes and the exposures that drive those changes in order to develop therapeutic approaches to early-onset CRC.

References


IA27 Exploring the impact of African ancestry in tumor immune response, a possible role in disparate clinical outcomes. Melissa B. Davis1, Brittany D. Jenkins2, Rachel A. Martinii, Haythem Alii, Clayton C. Yates4, Elizabeth A. Howerth2, Petros Nikolainkos4, Michele Monteilli, Lisa A. Newman1. 1Weill Cornell Medicine, New York, NY, 2University of Georgia, Athens, GA, 3Henry Ford Health Systems, Detroit, MI, 4Tuskegee University, Tuskegee, AL, 5University Blood and Cancer Center, Athens, GA, 6Augusta University Medical Partnership, Athens, GA, 7Weill Cornell Medicine, New York, NY.

Disparities in breast cancer survival among ethnic groups have been a persistent finding over the past five decades, exacerbated in part by the lack of improvement to non-white patient outcomes, despite treatment advancements that have improved clinical outcomes in white women. A significant part of this disparity is health equity; however, recent evidence from several groups indicates that histologic and pathologic diversity in tumor phenotypes among ethnic groups is also a key factor affecting the differences in clinical outcome. Specifically, correlated findings among women with significant West African ancestry reveal that there is a genetic link between women across the African Diaspora that is associated with aggressive tumor phenotypes, including triple-negative breast cancer. Aside from the global incidence of TNBC being higher in regions with relatively higher numbers of women with African ancestry, we also find that pathologic progression of tumors in African Americans tends to mimic that of African women. Tumor progression is directly related to the immune response elicited by the onset of tumor growth as well as the underlying tissue microenvironment, particularly the inflammatory status. We have identified several lines of evidence that suggest there is a distinct immune response to breast cancer, which is also tumor phenotype/subtype specific, when comparing patients of significant African ancestry with those of primarily European ancestry. These findings suggest that there could be a unique mechanism of tumor immunology at work, driven by population private genetic alleles derived in Africa and transmitted throughout the African Diaspora, causing a unique tumor phenotype in these breast cancer patients. This unique phenotype is likely the key factor in distinct treatment responses that result in poorer clinical outcomes for African American women.

IA28 Advocate Perspective: Diversity in research: A missing link to eliminate health disparities. Barbara Segarra-Vazquez. University of Puerto Rico, San Juan, PR.

The literature shows that whites, mostly males, make up the majority (more than 80%) of the participants in cancer treatment and prevention studies. This is of great concern as the finding of these studies are generalized among different population groups. The federal government began taking action to address diversity in research since 1993 with the National Institute of Health Revitalization Act directed to increase participation of women and minorities in clinical research. Other government initiatives and programs have followed, such as the Minority Health and Health Disparities Research and Education Act, National Center for Minority Health and Health Disparities, and Excellence Center to Eliminate Ethnic and Racial Disparities, among others. Despite the government’s efforts to increase diversity in research for more than 25 years, women and racial/ethnic minorities continue to be under-represented. Furthermore, as we keep moving into the era of precision medicine, fast-accumulating evidence suggests that the gap will grow even bigger. Understanding molecular biology in health disparities of cancer across populations and studying the interaction of biologic factors and other factors that contribute to the differences in cancer burden should become even more a research priority. To increase the participation of women and minorities in research, strategies such as having recruitment as a separate criterion in research proposal evaluations could result in a more thorough approach. This could lead to the consideration of cultural as well as other important aspects of the population group of interest. Also, specific strategies to overcome patients’ barriers to enrollment in research should be implemented. In order to address under-representation in research, one has to consider tackling diversity from many angles. Diversity goes beyond recruiting diverse populations. Attention should also be given to diversity in researchers,
research teams, study sections, research staff, physicians recruiting for clinical trials, and patient advocates. Moreover, journals and their editors play a key role in reducing the gap.

**IA29 Racial differences in the lung cancer transcriptome: Insights from coding, noncoding, and alternative polyadenylated genes.** Brid Ryan, National Cancer Institute, Bethesda, MD.

Deciphering the post-transcriptional mechanisms (PTM) regulating gene expression is an important step in understanding the molecular mechanisms underlying cancer transcriptomics and heterogeneity. Such studies are a core component of precision medicine and systems-level approaches to understanding the complexity of cancer. Historically, African Americans have been under-represented in clinical cancer research, a field that is increasingly focused on classifying patients according to molecular profiles. Thus, diversity helps to ensure equal access to new cancer therapies and better treatment for everyone. In the first analysis to study transcriptomic differences in lung cancer from European Americans and African Americans, we provided a detailed molecular analysis from paired non-small cell lung cancer tissues that identified differential coding and noncoding RNA expression in African Americans and European Americans. African American-enriched differential gene expression was characterized by stem cell and invasion pathways, while differential gene expression in lung tumors from European Americans was primarily characterized by cell proliferation pathways. Integration of noncoding RNA profiles suggested that population-specific gene expression was at least partly driven by population-specific miRNA expression profiles. Similar to other tumor types, we determined that race-enriched gene and miRNA expression signatures suggest a more aggressive disease in African Americans. Moreover, on the basis of predicted drug resistance to adjuvant chemotherapies, African Americans may not equally benefit from the same range of clinical drugs as European Americans. For example, drug susceptibility predictions using the CMAP resource revealed a strong inverse correlation between African Americans’ resistance and European Americans’ sensitivity to the same panel of drugs. While these are predicted findings, they demonstrate a proof of principle that population differences in gene expression could be important to consider in the context of drug development. Transcriptome profiling studies in cancer health disparities are not restricted to coding or noncoding gene expression. Alternative polyadenylation (APA) is a key PTM mechanism, whose comprehensive analysis remains an important open challenge. In our recent studies, we used a novel APA pipeline that sequences 3’ end-enriched RNA and maps polyA sites directly, an approach that is different to traditional 5’-3’ sequencing methods. We then comprehensively mapped the APA landscape in lung cancer for the first time, analyzing matched tissues derived from European American and African American patients. Consistent with previous observations and a finding that shortened 3’ UTRs are enriched in proliferating cells, we identified widespread shortening of the 3’ UTR in lung cancer. Many of these events were also associated with clinical outcome. Interestingly, we also observed racial differences in APA. Consistent with our previous findings showing that lung tumors from European Americans are enriched in cell proliferation pathways, tumors from EA were 2 times more likely to have shorter 3’ UTR transcripts. Further, we identified several genes where the 3’ UTR was lengthened in African Americans and shortened in European Americans, including PTEN, a known tumor suppressor previously linked with disparities in other cancer types. These data point towards APA as a mechanism of tumor suppressor inactivation that is independent of somatic copy number or mutational changes. Collectively, our data show that many aspects of the lung cancer transcriptome are shared between European Americans and African Americans, but that distinct patterns of expression and regulation are found in each population. Moreover, our work shows that the inclusion of patients of differing ethnicities also has the potential to inform our understanding of the biologic mechanisms of health disparities.

**IA30 Intrinsic and extrinsic contributions of mitochondrial DNA to metastatic efficiency: A genetic explanation for disparities in metastasis efficiency?** Danny R. Welch, University of Kansas Cancer Center, Kansas City, KS.

Single-nucleotide polymorphisms (SNP) in nuclear and mitochondrial DNA are used to define clades (or races) in people, as well as different strains in mice (PMID: 27383787). Previous studies showed that nuclear SNP determine metastasis efficiency; we hypothesized that mtDNA SNP could also play roles in tumorigenicity and metastasis. Mitochondrial Nuclear Exchange (MNX) mice, created by transferring an oocyte nucleus from strain X into an enucleated oocyte from strain Y (PMID: 27840835), show that many aspects of the lung cancer transcriptome are shared between European Americans and African Americans, but that distinct patterns of expression and regulation are found in each population. Moreover, our work shows that the inclusion of patients of differing ethnicities also has the potential to inform our understanding of the biologic mechanisms of health disparities.
Novel nuclear and mitochondrial RNAs that are linked to key pathways and depend on sex, population origin, race, tissue, and disease. Isidore Rigoutsos. Thomas Jefferson University, Philadelphia, PA.

MicroRNAs (miRNAs), the best-known short regulatory noncoding RNAs (ncRNAs), were reported for the first time exactly 25 years ago. Extensive research efforts since then have firmly established their roles as key regulators of cellular processes, in health and in disease. MiRNAs modulate protein abundance by targeting the corresponding messenger RNAs (mRNAs) in a sequence-dependent manner. Ever since the discovery of miRNAs, the community has largely adhered to a paradigm according to which a single stretch of genomic DNA is transcribed into a miRNA precursor molecule that is then processed to produce a single (regulatory) miRNA product, approximately 22 nucleotides (nts) in length. As next-generation sequencing (NGS) became widespread, scientists observed that each miRNA precursor gives rise to multiple miRNA products with slightly different endpoints and different abundances. These “variants” were called “isomiRs.” For a given miRNA precursor arm, the most abundant among the isomiRs arising from it was considered to be the “actual” product of the arm whereas all remaining isomiRs were initially dismissed as inconsequential bystanders. By analyzing datasets from thousands of healthy individuals and patients, we were first to show that human isomiRs are produced constitutively and that the identities and abundance levels of the isomiRs arising from a given miRNA precursor depend on a person’s sex, population origin, and race/ethnicity. We also showed that the isomiR profiles additionally depend on the tissue at hand, the tissue’s state (health vs. disease), and the disease type/subtype. From a functional standpoint, we showed experimentally that distinct isomiRs from the same miRNA precursor arm can target different groups of mRNAs. Notably, our analyses revealed that for a given miRNA arm the identity of the most abundant isomiR can change from tissue to tissue. An analogous story played out in the context of transfer RNAs (tRNAs). For more than 50 years, the community viewed tRNAs as ancillary molecules that participated in the translation of codons to amino acids. Here too, NGS revealed that both precursor and mature tRNAs give rise to multiple “tRNA-derived fragments” or “tRFs” with different endpoints and abundances. Work by several labs including our own showed for the shorter (~22 nts) tRFs that they act like miRNAs, i.e., they control the abundance of mRNAs and their respective protein products through RNAi. As in the case of isomiRs, we were first to show that human tRFs are produced constitutively and that the identities and abundances of tRFs from a given mature tRNA depend on a person’s sex, population origin, and race/ethnicity. We also showed that the tRF profiles additionally depend on the tissue at hand, the tissue’s state, and the disease type/subtype. Preliminary data that we generated also suggest that distinct tRFs that are produced by the same tRNA have generally distinct roles. Particularly intriguing was our finding that the mitochondrially encoded tRNAs are a very rich source of tRFs. In fact, sequence for sequence, the 22 mitochondrial tRNAs produce 15x as many tRFs as their nuclearly encoded counterparts. Having established their constitutive nature, we also investigated the possibility of cooperation and competition between isomiRs and tRFs. Specifically, we studied these molecules in normal breast and in triple-negative breast cancer (TNBC) samples from The Cancer Genome Atlas. In normal breast, we found that isomiRs and tRFs regulate genes and pathways in a cooperative manner. However, in TNBC the regulatory
events that are effected by isomiRs and tRFs, respectively, are aligned with the race of the patient. Specifically, we found that in White TNBC patients mRNAs are regulated preferentially by tRFs whereas in Black/African American TNBC patients mRNAs are regulated preferentially by isomiRs. The evidence also shows that both isomiRs and tRFs regulate core cancer pathways but do so differently in White and Black/African American TNBC patients. In other words, in TNBC the key regulators and the affected genes/pathways differ in patients who differ by race/ethnicity. We carried out similar analyses in prostate cancer and a few other cancers, reaching analogous conclusions. Our findings have several implications. First, they highlight that the mRNA abundance profiles in a given tissue (and, by extension, the abundance profiles of their protein products) generally differ in different people, in both health and disease. Second, the relationships we uncovered between short ncRNAs and mRNAs provide initial mechanistic evidence that who we are determines how we progress from health to disease and the exact trajectory that we will follow. Third, the findings suggest the feasibility of a pan-cancer biomarker that is based on isomiRs and tRFs and is both sensitive and specific. Fourth, our findings on isomiRs, and on the nuclear and mitochondrial tRFs, suggest that there are many putative regulators that matter more for women than they do for men; similarly, other putative regulators matter more for men, not as much for women; yet others matter more for European populations than they do for African or Asian populations, and vice versa, etc. It is safe to assume that in the short term these findings will force us to go back to the proverbial drawing board. However, it is also reasonable to expect that in the long run these findings can provide a different vantage point from which to approach disease. Doing so will in turn lead to exciting new and powerful approaches for diagnosing disease, help establish whether disease has recurred, determine whether a therapy is effective, and fuel the pursuit of new therapeutic targets. Most importantly, these new approaches will allow us to tune diagnostics and therapeutics to each specific patient and each specific disease.

IA32 Liver cancer screening—How much progress have we really made? Amit G. Singal. UT Southwestern Medical Center, Dallas, TX.

Hepatocellular carcinoma (HCC) is the third leading cause of cancer-related death worldwide and a leading cause of morbidity and mortality in patients with cirrhosis. Given an aging population of patients with hepatitis C virus (HCV) infection and a growing population of patients with nonalcoholic fatty liver disease (NAFLD), the incidence of HCC is anticipated to continue rising over the next 20 years. HCC disproportionately affects racial/ethnic minority populations in the United States, with higher age-specific rates among non-Hispanic Black, Hispanic white, and Asian persons compared to non-Hispanic whites. Studies have also suggested racial and ethnic disparities in HCC early detection, treatment receipt, and prognosis, with Black and Hispanic patients with HCC having worse overall survival than White and Asian patients. One of the strongest determinants of HCC-related prognosis is tumor burden at the time of diagnosis, with curative options only available for patients diagnosed at an early stage. Patients detected at an early stage can be treated with curative therapies such as liver transplantation or surgical resection, achieving 5-year survival rates exceeding 60%, whereas those detected at more advanced stages are only amenable to palliative therapies, with a median survival of 1-2 years. Therefore, several professional societies recommend HCC screening in at-risk patients (most notably patients with chronic hepatitis B infection or those with cirrhosis from any etiology) with an abdominal ultrasound and a blood test, alpha fetoprotein, every 6 months. HCC screening has been associated with improved early detection, increased curative treatment, and improved survival in several cohort studies. However, HCC screening is underused in clinical practice, with fewer than 20% of at-risk patients receiving consistent semiannual HCC screening. Studies suggest lower HCC screening receipt in racial/ethnic minorities and persons of low socioeconomic status, although no studies have been sufficiently large to evaluate intersectionality of race/ethnicity and socioeconomic status. Survey studies suggest several provider-level and patient-level barriers to HCC screening that likely must be addressed to increase HCC screening, particularly among socioeconomically disadvantaged patients and those being followed outside of tertiary care referral centers. Although few studies have evaluated interventions to increase HCC screening, some have yielded early promising results.

IA37 Lung cancer incidence and risk factors in never-smoking Asian American, Native Hawaiian, and Pacific Islander women: The development of a multilevel integrated dataset of EHR, cancer registry, and environmental data. Mindy C. DeRouen1, Salma Shariff-Marco1, Daphne Lichtensztajn1, Anqi Jin2, Yihe G. Daida3, Alison J. Canchola1, Yuqing Li1, Jennifer Jain1, Laura Allen1, Sixiang Nie1, Carmen Wong1, Robert Haile4, Manali Patel5, Peggy Reynolds1, Heather Wakelee5, Hal Luft6, Caroline Thompson1, Su-Ying Liang2, Beth E. Wartofsky3, Iona Cheng1, Scarlett L. Gomez1, 1University of California, San Francisco, San Francisco, CA, 2Sutter Health
Background: For Asian American, Native Hawaiian, and Pacific Islander (AANHPI) females, lung cancer is one of the most common cancers and the leading cause of cancer death. More than half of AANHPI female lung cancers occur in never-smokers, and contributing risk factors among never-smokers remain largely unknown. Until now, there was no single sufficiently-large data source to document lung cancer incidence rates by smoking status and sex among specific AANHPI ethnic groups, which is central to understanding and reducing the burden of this disease in this population. We assembled a large-scale cohort to quantify the burden of lung cancer by smoking status among single- and multiethnic AANHPI groups, with an emphasis on identifying the underlying factors driving lung cancer risk among never-smoking AANHPI females.

Methods: Assembly of the cohort involved (1) harmonizing and pooling electronic health record (EHR) data on known and putative lung cancer risk factors from two large health systems (i.e., Northern California Sutter Health system and Kaiser Permanente Hawaii [KPH]); (2) linking EHR data from Sutter and KPH with tumor and diagnosis data from the California Cancer Registry and Hawaii Tumor Registry, respectively; (3) geocoding and linking the Sutter portion of the cohort to regional air pollutant data and data on specific neighborhood contextual factors from the California Neighborhoods Data System; and (4) developing neighborhood contextual variables to enhance the geocoded data for KPH cohort members. Incidence rates stratified by sex, detailed race/ethnicity, and smoking status were calculated.

Results: The cohort comprises 1.8 million individuals, including 750,000 females of whom 190,000 are AANHPI females, with up to 15 years’ follow-up for incident lung cancer. It includes over 24,000 incident lung cancer cases, of which 10,595 are females and over 1,500 are single- and multiethnic AANHPI females. The cohort has high representation of Asian Indian, Chinese, Japanese, Filipino, Korean, and Pacific Islander never-smoking females in addition to multiple multiethnic AANHPI ethnic groups. Ongoing analyses, including overall and histologic cell-type specific incidence rates of lung cancer by sex, race/ethnicity, and smoking status will be presented.

Conclusions: We have assembled a large, integrated dataset well suited to study multilevel risk of lung cancer that will serve as a critical evidence base to inform screening, research, and public health priorities, especially among AANHPI females. Future work will include longitudinal analyses of lung cancer risk among never-smoking AANHPI females, including absolute risk modeling, examining six exposure domains representing putative lung cancer risk factors: second-hand smoke, previous lung diseases, infections, reproductive history and hormone exposure, body size, and neighborhood environmental factors, including measures of particulate matter, traffic density, neighborhood socioeconomic status, and ethnic enclave.

IA38 Racial/ethnic differences in liver fat, an obesity-associated risk factor for liver cancer. Unhee Lim1, Lynne R. Wilkens1, Kristine R. Monroe2, Iona Cheng3, Bruce S. Kristal4, Johanna W. Lampe5, Meredith A. Hullar6, John Shepherd1, Thomas Ernst5, Loic Le Marchand7. 1University of Hawaii, Honolulu, HI, 2University of Southern California, Los Angeles, CA, 3University of California San Francisco, San Francisco, CA, 4Brigham and Women’s Hospital, Boston, MA, 5Fred Hutchinson Cancer Research Center, Seattle, WA, 6University of Maryland, Baltimore, MD.

Background: Nonalcoholic fatty liver disease (NAFLD) is thought to be the main driver for the recent rise of chronic liver disease and liver cancer. NAFLD is also associated with other obesity-related metabolic diseases. Relative fat deposition in the liver varies by race/ethnicity and may partially account for liver cancer disparities. Thus, we aimed to compare liver fat content across five racial/ethnic groups, assess their contribution to the metabolic syndrome (MetSx), and predict NAFLD using common blood biomarkers.

Methods: We conducted a cross-sectional study within the Multiethnic Cohort. A total of 1,861 healthy men and women aged 60-77 years were recruited, after stratification on sex, ethnicity (African, Japanese, Latino, Native Hawaiian, or white ancestry), and six BMI categories (range, 17.1-49.8 kg/m²). We estimated total fat mass using DXA and liver fat content using abdominal MR imaging. Fasting blood was analyzed for ~50 markers including adipocytokines, insulin and IGFs, lipids and lipid-soluble micronutrients, liver enzymes, and steroid hormones, using multiple assay platforms. Liver fat amounts were compared across sex and ethnic groups after adjustment for age, total fat mass, and height. The contribution of liver fat to MetSx was estimated in multivariable-adjusted mediation analysis. A prediction model for NAFLD was developed using regularized logistic regression.
**RESULTS:** The correlation between liver fat and total fat was only moderate ($r^2 = 0.34$) and varied across ethnic groups (0.20-0.55). Liver fat content was similar between the sexes but differed by ethnicity ($p<0.0001$), with a four-fold range in NAFLD prevalence between Japanese Americans (57% in men, 72% in women) and African Americans (12%, 19%) after adjustment for total fat mass. Total fat-adjusted prevalence of MetSx also differed by ethnicity; compared to whites, it was higher among Japanese Americans and Native Hawaiian women and lower among African Americans and Latinos. This ethnic difference was significantly mediated by liver fat among African Americans (proportion mediated =19-24%), Japanese Americans (22-34%), and Native Hawaiian women (20%). The final prediction model for NAFLD included age, sex, BMI, waist circumference, waist/hip, and top five biomarker predictors (IGFBP2, HOMA-IR, TG, adiponectin, SHBG). Discrimination of NAFLD cases in a validation dataset had high accuracy (AUC=0.90), across ethnic groups (AUCs of 0.80-0.96), and was significantly improved by the biomarkers ($p$'s for contrast<0.0001, except in African Americans).

**CONCLUSIONS:** Relative fat storage in the liver varies substantially by race/ethnicity. In particular, Japanese Americans and Native Hawaiian women appear to experience a greater metabolic burden from their propensity to store excess fat in ectopic areas, which is consistent with a stronger association of BMI with liver cancer in these groups. Key metabolism markers may be used to successfully detect and monitor NAFLD patients of in various ethnic groups.

**IA39 A family-focused lay health worker approach to promote smoking cessation, healthy eating, and physical activity among Asian Americans.** Janice Y. Tsoh, University of California San Francisco, San Francisco, CA.

Cigarette use, unhealthy diets, and physical inactivity are the leading modifiable risk factors for cancer. These preventable risk factors remain prevalent among some Asian American groups. For example, smoking prevalence remains disproportionately high among Chinese, Korean, or Vietnamese immigrant men with limited English proficiency. More than half of Asian American adults do not meet physical activity recommendations (at least 150 minutes of moderate or vigorous exercise weekly) or have a body-mass index (BMI) above the WHO recommended cut-off point for Asian populations (at BMI >23). The Healthy Family Project, a community-based research program to promote healthy living among Asian Americans, was started in 2012 with research support from the California Tobacco-Related Disease Research Program and the National Institute on Drug Abuse. The program developed a family-focused lay health worker intervention to promote smoking cessation by engaging both current smokers and their families together with their peers. Since 2012, the Healthy Family Project has expanded to address multiple risks factors beyond cigarette smoking to include reduction of secondhand smoke exposure and promotion of healthy eating and physical activity among at-risk Asian Americans. The intervention curriculum is available in Chinese, English, Korean, and Vietnamese languages. A new program targeting Korean Americans is being launched in the San Francisco Bay Area of California in the fall of 2018. Since 2012, the Healthy Family Project has delivered the intervention to more than 520 smoker-family dyads (or >1,000 individuals). The program has been able to successfully engage participants who are not ready to quit smoking and have little knowledge of the recommended nutrition or physical activity levels. The program completion rates across different trials have been consistently above 95%, and follow-up rates at 3 to 12 months are above 90%. The presentation will highlight the health risk behavior profile of 680 Asian Americans enrolled in one of the ongoing trials, present the Healthy Family Project intervention model, and discuss current health behavior outcomes and implications. A family-focused lay health worker approach is a promising intervention platform to promote health behavior change and facilitate cancer prevention education in Asian American communities.

**IA40 Advocate Perspective: Shaping survivorship in Hawaii.** Lillian K. Matusmoto, Hawaii Comprehensive Cancer Coalition, Honolulu, HI.

As a person who has been diagnosed and treated four times for breast cancer, I have a deep value for the care of cancer warriors. I am especially interested in longer-term survivorship. What happens to cancer survivors after their formal care is complete? Today I will share some of my experience as well as discuss some work that the Hawaii Comprehensive Cancer Coalition has been conducting on behalf of cancer survivors. In the Hawaiian Islands we have a unique geography in that there are people living on many different islands and all in need of good care. Our work has been conducted by getting a firsthand look at what is needed throughout the primary Hawaiian Island chain, as the needs differ greatly depending on location. I also plan to talk about what has been helpful for me personally. Each of us has our own experience, and each experience is rich and adds to the landscape of cancer survivorship. I want to make sure people are not left behind, and I also want to do my part to try to
INVITED ABSTRACTS

ensure the best long-term care for cancer survivors, or as I like to call us, cancer warriors.

**IA41 Precision medicine in cancer: Opportunities and challenges in Latin America.** Andrea S. Llera, Instituto Leloir, Ciudad de Buenos Aires, Argentina.

In the last few years, the importance of diversity in precision medicine has been highlighted. However, in many cases, the scientific focus has been put on the need of genetic studies in diverse populations, even when the very definition of precision medicine has included both genetic and environmental aspects that affect the development of a certain disease in an individual. In particular, cancer, like other complex diseases, is considered a result of how chronic exposure to etiologically relevant environmental factors (the “exposome”) impacts on the more or less susceptible genetic information of a subject. Studies on cohorts other than White have highlighted variations on cancer incidence, prognosis, and response to treatment that reinforce the need to establish the unique genetic and environmental characteristics that are present in geographically diverse populations. In particular, Hispanic/Latinos have been the subject of several initiatives in the US that try to discriminate the impact of the variations on genome and exposome in the incidence and severity of cancers. Among other findings, it is fairly clear now that Latinos tend to have overall better health indicators than those of other ethnic groups with whom they share demographic and socioeconomic characteristics; however, cancer incidence rates tend to increase in US Latinos with respect to those reported in Latin America. Registries of cancer are scarcely populated in Latin America and for this reason, differences in completeness of registries cannot be ruled out as a confounding factor in this generalization. Unfortunately, there are still very little data publicly available in Latin America to address the causality of these differences. Moreover, Latin America is in itself a complex mixture of genetic variation and geographical features, and in particular the South American admixture, which represents less than 15% of US Latinos, is hardly represented in the current precision medicine landscape. Thus, there is a compelling need to establish Latin American case and control cohorts that may help to discern the relevance of genetic and environmental factors in the characteristics of cancer in this population. A few regional initiatives try to address, at least partially, this lack of knowledge. An example of these initiatives is the Latin American Cancer Research Network (LACRN), which comprises a coalition of hospitals (mostly public); basic, translational, and clinical science investigators and institutions; and government officials from Argentina, Brazil, Chile, Mexico, and Uruguay. Its first study, sponsored by NCI's Center for Global Health (CGH) and regional partners, focuses in the molecular and epidemiologic characterization of a real-world cohort of breast cancer patients (the MPBC study, for Molecular Profile of Breast Cancer) and has currently 1,314 eligible patients who have been enrolled from 2011 to 2013 and have been studied and followed for >5 years under GCP quality standards. As well, associated biobanks have been established to keep TCGA-quality biospecimens in optimal conditions for molecular studies. In my talk, I am going to address some of the difficulties that arise when these projects are developed in Latin America, especially when developed at the level of public health services. The success in these projects depends upon applying specific strategies to overcome the aforementioned difficulties so as to contribute to the knowledge of diversity in precision medicine in Latin America.


Africa is now facing a major public health challenge relative to noncommunicable diseases, especially cancer, while still dealing with the challenges of infectious diseases. Alarmingly, sub-Saharan Africa (SSA) will have more than an 85% increase in cancer deaths by 2030. Cancer continues to create a huge clinical, economic, and humanistic burden for Africa. Based on our research team’s work in Africa since 2006, we know firsthand that there are several challenges in fighting cancer in Africa, which requires innovative strategies to overcome the burden of cancer in Africa. Precision medicine (PM) carries the promise of tailoring treatment, prevention, and behavioral interventions in a precise and personalized manner to optimize medical benefit and minimize harm for an individual patient. While the focus on PM brings an exciting era in health care, there is considerable concern that it may shift focus away from social determinants of health and much-needed strategies to address community-based efforts on cancer prevention and control. This is especially of significant concern in low-resource communities that are unable to afford PM, especially SSA countries. The question then becomes, how can we leverage the PM effort to provide effective community health in low-resource communities? The Prostate Cancer Transatlantic Consortium (CaPTC) is an NCI-EGRP approved consortium that addresses the global disproportionate
burden of prostate cancer (CaP) among Black men connected by the Transatlantic Slave Trade. Founded in 2015, CaPTC’s effort in Africa includes Precision Public Health (PPH): “using community engagement, community data and technology with geographical precision to prevent prostate cancer, predict prostate cancer risks, develop tailored and targeted programs to improve community health, and foster public health policies to reduce CaP disparities.” CaPTC’s PPH efforts in Africa include (1) integration of community data, expert opinions and literature review to develop CaP research priorities for Nigeria; (2) use of web-based and mobile technologies to make oncology clinical trials accessible in Africa; (3) geographical mapping of CaP incidence in Nigeria using geospatial analysis; (4) examining genetic, environmental, and behavioral etiology of CaP in familial cohort of West African men in Nigeria, Cameroon, and US; (5) development of standardized and uniform behavioral and epidemiologic measures for the study of CaP in Black men globally; and (6) facilitation of global data sharing for multiethnic studies of prostate cancer in Black men by harmonizing and pooling existing data to create Big Data for the CaP research community. To effectively address the public health challenges of cancer in SSA, deliberate and concerted efforts must be made to implement programs that will provide precise community-tailored intervention to SSA populations at the right time. PPH offers a meaningful approach to address cancer disparities in Africa.


Variation in cancer incidence and outcome has well-documented correlations with racial-ethnic identity. In the United States, the possible genetic/ancestral hereditary explanations for these associations are confounded by socioeconomic, cultural, and lifestyle patterns. Differences in the breast cancer burden of African American (AA) compared to European/Caucasian (White) American (WA) women represent one of the most notable examples of disparities in oncology related to racial-ethnic identity. Elucidating the etiology of these associations is imperative in achieving the promise of the precision medicine initiatives. Population-based breast cancer mortality rates have been higher for AA compared to WA women since the early 1980s, likely reflecting declines in mortality among WA related to the advent of endocrine therapy, which is less effective in AA women because of the higher prevalence of estrogen receptor-negative disease. The increased risk of triple-negative breast cancer in AA women as well as western, sub-Saharan African women compared to WA, European, and east African women furthermore suggests that selected components of African ancestry are associated with hereditary susceptibility for specific patterns of mammary carcinogenesis. Oncologic anthropology represents a transdisciplinary field of research that can combine the expertise of population geneticists, translational oncologists, and behavioral scientists to elucidate breast cancer disparities related to racial-ethnic identity and to advance knowledge related to the pathogenesis of triple-negative breast cancer. This presentation will review associations between triple-negative/basal-like breast cancer and African ancestry, with a proposed mechanism based upon hereditary and population migration patterns.


Medicaid is a joint state-federal program that provides health insurance coverage to certain low-income populations. While the federal government provides funding for at least half of each state’s Medicaid costs and requires coverage for certain health care services, each state has broad flexibility to design its own Medicaid policies. These policies include reimbursement rates for medical care services, requirements for patient copayments, and duration of Medicaid enrollment before required eligibility recertification. Furthermore, following the 2012 Supreme Court decision, states can choose whether to participate in expansion of Medicaid to enroll individuals with incomes up to 138% of the Federal Poverty Level. As these policies differ substantially among states, Medicaid is not a single health insurance plan but a set of different plans for each state. Medicaid provides coverage for cancer screening and treatment for many low-income individuals. However, differences in state Medicaid policies may affect receipt of timely and high-quality cancer care for this underserved population. In addition, social determinants of health such as race/ethnicity, sex, and age may also affect receipt of cancer care among Medicaid beneficiaries. This presentation will review findings examining the effects of state Medicaid policies and individual characteristics on receiving cancer screening, treatment, supportive care, and survivorship care services among Medicaid beneficiaries. Using Medicaid claims and enrollment data, research has found that both state policies and social determinants of health can impact receipt of recommended cancer screenings and treatment for individuals with Medicaid coverage. The impacts of Medicaid policies vary for different types of cancer care services and among individuals with different types of
cancer. State decisions to participate in Medicaid expansion also affect receipt of cancer care. These findings highlight the need for state Medicaid policies designed to improve access to cancer care and enhance outcomes among Medicaid beneficiaries. Given the large—and growing—Medicaid population, even small improvements in access to high-quality cancer care can translate into substantial changes in health outcomes.

**IA46 Medical financial hardship in the United States.** K. Robin Yabroff, American Cancer Society, Atlanta, GA.

The prevalence of cancer survivorship is increasing in the United States, reflecting an aging and growing population as well as earlier detection of cancer and improved treatments, resulting in longer survival following diagnosis. The costs associated with cancer survivorship are also expected to increase, based only on these population changes. Recent trends towards increasing costs of cancer treatment are further straining budgets for health care payers, and corresponding trends towards greater patient cost-sharing, with higher deductibles, copayments, and coinsurance rates, are straining budgets for cancer patients and their families. As a result, concerns about the costs of cancer care and medical financial hardship, including problems paying medical bills, financial distress, and delaying or forgoing medical care due to costs, are increasingly common. This presentation will discuss risk factors for medical financial hardship in cancer survivors, including patient sociodemographic characteristics (e.g., poverty, minority race/ethnicity, rural residence), lack of health insurance coverage, and aspects of health insurance benefit design among the insured. It will also identify research gaps at the patient and family, provider and care team, health care system, employer, and state and national policy levels.

**IA47 Disparities in access and outcomes: Actions and consequences.** Sandra L. Wong, Dartmouth, Lebanon, NH.

Disparities in cancer care quality and outcomes are well documented, and an increasing evidence base informs a deeper understanding of the complex determinants of such disparities and their interactions. However, because the interactions are incompletely understood, work to achieve equity in cancer care has not demonstrated the desired impact in eliminating, or even meaningfully reducing, disparities at the population level. Current strategies to reduce health care disparities must take the value proposition into account, balancing the tenets of payment reform with improvements in access and quality. Coordinating the actions of policymakers and providers (including health systems and front-line clinical teams) is critical in making intentional forward progress. The impact of well-intended policies is often difficult to anticipate. This talk will highlight examples of policies and trends in health care delivery with unintended consequences on the very cancer outcomes they were meant to improve.

**IA49 Advancing cancer disparities research through data integration: The Multiethnic Cohort Study.** Iona Cheng, Scarlett Lin Gomez, Salma Shariff-Marco, Anna H. Wu, Sung-Shim Lani Park, Christopher A. Haiman, Lynne Wilkens, Loic Le Marchand, University of California, San Francisco, San Francisco, CA. Lynne Wilkens, University of Southern California, Los Angeles, CA. Iona Cheng, University of Hawaii, Honolulu, HI.

The Multiethnic Cohort Study was established in 1993-1996 with the goal of examining lifestyle risk factors, especially diet and nutrition, as well as genetic susceptibility in relation to the development of cancer. The cohort comprises more than 215,000 adult men and women from five major U.S. racial/ethnic groups—African American, Japanese American, Latino, Native Hawaiian, and white—residing in Hawaii and California. It is one of the largest racially/ethnically diverse cohorts of its kind. Over the past 25 years, a wealth of questionnaire information has been surveyed from MEC participants and biologic specimens, including blood and urine samples, have been collected from more than 70,000 participants. Incident cancer cases in the MEC are identified annually through linkage with the NCI SEER Hawaii and California cancer registries. The cohort has been linked to medical claim data (Medicare) and hospital discharge diagnoses (in CA), allowing the study of many non-cancer endpoints. This rich resource has led to numerous important findings on racial/ethnic differences in the risk of breast, colorectal, and prostate cancers in relation to diet and lifestyle factors. In addition, seminal findings have been achieved in discovering and characterizing genetic risk loci for cancer and identifying ancestry-specific risk regions such as the chromosome 8q24 region that contributes to the racial/ethnic disparities in prostate cancer. Recent advances in omics technologies have led to innovative studies within the MEC that examine the roles of the exposome, genome, methylome, metabolome, and gut microbiome in understanding ethnic differences in the relationships of smoking and obesity with cancer. Participation in consortia has allowed us to leverage the data available for non-whites in multiple other studies. Furthermore, development of
INVITED ABSTRACTS


Cancer registries enable research on cancer incidence and outcomes in a real-world setting, with broad relevance for the general population. Since only 3% of adult cancer patients in the United States are treated in clinical trials, cancer registries offer crucial insight into the treatment and survival of the other 97%. While highly informative in terms of patient demographics, cancer incidence, and survival, cancer registries lack key clinical details necessary to assess treatment quality and prognostic factors: notably, genetic testing results, specific therapies and patient-reported outcomes. In recent work, we have developed novel data linkage approaches to augment the information value of the National Cancer Institute’s Surveillance, Epidemiology and End Results (SEER) registry. These linkages have enhanced our understanding of breast cancer and ovarian cancer from genetic risk assessment through treatment, recurrence, and mortality. I will discuss the SEER-GeneLINK initiative, in which we have collaborated with genetic testing laboratories to link the results of germline genetic testing to SEER registry records of breast cancer and ovarian cancer patients. Furthermore, we have surveyed these patients and their attending physicians about key aspects of genetic testing. We are now extending this work to encompass cascade genetic testing of patients’ relatives. Our aim is to identify gaps and disparities in cancer care, in order to inform interventions that will improve care quality. Recent results on the use, correlates, and results of genetic testing on the population level will be presented.

IA51 Federally supported tools and resources to support data integration efforts for health disparities research. Richard P. Moser. National Cancer Institute, Bethesda, MD.

The etiology of many cancer-related health disparities that continue to persist is oftentimes complex, interactive, and multifactorial. Because of this complexity and to understand these causes, it behooves cancer researchers to utilize data that represent different types and sources of these determinants measured at multiple levels of abstraction, from biology to policy. By incorporating these different data sources into their studies, researchers can answer novel (and better) cancer control research questions that cannot be answered with any one data set. To do these types of integrative analyses, however, researchers will most likely need to merge or link independent data, and this may be difficult or impossible if the data are too heterogeneous in regard to the instruments or measures used to represent variables in the data. To increase the ability to do data integration, it typically requires harmonized data that contain common data elements of the important constructs of interest. In this presentation, Dr. Moser will highlight tools and resources, especially those supported by the federal government, that can be used for data integration to conduct health disparities research. These tools include ontologies, standardized measures, collaborative sites, and data repositories that promote the use of common data elements to create or analyze harmonized data. This presentation will also mention National Institutes of Health (NIH) funding announcements that could be used to support data integration efforts and health disparities research.


In 2017, AACR, ASCO, ACS, and NCI published a statement stemming from a think tank on the future of research in cancer health disparities. This statement, published in several leading oncology journals, offered recommendations in five areas for advancing cancer health disparities research. This presentation will review the recommendations for the area “defining measures and tools for the next generation of cancer health disparities research,” describe efforts to standardize data collection for social determinants of health, and explore emerging methodologic challenges in the measurement of social determinants in cancer health disparities research.
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PR01 Factors associated with dual use of electronic cigarettes among adult American Indians who smoke: A Cherokee Nation cohort study. Dorothy A. Rhoades1, Ashley L. Comford2, Justin D. Dvorak1, Kai Ding1, Leslie Driskill4, Michelle Hopkins1, Theodore L. Wagener5, Paul Spicer6, Mark P. Dosescher1. 1Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 2Epidemiology, Cherokee Nation, Tahlequah, OK, 3College of Public Health, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 4University of Oklahoma Health Sciences Center, Oklahoma City, OK, 5Oklahoma Tobacco Research Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 6University of Oklahoma, Norman, OK, USA.

Significance: American Indians (AI) have a higher prevalence of smoking, higher prevalence of electronic cigarette (EC) use, and higher cancer mortality than most other racial groups, particularly in Oklahoma. However, AI are rarely included in studies of EC use among smokers. As many individuals who smoke also use ECs to reduce harms from cigarettes, understanding correlates of using both products by AI merits greater attention.

Methods: In Oklahoma in 2016, 375 AI who smoke and were ages 18 years and older completed a survey collecting demographic information, personal and family history of cancer, perceptions of EC harm and benefits, measures of smoking and dependence, other tobacco use, and EC use by spouse or partner. We defined dual users as using EC within 30 days and every day or some days (n = 44; 12%) and compared dual users to EC never users (n = 137; 37%).

Results: Dual users were younger than never users (median 36 vs. 46 years, respectively; p = .01) but did not differ significantly by sex, education, or income. Dual users did not differ significantly from never users in self-reported general health status, personal history of cancer, or other smoking-related medical conditions. Dual users more often reported history of depression (56% vs. 29%; p < .01) and a family history of cancer (lung, head, neck, other) marginally more often than did never users (58% vs. 41%, p = 0.05). While no significant differences were noted for perceived harms of smoking or secondhand smoke, low perceived harm of ECs was more frequent among dual users than never users (64% vs. 24%; p < .01) as well as secondhand vapor (77% vs. 29%; p < .01). Dual users agreed more often that ECs help to quit smoking (75% vs. 16%; p < .01) and are less harmful than smoking (70% vs. 17%; p < .01). Only 9% of dual users did not know or were uncertain about EC harms or benefits, compared to 29% of never users for harms (p < .01) and 38% for benefits (p < .01). Differences between groups were not significant for cigarette consumption, salivary cotinine levels, or smoking dependence scales, but dual users reported a likelihood to quit smoking more often than never users (86% vs. 65%; p = .01), and more often tried to quit in past 12 months (55% vs. 32%; p = .01). Dual users significantly (p ≤ .01) more often ever tried snus (36% vs. 10%), cigars (68% vs. 46%), cigarillos (82% vs. 56%), and hookah (50% vs. 14%) but no differences in ever use of other smokeless tobacco. Among those living with a spouse/partner, dual and never users did not differ in spouse/partner smoking, but dual users much more frequently lived with a spouse/partner who uses ECs (45% vs. 6%; p < .01).

Conclusions: EC use is a potential, albeit unproven, harm reduction strategy for people who smoke. The American Cancer Society strongly discourages dual use of EC and cigarettes. This exploratory study of AI found several significant associations with dual EC and cigarette use, but cigarette consumption was similar between groups. It remains to be determined whether ECs will have a role in smoking cessation or reducing cancer health disparities among AI.

This abstract is also being presented as Poster A004.

PR02 Contextualizing the association between social isolation and smoking among socioeconomically disadvantaged adults: Psychosocial, life-contextual, and health care factors. Kassandra I. Alcaraz1, Rhyan N. Vereen2, Antonika Souder3, Alan Bienvenida3. 1American Cancer Society, Atlanta, GA, 2Texas Health and Human Services Commission, Midland, TX, 3Emory University, Atlanta, GA.

Purpose: Social influences on health are inadequately understood, hindering progress in eliminating disparities in cancer. One such influence, social isolation, is well established as an independent risk factor for mortality and comparable in magnitude to other risks such as obesity. Social isolation is associated with smoking, which is increasingly concentrated in socioeconomically disadvantaged (SED) populations. However, the association between social isolation and smoking is understudied. This study examined the extent to which psychosocial, life-contextual, and health care factors account for the social isolation-smoking relationship among SED adults.

Methods: The study used data from a cross-sectional survey of SED adults (N=3064) recruited from an information and referral program that helps individuals with meeting basic needs (e.g., food). Measures included current smoking status,
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social isolation, psychosocial factors (stress, loneliness), life-contextual factors (unmet basic needs), health care factors (time since last routine checkup, health self-efficacy), and demographics. A social isolation score was derived using a modified version of the Social Network Index. Bivariate analyses and multivariable logistic regression examined the association between social isolation and smoking. Path analyses estimated indirect associations between social isolation and smoking via psychosocial, life-contextual, and health care factors while controlling for demographics. Path analyses used full information maximum likelihood with robust estimation and the theta parameterization. Model fit was assessed using the comparative fit index (CFI ≥0.95) and root mean square error of approximation (RMSEA <0.06). Analyses were conducted using SAS and Mplus.

**Results:** The sample was predominantly female (81%), non-Hispanic Black (79%), and highly SED, with 44% having a high school education or less and 52% having an annual household income less than $10,000. Overall, 29% of participants were current smokers, and 62% were highly socially isolated. Social isolation was associated with smoking, with only 10% of the least isolated individuals smoking currently compared to 39% of the most socially isolated individuals (p<0.0001). In analyses adjusting for demographics, odds of being a current smoker increased as social isolation increased (aORs=1.8 to 3.2; p<0.0001). The final path model (RMSEA=0.031 with 90% CI: 0.025, 0.038; CFI=0.970) confirmed a direct path from social isolation to smoking (β=0.14, p<0.0001) and indirect pathways operating through psychosocial, life-contextual, and health care factors (all β≥0.44, all p<0.05).

**Conclusions:** Findings elucidate possible mechanisms driving the social isolation-smoking relationship in SED populations, suggesting several potential intervention approaches for reducing cancer disparities. Evidence-based interventions that consider psychosocial and life-contextual issues may be especially salubrious for SED populations.

*This abstract is also being presented as Poster A090.*

**PR03 Disparities in work status after treatment for breast cancer: A controlled, longitudinal study.** Victoria S. Blinder1, Sujata Patil1, Carolyn Eberle1, Gabriel Jung2, Lewis J. Kampel1, Caroline Hwang1, Ting Bao1, Mark E. Robson1, Manmeet Malik4, Francesca Gany3. 1Memorial Sloan Kettering Cancer Center, New York, NY, 2Queens Medical Associates, Fresh Meadows, NY, 3Lincoln Medical Center, Bronx, NY, 4New York Presbyterian Queens, Flushing, NY.

Low-income and minority groups appear to be at increased risk of post-treatment job loss and its sequelae, including financial strain and bankruptcy. However, the drivers of disparities in job loss are not understood. We surveyed employed women aged 18-64 with stage I-III breast cancer who spoke Chinese, English, Korean, or Spanish. Baseline surveys (telephone or online) were administered during adjuvant treatment; follow-up surveys were conducted 4 months after completion of active treatment except endocrine and targeted therapy (i.e., trastuzumab with or without pertuzumab). The primary outcome was post-treatment work status (working full- or part-time vs. any other work status). We used healthy peers to control for disparities in non-cancer unemployment and multivariable analyses to identify predictors of work status in patients. Our sample (n=479) was 28% Latina, 23% black, 21% non-Latina white, 19% Chinese, and 7% Korean; 56% were foreign-born. Overall, 31% had a household income <200% of the federal poverty level; 26% were under-/uninsured; 33% worked in service/manufacturing jobs at baseline, 19% in sales/administrative jobs, and 47% in management/profession jobs. Most underwent chemotherapy (85%). Four months after treatment completion, 71% of the survivors reported that they were working. The proportion of working patients versus controls was 0.69 for Chinese, 0.73 for Korean, 0.75 for Latinas, 0.78 for blacks, and 0.98 for non-Latina whites. Independent predictors of not working among patients were receipt of chemotherapy (OR 2.20; 95% CI 1.04-4.64); older age (OR 1.06; 95% CI 1.03-1.09); black (OR 2.37; 95% CI 1.01-5.56), Chinese (OR 2.91; 95% CI 1.20-7.05), or Korean (OR 3.68; 95% CI 1.24-10.98) race (vs. non-Latina white); household income <200% of poverty (OR 3.00; 95% CI 1.68-5.35); and service/manufacturing job-type at baseline (OR 2.41; 95% 1.30-4.44, vs. manager/professional). Having an employer who was not accommodating also predicted not working post-treatment (OR 3.05; 95% CI 1.88-4.95). Breast cancer exerts a disparate negative impact on work status in minority and low-income women, which persists after controlling for disparities in background unemployment. Women who work in service or manufacturing jobs are at greater risk. Furthermore, receipt of chemotherapy is a predictor of job loss, even after controlling for race and income. However, employer accommodations appear to abrogate the negative impact of chemotherapy on work status. Interventions are needed to promote job retention in minority and low-income women, particularly those who lack work accommodations or are in high-risk jobs.

*This abstract is also being presented as Poster A100.*
PR04 Engaging in physical activity after a cancer diagnosis: A Detroit ROCS study. Julie J. Ruterbusch1, Ann G. Schwartz2, Terrance Albrecht1, Tara Baird1, Dave Finlay1, Felicity Harper1, Stephanie Pandolfi1, Julia Mantey1, Andrew G. Rundle1, Jennifer L. Beebe-Dimmer1. 1Wayne State University, Detroit, MI, 2Barbara Ann Karmanos Cancer Institute, Detroit, MI, 3Columbia University, New York, NY.

Background: The benefit of regular exercise in improving cancer outcomes is well established. In 2012, the American Cancer Society (ACS) released a recommendation statement that cancer survivors should engage in regular physical activity (PA) as soon as possible after a cancer diagnosis with the goal of engaging in at least 150 minutes per week of moderate to vigorous PA (1). However, few cancer survivors report meeting this recommendation (2). Using data from the Detroit Research on Cancer Survivors (ROCS) study, we examined the patterns of PA and its association with health-related quality of life (HRQOL) in a cohort of African American cancer survivors.

Methods: Detroit ROCS participants complete baseline and yearly follow-up surveys to update their health and provide information on health behaviors including PA, using the International Physical Activity Questionnaire-short form. We assessed the number of survivors who reported participating in regular PA and those who reported ≥150 minutes of moderate to vigorous PA per week by select characteristics and reported HRQOL measured using the Functional Assessment in Cancer Therapy (FACT) and Patient-Reported Outcomes Measurement Information System (PROMIS) instruments.

Results: Among the first 1,000 ROCS participants, 58% reported participating in regular PA with just 22% reporting engaging in ≥150 minutes of PA per week. While there were no differences by sex, prostate cancer survivors were the most likely to report participating in regular PA while lung cancer survivors were the least likely (p=0.009). There was a positive relationship between self-reported education and area-level affluence based on US census data with PA (p<0.001 and p=0.019, respectively). Survivors who reported participating in regular PA also reported higher HRQOL (p<0.001) and lower depression (p=0.036). The same patterns were observed among those reporting ≥150 minutes of PA per week, and additionally we found lower reported anxiety among survivors who report meeting ACS guidelines (PROMIS-Cancer anxiety score, p<0.001). Among survivors who completed their first follow-up survey (N=389), a higher proportion of survivors reported participating in regular PA (71%, p<0.001) and getting ≥150 minutes of PA per week (32%, p<0.001).

Conclusions: Fewer than 25% of African American cancer survivors reported meeting the ACS guidelines for PA at baseline recruitment; however, it was encouraging to see significant increases in PA engagement over time. Given the established benefits associated with regular exercise and cancer outcomes, and the positive correlation on HRQOL and inverse relationship with depression observed in this study, identifying, understanding, and eliminating barriers to regular moderate to vigorous PA among African American cancer survivors is critical. Future study of ROCS subjects will attempt to establish the temporality of these relationships.

This abstract is also being presented as Poster C048.

PR05 A genetic variant at 6q25 associated with estrogen receptor-negative breast cancer subtypes in Peruvian breast cancer patients. K.M. Markert1, T. Vidaurre2, L.I. Tamayo3, J.N. Vásquez4, R. Meza Flores1, S. Casavilca5, M. Calderon1, J.E. Abugattas2, H.L. Gómez2, H.A. Fuentes2, C.L. Monge Pimentel1, S. Song6, D. Cherry7, S. Huntsman8, D. Hu9, E. Ziv10, L. Fejerman11. 1Division of Epidemiology, School of Public Health, University of California Berkeley, Berkeley, CA, 2Instituto Nacional de Enfermedades Neoplásicas, Lima, Peru, 3University of Chicago, Chicago, IL, 4Division of General Internal Medicine, Department of Medicine, Institute of Human Genetics, University of California San Francisco, San Francisco, CA, 5University of California San Diego, San Diego, CA.

Background: We have previously identified a genetic variant, rs140068132, which has a strong protective effect on breast cancer risk. This variant is located near the estrogen receptor 1 gene (ESR1) on chromosome 6q25, a locus which has been repeatedly implicated in breast cancer risk. Women who carry two copies of the protective variant (GG) have 60-70% reduction in risk of developing breast cancer compared to women with none. The G variant has relatively high frequency in Latin American women (up to 23% in the 1000 Genomes Project Peruvians); it is only common in people of Indigenous American ancestry and almost absent in all other populations. We investigated whether the rs140068132-A/G polymorphism is associated with a specific breast cancer subtype among Peruvian women with breast cancer.

Methods: Blood samples and clinical data were collected from 441 women with breast cancer at the Instituto Nacional de Enfermedades Neoplásicas in Lima, Peru. Genotypic profiles were generated using the Affymetrix Precision Medicine Research Array. Four major breast cancer subtypes were identified based on immunohistochemical markers
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(luminal A, luminal B, triple-negative, and human epidermal growth factor receptor 2 (HER2) overexpressing). Quality control of the genotyped data was performed in PLINK. Genetic ancestry was determined for each individual using ADMIXTURE. ANOVAs were performed on the proportion of genetic ancestry and disease subtype. PLINK was used to perform a binary logistic regression on the rs140068132 variant and ER status (ER-negative versus-ER positive), with age and genetic ancestry as covariates.

Results: The breast cancer patients analyzed have the following average ancestry proportions: 77.3% Indigenous American, 17.4% European, 3.8% African and 1.5% East Asian. The frequency of the G allele in the Peruvian breast cancer patients is 14% (compared to 23% in healthy individuals from the 1000 Genomes Project). We found that the G allele of rs140068132 was associated with ER-negative status among cases (OR = 0.6443, P = 0.086) for both HER2 overexpressing and triple-negative. We also examined the proportions of ancestry in relation to subtypes of disease. The proportion of Indigenous American ancestry was associated with the HER2 overexpressing subtype (P = 0.06), with an average Indigenous American ancestry among these patients of 83.1% compared to 77.3% among all patients. The proportion of African ancestry was higher in women with the triple-negative subtype, with an average African ancestry of 4.8% among patients with the triple-negative subtype compared to a 3.8% average among all patients, but this trend was not statistically significant (P = 0.21).

Conclusions: The lower frequency of the variant in Peruvian breast cancer cases is consistent with a protective effect in this population. We have confirmed that the protective effect of the rs140068132 variant is stronger for ER-negative subtypes. Additional analyses are under way in a larger sample of Peruvian breast cancer patients.

This abstract is also being presented as Poster C051.

PR06 Research on prostate cancer in men of African ancestry: Defining the roles of genetics, tumor markers, and social stress. Ann S. Hamilton1, Scarlett Gomez2, Xiao-Cheng Wu3, Kevin Ward4, Melissa Bondy5, Rosemary Cress6, Jennifer Beebe-Dimmer7, Karen Pawlish8, Jong Park8, Iona Cheng2, Antoinette Stroup9, Thomas Sellers9, Susan Gundell9, Angelo Demarzo10, Denise Modjeski11, Stephen Chanock1, Salma Shariff-Maro12, Mindy DeRouen2, John Carpten1, Franklin Huang11, Karen Sfanos13, Tamara Lotan13, David Conti14, Christopher Haiman1, University of Southern California, Los Angeles, CA, 2University of California, San Francisco, CA, 3Louisiana State University Health Science Center, New Orleans, LA, 4Emory University, Atlanta, GA, 5Baylor College of Medicine, Houston, TX, 6Cancer Registry of Greater California, Sacramento, CA, 7Wayne State University, Detroit, MI, 8New Jersey Department of Health, Trenton, NJ, 9Moffitt Cancer Center, Tampa, FL, 10Rutgers University, The State University of New Jersey, New Brunswick, NJ, USA, 11John Hopkins University, Baltimore, MD, USA, 12National Cancer Institute, Division of Cancer Epidemiology & Genetics, Rockville, MD, 13Dana-Farber Cancer Institute, Boston, MA.

African American men have a >60% higher incidence and are more likely to be diagnosed with aggressive prostate cancer than white men. The reasons are not clear but are likely to include a multitude of factors such as social factors (e.g., lifetime stress), inherited susceptibility, and tumor-related features such as somatic alterations and local inflammation in the microenvironment. To investigate these hypotheses, over the next five years, we will establish a large, national, population-based cohort study, RESPOND (Research on Prostate Cancer in Men of African Ancestry: Defining the Roles of Genetics, Tumor Markers and Social Stress) of 10,000 African American men with incident prostate cancer identified through nine U.S. cancer registries from states that include 38% of all African American prostate cancer cases in the U.S. We will also recruit men who wish to volunteer through our website (RespondStudy.org). The cohort will provide comprehensive information on 1) multilevel stressors over the lifecourse; 2) geographic data on residential segregation, and social and built environmental factors; 3) lifestyle factors and health behaviors; 4) disease-specific factors including PSA screening history and treatment choice; 5) germline DNA to study genetic susceptibility; and 6) tumor samples to study somatic changes associated with aggressive disease. No previous study has attempted to obtain information across these domains in a single large cohort in order to understand the independent and joint contributions of these factors. Leveraging the RESPOND resource and investigator expertise, we have designed a research program composed of four Projects that are supported by four Cores, which are all focused on the central theme of identifying social and biologic factors related to prostate cancer disease aggressiveness in African American men. These Projects include the investigation of multilevel social stressors across the lifecourse in relationship with aggressive prostate cancer (Project 1); genome-wide discovery efforts of germline susceptibility loci for aggressive prostate cancer and examination of the relationship between germline and somatic variation (Project 2); the identification of underlying somatic alterations in prostate cancer tumors and biologic pathways that are related to aggressive disease.
PROFFERED ABSTRACTS

(Project 3); and a detailed assessment of inflammation in the tumor microenvironment as it relates to prostate cancer aggressiveness (Project 4). Each of the four Projects addresses a distinct research domain, but together they will provide a comprehensive picture of the major factors that contribute to aggressive prostate cancer in African American men. The information we will discover is likely to help in explaining prostate cancer health disparities and have immediate clinical implications in the areas of improved patient stratification and personalized medicine for African American men.

This abstract is also being presented as Poster C058.

PR07 Racial differences in financial toxicity among metastatic breast cancer patients. Cleo A. Samuel1, Jennifer C. Spencer1, Michelle L. Manning2, Donald L. Rosenstein1, Katherine E. Reeder-Hayes1, Jean B. Sellers1, Stephanie B. Wheeler1. 1UNC Gillings School of Global Public Health, Chapel Hill, NC; 2UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC.

Background: Awareness of the significant financial burden and distress that cancer patients experience (i.e., “financial toxicity”) is gaining traction in the oncology community. While racial differences in cancer care are well documented, less is known about racial variations in the financial impact of cancer care, particularly among patients with costly incurable disease. Using data from a national survey of racially diverse patients with metastatic breast cancer, we examined racial/ethnic patterns in financial burden due to cancer.

Methods: We partnered with the Metastatic Breast Cancer Network to conduct a 20-minute online survey of metastatic breast cancer patients over a 2-week period in 2018. Study participants responded to items assessing sociodemographic characteristics, communication with providers regarding costs, financial distress, strategies for managing cancer-related costs, and emotional well-being. We evaluated and compared financial outcomes among Hispanics, non-Hispanic Blacks, and non-Hispanic Whites.

Results: Our analysis included 1,119 respondents from 41 states, including 214 Hispanics (19%), 130 non-Hispanic Blacks (12%), and 775 non-Hispanic Whites (69%). Compared with non-Hispanic Whites, Hispanics were more likely to report refusing or delaying treatment due to costs (81% vs. 41%, p<.001), applying for disability (66% vs. 35.1%, p<.001), avoiding treatment for other medical problems (54% vs. 34%, p<.001), and skipping payments on non-medical bills (70% vs. 13%, p<.001). Non-Hispanic Blacks were more likely than non-Hispanic Whites to report refusing or delaying treatment due to costs (91% vs. 41%, p<.001), skipping payments on non-medical bills (32% vs. 13%, p<.001), and being contacted by a collections agency (87% vs. 46%, p<.001). In contrast, non-Hispanic Whites more often reported skipping a vacation to help manage their cancer care costs than Hispanics and non-Hispanic Blacks (46.1% vs. 36.4% vs. 13.8%, respectively, p<.05). Moreover, compared with non-Hispanic Whites and Blacks, Hispanics reported more severe financial distress associated with uncertainty about the cost of their cancer care (6.6% vs. 8.5% vs 47.4%, respectively, p<.001).

Conclusions: Racial/ethnic differences exist in financial burden among metastatic breast cancer patients, with patients of color experiencing more financial harm than their White counterparts. Given the negative impact of financial strain on patient well-being and treatment decision-making, and longstanding disparities in cancer outcomes, equity must be a guiding principle in strategies aimed at addressing financial toxicity in cancer patients.

This abstract is also being presented as Poster B024.

PR08 Higher expression of SATB2 gene in hepatocellular carcinoma of African American patients determines aggressiveness phenotypes than those in Caucasian Americans. S.K. Roy1, Y. Ma2, D.M. Danos1, S. Shankar3, L. Miele1, R.A. Scribner1, R.K. Srivastava1, 1Stanley S. Scott Cancer Center, Louisiana State University Health-New Orleans, School of Medicine, New Orleans, New Orleans, LA, 2Kansas City VA Medical Center, Kansas City, MO, 3Louisiana State University Health Sciences Center, New Orleans, LA, 4Louisiana State University Health, New Orleans, LA.

In the US, hepatocellular carcinoma (HCC) incidence has tripled over the past two decades. This trend indicates that social determinants, genetic and environmental factors are driving the epidemic at the population level. Furthermore, the disease has disproportionately affected minority and disadvantaged populations. SATB2 (special AT-rich binding protein-2), a transcription factor and epigenetic regulator, influences gene expression both by modulating chromatin architecture and by functioning as a transcriptional co-factor. SATB2 is highly expressed in embryonic stem cells and progenitor cells, whereas its expression is low or absent in human normal liver tissues. We have recently demonstrated that overexpression of SATB2 can transform normal epithelial cells to cancer stem-like cells in pancreatic, colorectal and breast cancer models, and the expression of SATB2 was...
significantly higher in cancer tissues compared to normal tissues. The purpose of this study was to examine the expression of SATB2 gene in HCC from AA and CA patients and assess its oncogenic potential by measuring cell viability, epithelial-mesenchymal transition (EMT), stem cell markers and pluripotency maintaining factors in cancer stem cells (CSCs). We compared the expression of SATB2 in primary hepatocytes, Hep3B (from AA), HepG2 (from CA) and HCC CSCs. Hep3B (higher), HepG2 (lower) and CSCs (highest) expressed SATB2 protein, whereas human primary normal hepatocytes did not express SATB2. Knockout of SATB2 in CSCs by Crisp/Cas9 technique significantly inhibited the expression of SATB2 gene, stem cell markers (CD24, CD44 and CD133), pluripotency maintaining factors (cMyc, KLF4, SOX2 and OCT4), and EMT compared to NTC control group. The expression of SATB2 was significantly higher in HCC tissues than adjacent normal controls. Furthermore, the expression of SATB2 was significantly higher in HCC tissues derived from AA compared to those in CA. These data suggest that SATB2 is an oncogenic factor and its expression, which is higher in in HCC tissues derived from AA, may explain the disparity in HCC outcomes among AA.

This abstract is also being presented as Poster B049.

**PR09 MicroRNA-1205 regulation of FRYL and aggressive prostate cancer in men of African ancestry.** Michelle K. Naidoo1, Fayola Levine1, Tamara Gillot1, Thahmina Ali1, Konstantinos Krampis1, Akintunde Olumuyi2, E.O. Olapade-Olaopaa3, Olusraunseun O. Ogunwobi1, 1Hunter College of the City University of New York, New York, NY, 2University College Hospital, Ibadan, Nigeria, 3University of Ibadan, Ibadan, Nigeria.

Men of African ancestry (moAA) have increased likelihood for development of aggressive prostate cancer (PCA). PCA deaths are often associated with castration-resistant prostate cancer (CRPC) due to maintenance of androgen receptor (AR) signaling in PCA cells following androgen ablation therapy (ADT). The 8q24 chromosomal locus is a highly susceptible PCA region that carries risk genetic variants associated with increased incidence of aggressive PCAs in moAA. This region also carries frequent amplifications of the PT1 gene, a nonprotein coding gene that encodes microRNA-1205 whose function was previously unknown. We examined miR-1205 mRNA expression in a cohort of normal (n=22), benign prostatic hyperplasia (n=42), and PCAs (n=26) histologically confirmed prostatic tissues obtained from prostatectomy or transrectal biopsies of moAA in Ibadan, Nigeria. A Tukey post hoc test revealed decreased miR-1205 expression in benign prostatic hyperplasia (4.61 ± 7.5) and PCAs (3.39 ± 3.53) when compared to normal tissues (6.55 ± 9.5), suggesting that miR-1205 may function as a tumor suppressor and loss of miR-1205 is characteristic of PCa in moAA. In vitro studies revealed decreased miR-1205 expression in CRPC (C4-2B and 22RV1) cells when compared to non-CRPC (LNCaP) cells, suggesting a role for miR-1205 in CRPC. Furthermore, we observed significant inhibition of tumor growth in NOD/SCID gamma mice implanted with C4-2B cells that were administered our novel synthetic analog of miR-1205 (patent pending) when compared to mice treated with a scramble oligonucleotide, indicating that miR-1205 can suppress CRPC tumors. We identified Fry-like (FRYL) as a putative target of miR-1205 using a miSVR computer algorithm and subsequently observed FRYL and AR overexpression in prostate tumors compared to normal tissue from fourteen PCa patients when whole-transcriptome analysis was performed using the Galaxy web platform. Moreover, FRYL was overexpressed in CRPC cells when compared with non-CRPC cells, further suggesting a role in CRPC development. C4-2B cells transfected with miR-1205 and the 3’ UTR of FRYL in a luciferase expressing vector revealed a significant decrease in luciferase activity when compared to control cells, indicating direct binding of miR-1205 to the 3’ UTR of FRYL. These observations strongly suggest that miR-1205 acts as a tumor suppressor by directly targeting FRYL mRNA in PCA cells. FRYL is predicted to regulate dendritic branching, leading to our hypothesis that FRYL plays a role in the development of PCa with neuroendocrine differentiation (PCND), a resulting mechanism due to ADT resistance. We observed that FRYL mRNA was overexpressed and miR-1205 was significantly underexpressed after fourteen days of inducing PCND in LNCaP cells, suggesting that miR-1205 regulation of FRYL mRNA may play a role in PCND development. Further understanding miR-1205 regulation of FRYL may provide novel insights into the molecular mechanisms of aggressive PCAs.

This abstract is also being presented as Poster B068.

**PR10 Fewer rural cancer patients treated with antineoplastic agents.** Cathy J. Bradley, Marcelo Coca Perraillon. University of Colorado, Aurora, CO.

Approximately one-fifth of the U.S. population lives in rural areas. Cancer in rural areas is characterized by late-stage diagnosis, care that is inconsistent with recommended guidelines, and higher mortality. To our knowledge, no research to date has examined the use of systemic agents in rural patients. We investigated whether rural patients...
are treated with newer, high-cost antineoplastic agents. We defined high-cost antineoplastic agents as those with costs above the median monthly cost in 2014 dollars, approximately $5,500 (https://www.mskcc.org/research-programs/health-policy-outcomes/cost-drugs). Most of these agents were approved in 2002 and later, while most lower-cost agents were approved prior to 2000. The most common high-cost agents identified in the study included oxaliplatin, bevacizumab, irinotecan, cetuximab, and panitumumab. Our study population comprised stage III and IV colorectal cancer patients identified in the 2011-2013 SEER-Medicare data. Rurality was defined as less urban and rural areas combined relative to large metropolitan areas. There were 4,383 patients who met our inclusion criteria. Of these, approximately 21% (N=901) lived in less urban and rural areas. Patients residing in rural areas were less likely to receive any antineoplastic treatment than their more urban counterparts (50% compared to 54%, p=0.01). Among those who received antineoplastic treatment, 71% of urban patients were prescribed newer, more costly agents relative to 68% of rural patients. Urban patients also had better survival, with a median survival time of 20 months compared to 16 months for rural patients (p<0.05). In a multivariate logistic regression, we examined the receipt of any antineoplastic treatment and the receipt of high-cost agents, controlling for patient sex, race, stage, and rurality. When controlling for these factors, rural patients were significantly less likely to receive any antineoplastic treatment (odds ratio = 0.808, p<0.01), although there was no significant difference in receipt of high-cost agents. Newer, high-cost antineoplastic agents are becoming the standard of care. Because peer exposure is associated with the likelihood of technology adoption, physicians in rural areas may not benefit from close peer relationships and thus may be reluctant to adopt new treatment approaches. Contextual factors such as poverty, social deprivation, health care resources, and distance traveled mediate outcomes in rural communities. In ongoing research, we are investigating the role each of these factors has in the use of new agents. Collectively understanding these determinants can shape policies and investments to reduce widening disparities.

This abstract is also being presented as Poster B077.

PR11 Racial differences in characteristics of early- vs. late-onset colorectal cancer among veterans. **Monalesia Chapman**, Christina D. Williams1, Thomas Ivey Redding1, Robin Bartlett1, Neeta Chawla1, Dawn Provenzale1, Michael J. Kelley1, 1University of North Carolina-Greensboro, Durham VA Healthcare System, Greensboro, NC, 2Durham VA Healthcare System, Duke University Department of Medicine, Durham, NC, 3Durham VA Healthcare System, Durham, NC, 4University of North Carolina-Greensboro, Durham, NC, 5VA Greater Los Angeles Healthcare System, Los Angeles, CA.

**Introduction:** Colorectal cancer (CRC) accounts for approximately 8% of annual cancer cases in the Veterans Health Administration. While CRC incidence is decreasing, evidence suggests that the incidence among the subset of patients diagnosed before the age of 50 is increasing. The purpose of this work is to compare the clinical and demographic characteristics of veterans with early-onset CRC (age at diagnosis <50; EOC) and late-onset CRC (age at diagnosis ≥50; LOC) and assess racial differences within both groups.

**Methods:** We conducted a retrospective analysis of national cohort data in the Veterans Affairs Central Cancer Registry on patients diagnosed with CRC between 2001 and 2011. Descriptive statistics (frequencies, medians) were used to compare characteristics among EOC and LOC patients and evaluate black-white differences within both groups of CRC patients.

**Results:** In this cohort of 31,435 patients, 3% (N=966) had EOC, and this proportion was consistent each year. Statistically significant differences between EOC and LOC were noted for race, stage, and tumor location (all p<0.0001). The black/white race distribution was 33%/64% in EOC and 17%/80% in LOC. For stage, 56% of EOC and 44% of LOC were stage III/IV. Regarding tumor location, 39% of EOC was rectum whereas 30% of LOC was rectum. 5-year overall survival (OS) was 58% in EOC and 50% in LOC (p<0.0001); however, no difference in CRC-specific survival was noted (72% vs 74%, p=.13). We also observed significant differences by race when comparing demographic and clinical characteristics within EOC and LOC. Race-specific results for EOC patients were as follows: Median age was 46 for both blacks and whites; the proportion of blacks diagnosed with Stage III/IV disease was 51% compared to 58% of whites (p=0.001); tumor location was rectum for 31% of blacks and 43% of whites (p=0.0006); and overall and CRC-specific survival rates were similar for blacks and whites. The following was observed among patients with LOC: Blacks were slightly younger than whites (median age 66 vs 69, respectively); stage III/IV disease was noted for 47% of blacks and 43% of whites (p<0.0001); 24% of blacks and 31% of whites had rectum tumor location (p=0.0001); and overall and CRC-specific survival rates were lower among blacks compared to whites.
PROFFERED ABSTRACTS

Conclusion: Although we did not find an increasing proportion of EOC over time, EOC was more common in blacks than whites and more common in the distal large bowel. EOC in blacks, however, was more commonly proximal, had less advanced stage at diagnosis but similar survival compared to whites. EOC has distinct clinical characteristics in blacks that may reflect differences in molecular etiology. Our findings emphasize the importance of distinguishing between EOC and LOC to better understand the unique characteristics of early-onset disease and how they might inform prevention and early detection efforts.

This abstract is also being presented as Poster C116.

PR12 CRC screening in rural community clinics using the fecal immunochemical test (FIT): Issues with repeat screening. Connie L. Arnold1, Terry C. Davis1, James Morris2, Peggy Murphy1, Glenn Mills1. Feist-Weiller Cancer Center and LSU Health Sciences Center, Shreveport, LA. 1LSU Health Sciences Center, Shreveport, LA.

Introduction: Colorectal cancer (CRC), the second leading cause of cancer death in the United States, can be significantly reduced if it is detected early. Although overall CRC screening rates have increased significantly, disparities persist among low-income individuals, adults with low literacy and those living in rural areas. These groups all have screening completion rates below 50%.

Objectives: To assess patient knowledge, beliefs, and self-efficacy about CRC screening and compare the effectiveness of two health literacy informed telephone follow-up strategies to improve annual screening over a three-year period with fecal immunochemical test (FIT) in rural community clinics.

Methods: A two-arm, randomized controlled trial is being implemented in four community clinics. Clinics reported CRC baseline screening rates of 3% to 5%. Eligible patients, age 50-75, were recruited at the clinic prior to a scheduled appointment. A research assistant (RA) conducted a baseline structured interview measuring CRC screening knowledge, beliefs, and self-efficacy. The RA then recommended screening and gave brief literacy and culturally appropriate education using a pamphlet (4th-grade level), the FIT kit with preaddressed envelope, simplified instructions (3rd-grade level) and a demonstration of how to use it. At four weeks patients who had not returned their kit received either 1) a personal follow-up call (PC) from a central prevention coordinator using motivational interviewing skills and reminding them to complete and mail FIT kits, or 2) an automated follow-up call (AC) using plain language and motivational messages encouraging patients to complete and mail the FIT. Outcomes include FIT completion after intervention, and again at 12 and 24 months.

Results: 620 patients not up-to-date were enrolled: 308/AC and 306/PC; 66% were African American, 55% women; 40% had limited literacy. During Year 1, 69% completed screening in AC arm versus 67% in PC arm. During Year 2, percentage screened decreased: 40% screened in AC arm and 37% in PC arm. Number of patients who needed at least one follow-up call increased: 74% in both arms needed at least 1 reminder call. Among those called, 19% in the AC arm completed their kit versus 15% in the PC arm. To date in Year 3, 32% screened in AC and 34% in PC.

Conclusions: Simplified instructions accompanied by a face-to-face demonstration of FIT, and use of “teach back” to confirm understanding with a follow-up call if needed, facilitated completion rates of FIT, particularly those with limited literacy. Providing FIT + literacy appropriate education at regularly scheduled clinic visit with follow-up call (if needed) increased CRC screening rates of low-income, rural patients. Sustaining annual screening with FIT is challenging. In year 2 < 40% completed FIT. Follow-up calls were essential. Only 1/4 completed FIT without phone prompt. Lower-cost automated call has proven to be just as effective as personal call in both years 1 and 2. FIT is only effective if completed annually.

This abstract is also being presented as Poster B099.

PR13 Geospatial analytics and sensitivity/specificity assessments to inform liver cancer prevention. Shannon M. Lynch1, Daniel Wiese1, Kristen Sorice1, Minhuyen Nguyen1, Evelyn Gonzalez1, Kevin Henry1. Fox Chase Cancer Center, Philadelphia, PA. 1Temple University, Philadelphia, PA.

Background: Liver cancer rates are rising, particularly in minority populations. Risk factors for liver cancer, such as alcohol/drug use, metabolic disorders, and viral hepatitis B/C (HBV/HCV), are generally modifiable through lifestyle interventions, vaccinations, and treatments. However, resources are often limited and strategies to prioritize geographic areas most in need of cancer prevention are needed. Recommendations exist to focus prevention efforts on groups with the highest rates of liver cancer, namely Hispanics, Blacks, and individuals born 1950-1959 who are at high risk for HCV. We compare the sensitivity/specificity
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of this approach to a dual approach that couples liver cancer disease cluster statistics with neighborhood-level demographic data to inform liver cancer prevention.

Methods: Pennsylvania (PA) Liver Cancer Registry data from 2007-2014 were linked to the 2010 U.S. Census data via a geocode at the census tract level with ArcGIS software. Using the space-time scan statistic in SaTScan and relative risk estimates from BayesX, we also identified high-risk clusters or geographic areas with significantly elevated rates of incident liver cancer, adjusted for age, gender, and diagnosis year. Analyses were conducted using elliptical spatial windows and Poisson models. Census tracts in the top 80th percentile for percentage of Hispanics, Blacks or those born between 1950-1959 were also identified. The sensitivity, specificity, and positive predictive value (PPV) of a census tract being located in a high-risk cluster and/or testing positive or negative for at least one of three neighborhood variables (higher % Black, % Hispanic, 1950-1959 birth cohort) were calculated.

Results: There were 9,460 cases of liver cancer diagnosed in PA. Five high-risk clusters were identified (relative risks ranged from 1.83-3.73, all p<0.05). Of 3,217 census tracts in PA, 412 were located in one of the 5 high-risk clusters, whereas 1,596 were positive for at least one of 3 neighborhood demographic variables. Within high-risk clusters, 365 census tracts also had a higher percentage of the birth cohort, Blacks or Hispanics. While sensitivity was relatively high (88.66%), specificity (56.1%) and PPV (22.8%; i.e., the chance a census tract with at least one demographic variable truly was located in a high-risk cluster) were low.

Conclusions: Coupling disease cluster statistics with neighborhood demographic data refines the identification of areas that carry a greater than expected burden of liver cancer and reduces intervention targets more than neighborhood demographics alone. However, additional analyses are needed to improve the sensitivity/specificity of this combined geospatial approach. Consideration of other patient and neighborhood level socioeconomic data is also being explored and will be presented to further inform the prioritization of liver cancer prevention efforts.

This abstract is also being presented as Poster C014.

PR14 Do Latinas with breast cancer who live in ethnic enclaves have better or worse survival? Analysis of cancer registry data from California and Texas. Salmah Shariff-Marco1, Scarlett Lin Gomez1, Alison Canchola1, Hannah Fullington2, Amy E. Hughes2, Sandi L. Pruitt2. 1University of California San Francisco, San Francisco, CA, 2University of Texas Southwestern Medical Center, Dallas, TX.

Introduction: Many Latinos live in ethnic enclaves—culturally distinct neighborhoods with high concentrations of individuals of the same ethnic origin, high linguistic isolation, a large share of recent immigrants, and ethnic specific businesses and resources. Prior studies on the association of enclave residence and cancer mortality were often limited to a single state and demonstrated mixed results. It is unclear whether the mixed results are due to widely varying measures and analytic methods, or true regional differences in enclave effects.

Methods: We conducted parallel analyses of California and Texas cancer registry data from adult (~18 years of age) Latinas diagnosed with invasive breast cancer from 1996 to 2005, with follow-up through 2014. Our key focus was to use the same measures and methods. We linked 2000 U.S. Census data to measure Latino enclaves and neighborhood socioeconomic status (nSES). We defined enclaves using an established multidimensional index of seven census tract measures (percent of residents who are Latino, foreign-born, recent immigrants, and linguistically isolated (general and of those who speak Spanish), with limited English proficiency (general and of those who speak Spanish) split into statewide quintiles. We fitted Cox proportional hazard models for all-cause and breast cancer specific mortality adjusted for year of diagnosis, patient age, birthplace (with multiple imputation), tumor stage, histology, grade, and size, and clustering by census tract. We explored interactions of enclave residence with nSES and patient birthplace.

Results: Among 40,716 Latinas, the majority (61.3% in CA, 70.5% in TX) lived in ethnic enclaves. Ethnic enclave residence was more common among foreign- vs U.S.-born Latinas (72.0% vs 52.3% in CA and 82.4% vs. 68.5% in TX). In fully adjusted models for both states, foreign- vs. US-born women were more likely to die from breast cancer and all causes. Living in an ethnic enclave and in neighborhoods with higher SES was independently associated with decreased mortality. Patterns were consistent in terms of direction and significance of associations across states for all-cause and breast cancer-specific mortality. Future analyses will further explore the statistically significant interactions (p<.05) observed between enclave residence, nSES, and patient birthplace.

Discussion: Applying the same methods across two states eliminated previously published inconsistent results about the association of enclave residence and mortality among
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Latinas with breast cancer. Future studies should consider pooling cancer registry data across states and using the same methods to better understand the true impact of ethnic enclave residence across the cancer continuum. Future studies should also focus on identifying the specific protective effects of enclave residence to inform interventions.

This abstract is also being presented as Poster C073.

PR15 Do segregated neighborhoods buffer the stressful effects of low coping among Black breast cancer survivors?

Jesse J. Plascak1, Laxmi Chavali1, Adana A.M. Llanos-Wilson1, Bonnie Qin1, Kitaw Demissie2, Chi-Chen Hong3, Elisa V. Bandera1, Rutgers, The State University of New Jersey, Piscataway, NJ, 2Roswell Park Cancer Institute, Buffalo, NY.

Black women diagnosed with breast cancer have worse outcomes compared to White women, and variation in social and psychosocial factors might play a role in this racial disparity. African American (AA) residential segregation is hypothesized to result from racial discrimination, economic inequality, and social network characteristics where the exchange of social capital influences individual mobility patterns. Accordingly, whether segregation exerts a negative or positive influence on psychosocial outcomes, such as perceived stress, might depend on additional intra- (e.g., coping) and interpersonal (e.g., social support) social characteristics. This study investigated whether AA residential segregation, coping and social support were associated with perceived stress among Black breast cancer survivors. Individual-level data were from the Women’s Circle of Health Follow-up Study, an ongoing breast cancer survivor cohort of Black women residing in New Jersey (NJ). Perceived stress (Cohen’s Perceived Stress Scale, 10-item PSS-10), coping (Brief Resilient Coping, 4-item), and social support (Functional Assessment of Chronic Illness Therapy-Breast cancer, 7-item) were measured in follow-up questionnaires (average time since cancer diagnosis = 22.6 months). AA Gini Indices of segregation (0-100) were linked to participants’ zip code of residence at baseline questionnaire (average time since cancer diagnosis = 13.0 months). Potential demographic, socioeconomic, and health behavior confounders were from the baseline questionnaire. Multilevel linear regression models were used to estimate the relationships between segregation, coping, social support and perceived stress. The follow-up questionnaire was completed by 533 breast cancer survivors, 530 of whom had complete PSS-10 data (sum score mean=15.1, standard deviation [SD]=7.0). The typical participant lived in highly segregated zip codes (median=70.7, range=23.8-92.9). The relationship between coping and perceived stress depended on zip code level AA segregation: among lower segregation zip codes (Gini=62) PSS-10 increased 1.6 points (95% CI: 0.9- 2.3, P <0.001) for each SD decrease in coping ability, but among higher segregation zip codes (Gini=78) PSS-10 increased only 0.7 points (95% CI: 0.02-1.4, P=0.04) for each SD decrease in coping ability. Moreover, adjustment for social support decreased the magnitude of the associations between coping and PSS-10. AA segregation, coping, and social support might act together to influence perceived stress of Black breast cancer survivors in NJ.

This abstract is also being presented as Poster C067.

PR16 Investigating the determinants of racial disparities in ovarian cancer incidence: The OCWAA consortium.

Veronica Wendy Setiawan1, Lauren Peres2, Lynn Rosenberg3, Traci Bethea1, Patricia Moorman4, Evan Myers2, Anna Wu1, Charlotte Joslin5, Elisa Bandera1, Deanna Chyn1, Fabian Camacho2, Joellen Schildkraut2, 1University of Southern California, Los Angeles, CA, 2University of Virginia, Charlottesville, VA, 3Boston University, Boston, MA, 4Duke University Medical Center, Durham, NC, 5Duke University School of Medicine, Durham, NC, 6University of Illinois at Chicago, Chicago, IL, 7Rutgers Cancer Institute of New Jersey, New Brunswick, NJ.

Background: The Ovarian Cancer in Women of African Ancestry consortium (OCWAA) was established to address racial disparities in epithelial ovarian cancer (EOC) risk and survival. Specifically, we aim to estimate the degrees to which racial differences in incidence and survival of EOC between African-American (AA) and white women are attributable to differences in the prevalence and timing of risk factors and in the magnitude of risk associations.

Methods: OCWAA includes four case-control studies (the African-American Cancer Epidemiology Study, the North Carolina Ovarian Cancer Study, the Los Angeles County Ovarian Cancer Study, and the Cook County Case-Control Study) and two nested case-control studies within cohort studies (the Black Women’s Health Study and the Multiethnic Study). A centralized core database consisting of demographic and epidemiologic risk factors for borderline and invasive EOC, tumor characteristics and prognostic factors has been created, and the majority of data has been harmonized across studies. A histotype classification scheme was uniformly applied using a combination of morphology and grade information to best represent the most recent diagnostic guidelines for ovarian cancer as detailed in...
the 2014 WHO Classification of Tumors of the Female Reproductive System.

Results: A total of 1,169/2,324 AA cases and controls and 2,963/3,934 white cases and controls have been included in the OCWAA database to date. Approximately 83% of cases are invasive EOC, 15% are borderline tumors, and 2% are missing tumor behavior information. Among the invasive EOC cases, 61% are high-grade serous carcinomas. The average age at diagnosis of EOC cases is the same in AA and white women (57.2 years), and the year of diagnosis ranges from 1991 to 2016. The following risk factors showed marked prevalence differences in AA and white controls: obesity (46.3% vs 19.2%), breastfeeding (42.7% vs 54.3%), tubal ligation (31.1% vs 17.9%), postmenopausal hormone use (23.8% vs 40.8%), nulliparity (14.9% vs 19.2%), at least a college degree (35.5% vs 56.4%), and menarche age <13 (51.6% vs 47.4%; p<.01); p<.0001 for all except where noted. In preliminary EOC risk analyses, we observed positive associations with body mass index and nulliparity and inverse associations with tubal ligation, oral contraceptive use and breastfeeding in both AA and white women. The harmonization of other factors including duration, frequency and timing of key risk factors, physical activity, comorbidities, medication use, and treatment information is ongoing.

Conclusions: OCWAA represents the largest study investigating disparities in ovarian cancer risk and survival between AA and white women. This consortium is uniquely positioned to study the epidemiology of ovarian cancer in AA, focusing on the role of lifestyle and behavioral characteristics, reproductive risk factors, treatment and other prognostic factors in explaining racial differences in ovarian cancer incidence and survival.

This abstract is also being presented as Poster C083.

PR17 The mediating role of unmet social support needs on the racial/ethnic disparity in psychosocial stress among breast cancer patients. Carola T. Sánchez Díaz, Garth H. Rauscher, Yamile Molina. University of Illinois at Chicago, Chicago, IL.

Background: A breast cancer diagnosis is a stressful life event that can reduce quality of life and put a patient at increased risk for additional health problems and may also affect survivorship more generally. Greater levels of psychosocial stress (PSS) have been reported among non-Latina (nL) Black and Latina women when compared to nL White patients, and the absence of adequate social support among cancer patients has been associated with greater psychosocial stress. The goal of these analyses was to examine whether there existed a racial/ethnic disparity in three validated measures of psychosocial stress and how racial disparities are explained by distal mechanisms (i.e., SES) and proximal mechanisms (i.e., unmet social support needs) among recently diagnosed urban breast cancer patients in the Breast Cancer Care in Chicago (BCCC) study (2005-2008).

Methods: The BCCC was a cross-sectional study of 989 recently diagnosed breast cancer patients, including 397 non-Latina White (white), 411 non-Latina Black (black), and 181 Latina patients diagnosed with a first primary breast cancer (in situ or invasive) aged 30-79. Income, education and tract level disadvantage and affluence were summed to create a standardized socioeconomic status (SES) score. Low SES was defined as less than one standard deviation below the sample mean. Three measures of PSS were defined based on the Cohen perceived stress subscale (inter-item reliability or alpha = 0.74), UCLA felt loneliness scale (alpha=0.79), and the Cockburn psychological consequences scale (alpha=0.93). High PSS was defined as >1 standard deviation above the mean for each. Unmet emotional, spiritual, informational, financial, and practical support were based on questions regarding support needed and received. We conducted structural equations models in M-Plus in order to disentangle the separate mediating roles of SES and unmet social support needs on disparities in PSS.

Results: Black and Latina patients reported greater levels of loneliness (32% vs. 23% vs. 16%, p<0.001), stress (23% and 21% vs. 12%, p=0.001) and psychological consequences (24% and 23% vs. 12%, p<0.001) compared to white patients. Black and Latina patients also reported greater levels of unmet emotional, informational, financial and practical need (p=0.001 for all). In mediation models, all of the disparity in the three PSS outcomes could be explained by SES, with a substantial portion of the mediating influence of SES being further transmitted by unmet financial and practical support needs. Neither tumor nor treatment characteristics appeared to mediate the disparity in PSS.

Conclusions: A substantial disparity in distress among breast cancer patients exists and underlying inequities in SES appear to be a “root” cause of the PSS disparity, as opposed to being driven by tumor and treatment differences. Results suggest that providing equitable financial (e.g., health insurance coverage) and practical (e.g., navigation) resources could narrow the racial/ethnic gap in PSS.

This abstract is also being presented as Poster C094.
PR18 Prognostic role of androgen receptor in triple-negative breast cancer: A global multi-institutional experience. Shristi Bhattarai, Sergey Klimgov, Karuna Mittal, Uma Krishnamurthi, Xiaowen Sun, Deepika Wali, Ceyda Sonmez Wetherill, Ansa Riaz, Mohammad A. Ateskandary, Andrew R. Green, Ian O. Ellis, Meenakshi Gupta, Lauren E. McCullough, Upender Manne, Johnson Agboola, Brett Baskovich, Emil A. Janssen, Grace Callagy, Anurag Mehta, Tanuja Shet, Rakha A. Emaad, Padmashree C.G. Rida, Ritu Aneja, Department of Biology, Georgia State University, Atlanta, GA, Department of Pathology, Emory University School of Medicine, Atlanta, GA, Division of Cancer and Stem Cells, School of Medicine, University of Nottingham and Nottingham University Hospitals NHS Trust, City Hospital Campus, Nottingham, United Kingdom, Department of Pathology, West Georgia Medical Center, LaGrange, GA, Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA, University of Alabama at Birmingham, Birmingham, AL, Olabisi Onabango University, Sagamu, Nigeria, University of South Alabama College of Medicine, Mobile, AL, Stavanger University Hospital, Stavanger, Norway, NUI Galway, Clinical Science Institute, Galway, Ireland, Rajiv Gandhi Cancer Institute and Research Centre, Delhi, India, Tata Memorial Hospital, Mumbai, India.

Background: African American (AA) triple-negative breast cancer (TNBC) patients experience worse clinical outcomes and exhibit 40% higher mortality rate than their European Americans (EAs) counterparts. There are currently no distinctions in inherent tumor biology between the ethnically distinct TNBC patients that serve as risk-predictive markers allowing new tailored treatments. Recently, androgen receptor (AR) has emerged as a new target for treating TNBC. However, the prognostic value of AR in TNBC remains controversial. To reconcile conflicting reports about the impact of AR loss on prognosis of TNBC and uncover the molecular pathways that may underlie the racial disparity in outcomes among AR-negative TNBCs, we determined the prognostic value of AR in diverse TNBC cohorts. Since loss of AR is associated with worse clinical outcome and African and AA women are more prone to aggressive disease course, we hypothesized that AR loss may underlie the global disparate burden in TNBC.

Methods: We evaluated AR expression in well-annotated formalin-fixed, paraffin-embedded TNBC resection samples (n=1351) obtained from multiple hospitals from US, UK, Norway, Ireland, Nigeria and India. Samples with ≥1% nuclei staining positive for AR were deemed to be AR-positive. Associations between AR status, clinicopathologic variables and overall survival (OS) were evaluated. We performed gene set enrichment analysis for AR low and high group in AA and EA TNBCs. In vitro experiments were performed to examine whether AR loss increased the metastatic potential of TNBC cells.

Results: We observed a significant difference in AR expression among EA and AA TNBCs (p=0.02) with AR loss associated with women of African ancestry (>90%, p<0.05). AR loss was significantly associated with poor OS in TNBC patients from US cohort (p=0.0324; n=316 for AR-negative, n=104 for AR-positive) and Nigerian cohort (p=0.0251; AR-negative=164, AR-positive=16). AR-negative was associated with poor OS in adjuvant-treated high Ki67 (>14%) (HR=1.72; p=0.095) AA TNBC (n=98) when compared to EA TNBCs (n=80). Furthermore, AR status retained its significant prognostic value (HR=1.549, p=0.036) after controlling for age, grade, Ki67, race and chemotherapy status. Gene set enrichment analysis revealed that Wnt/β-catenin signaling was the top-enriched gene ontology in the AR-low TNBC subgroup. Moreover, β-catenin protein levels are higher in AA AR-low TNBCs compared with AA AR-high TNBCs (p<0.05), suggesting Wnt signaling upregulation in AA women with AR-negative TNBC. In TNBC cell lines, loss of AR was significantly associated with higher cell proliferation, migration and invasion (p<0.05).

Conclusion: Our study suggests a striking association of AR loss in TNBC with women of African ancestry. Our data offer compelling evidence that oncogenic Wnt/β-catenin signaling may link AR loss to more aggressive disease course and represent actionable biology in AA AR-negative TNBCs for whom no targeted treatments are currently on the horizon.

This abstract is also being presented as Poster C102.
Quitting smoking after a cancer diagnosis leads to better outcomes for cancer patients, including lower risk for a second primary cancer and increased survival. Yet few cancer patients receive smoking cessation services during their oncology health care visits, and disparities in the receipt of such smoking cessation services exist. As part of the Cancer Moonshot, the National Cancer Institute (NCI) has dedicated funding to expand and enhance smoking cessation services at NCI-Designated Cancer Centers for all patients who smoke. We report on the baseline characteristics of tobacco treatment programs (TTPs) at the 22 Cancer Centers initially funded through the Cancer Center Cessation Initiative (C3I), for six months before funding was awarded. Characteristics measured included consistency of smoking status documentation in electronic health records (EHR), types of cessation services offered, and referral methods used. TTP reach (the percentage of smokers who engaged in any type of TTP) was calculated overall and by patient demographics for Centers providing aggregate patient data (n=11). Data were collected in 2018. Among the 22 funded Centers, 40.9% consistently documented smoking status using the EHR. At least one type of cessation service was offered at 77.3% of Centers. Quitline referral was the most frequently cited service (50%), followed by in-person TTPs (45.5%). One Center offered text and web-based programs. Only 31.8% of centers used the EHR to refer patients to TTPs; among those, one used an opt-out referral method. TTP reach on average was 22.2%, but varied by Center, ranging from 0.5% to 79.7%. About 27% of Black, 21% of White, 20.3% of Hispanic and 12.2% of Asian patients who smoked received cessation services. Less than 8% of patients aged 18-24 received cessation services compared with those aged 25-44 (18.3%), 45-64 (24.7%) and 65+ (21.9%). A slightly higher percentage of female patients (23%) received cessation services compared with males (21.7%). The majority of C3I funded Cancer Centers offered some type of TTP in the prefunding period. However, on average only 22% of smokers were reached by a TTP, and reach varied by race, age, and gender of smokers. The Cancer Center Cessation Initiative provides an opportunity for Cancer Centers to improve the reach and effectiveness of smoking cessation services for cancer patients who smoke, and reduce disparities in the receipt of cessation services by providing financial and technical support for Centers to build and implement comprehensive evidence-based smoking cessation programs.

Method: Four Community Review Boards (CRB) (n=38) were conducted in collaboration with the Translational Research Institute (TRI) at the University of Arkansas for Medical Sciences. CRBs are expert community panels who provide feedback on research studies. Our study team worked with TRI’s Community Engagement (CE) Core and the CE and Dissemination Core of the Arkansas Center for Health Disparities to recruit African American women smokers aged 18-50 years to obtain input on our study methods. CRBs were co-facilitated by staff from April to June 2018 in rural AR counties. Staff obtained feedback on the collection of biologic samples; surveys; recruitment and retention; use of the tobacco Quitline; incentives; project name and logo; and volunteer board development.

Results: CRB I experts felt comfortable with research staff collecting saliva samples from children in the home, but expressed concerns about providing blood or urine samples. Some experts preferred paper, while others preferred short computer-based surveys. None of the experts was interested in using the tobacco Quitline. CRB II experts expressed the need for community development activities (e.g., spa day, support groups) and monetary and nonmonetary incentives such as the nicotine patch. Experts emphasized the need
to engage community women in recruitment efforts due to distrust of outsiders. CRB III experts suggested that we incentivize a volunteer board to assist with recruitment. Experts in CRB III and IV selected recruitment messages and delivery channels (e.g., flyers, word of mouth, Facebook). Experts prioritized recruitment activities brainstormed in CRB II, described how to organize the activities, and selected incentives (e.g., Walmart and Dollar General gift cards) and promotional items (e.g., tee-shirts). Experts in CRB IV identified a project name and logo (Families Rising to Enforce Smokefree Homes). An unintended consequence was that women participated in the CRBs because they wanted to quit smoking.

Conclusions: CRBs are often a one-time event conducted by researchers seeking expert community opinions. Our repeated sessions conducted with TRI increased our knowledge of community needs, culture, and how to adapt our study methods to address community needs.

A003 Group tobacco education at short- and long-term substance use disorder programs. Christopher S. Lathan, Rebecca K. Jackson. Dana-Farber Cancer Institute, Boston, MA.

Background: The use of tobacco remains the main cause of preventable disease and death in the United States, with 37.8 million American adults still smoking in 2016. Dana-Farber Cancer Institute’s Cancer Care Equity Program (CCEP) hired a Community Health Educator (CHE) to implement a tobacco education program in conjunction with CCEP’s lung cancer screenings and smoking cessation counseling. This entailed completing Tobacco Treatment Specialist Training and developing an education curriculum in English and Spanish. In May 2016, CCEP met with a Federally Qualified Health Center (FQHC) in Roxbury, MA, to begin integrating tobacco education for some of their behavioral health programs focused on Substance Use Disorder (SUD). Despite a 5% reduction in the number of smokers since 2005, the rate of active smokers among SUD patients remains higher than that of the general adult population. From 2009 to 2011, adults with SUD represented 8.7% of the population yet used 18.2% of all cigarettes smoked by adults.

Methods: Information on the health impacts of tobacco when combined with alcohol and other substances, as well as the impact of tobacco on long-term abstinence, was added to the curriculum to reflect the needs of SUD patients. Two additional local cessation counseling programs were added to reflect where the patients received medical treatment. A bilingual flyer for the FQHC’s smoking cessation program was distributed to staff and during the group to facilitate referrals. The weekly groups began at the two-week Acute Treatment Services (ATS) program and expanded monthly to four long-term residential recovery programs.

Results: A total of 67 groups were conducted reaching 1,074 individuals. The majority (50) of the groups were conducted at ATS, which serves a patient population not limited to Boston, limiting the ability of the CHE to provide referrals to local cessation counseling programs. However, nicotine replacement therapy medications were available for interested patients. In the residential programs, the patients had established providers, allowing for more referrals to cessation counseling. Preliminary results indicate that although most individuals were familiar with and had used pharmacotherapy in the past, few had considered cognitive and behavioral treatment strategies to quit smoking. These include precessation treatment options, self-monitoring of smoking behaviors, self-management skills, urge coping strategies, maximizing support for nonsmoking, relapse prevention strategies, dealing with slips, and lifestyle balance.

Conclusion: Despite the high number of patients with knowledge of the health effects of smoking and pharmacotherapy options, the groups illustrated a need for cognitive and behavioral treatment strategies among SUD treatment patients. Additionally, further evaluation in the form of a post-survey is needed to assess attitudes about the curriculum content and its effectiveness, given the challenges in documenting referrals to cessation counseling services.

A004 Factors associated with dual use of electronic cigarettes among adult American Indians who smoke: A Cherokee Nation cohort study. Dorothy A. Rhoades, Ashley L. Comford, Justin D. Dvorak, Kai Ding, Leslie Driskill, Michelle Hopkins, Theodore L. Wagener, Paul Spicer, Mark P. Doescher. 1Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 2Epidemiology, Cherokee Nation, Tahlequah, OK, 3College of Public Health, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 4University of Oklahoma Health Sciences Center, Oklahoma City, OK, 5Oklahoma Tobacco Research Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 6University of Oklahoma, Norman, OK, USA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PRO1) of the Conference Proceedings.
**A005 “Nobody will tell you. You’ve got to ask!” Race-based differences in patient-provider communication efficacy and social support between Black and White women with breast cancer.** Janeane N. Anderson, Ryan Blue, J. Carolyn Graff, Rebecca A. Krukowski, Ilana Graetz. University of Tennessee Health Science Center, Memphis, TN.

**Purpose:** The purpose of this qualitative research study was to explore patient perceptions of patient-centered communication from oncology care providers among Black and White women taking an adjuvant endocrine therapy (AET) medication to treat breast cancer.

**Methods:** Four 90-minute focus groups were conducted from December 2017 to January 2018 in Memphis, TN, a Mid-South region of the United States with significant Black-White breast cancer mortality disparities. Focus groups were stratified by race (Black and White) and patient length on AET (i.e., < 6 month AET use or > 6 month AET use) (N=28). They were moderated by a race-concordant moderator, using a semistructured interview guide, and audio recorded, transcribed verbatim, coded according to conventions of value-based coding, and analyzed by emergent themes. Participants were compensated with a notebook and $40 merchant gift card. Results in our study, race-based differences in participants’ perceptions of information provision and patient-centered patient-provider communication emerged. Black women were more likely than White women to report being proactive and assertive in requesting information related to AETs. Yet, Black women were less likely than White women to report having their informational needs met by providers, namely treatment length, AET symptom management, and effects of AET on pre-existing chronic conditions. One Black participant said, “Nobody will tell you about it [her lab reports]. You’ve got to ask! If you don’t, you won’t get any answers.” White women in our study were more likely to report receiving social support from health care providers and praise longstanding relationships. Conversely, Black women in our study shared personal stories of disempowered, paternalistic interactions with providers and frequently mentioned the importance of changing providers to increase their comfort. As such, they were more likely than White women to report relying on their faith in God and nonmedical social support networks to manage symptoms and adhere to prescribed AET regimens. In addition, unlike White women in our sample, Black women said they had no problem discussing sensitive topics, like sexual dysfunction and menopause, with providers but believed those discussions made their providers feel uncomfortable.

**Conclusion:** Race-based differences in patient-provider communication may contribute to unmet informational and social support needs among Black women with breast cancer during the AET phase. Findings from our study suggest that Black women, compared to White women, experience poorer patient-provider communication and patient-centered cancer care.

**Implications:** Study results have implications for cancer care in diverse clinical settings. Communication skills training programs should include cultural competency curricula and help oncologists identify and address social support challenges facing Black female patients during the adjuvant phase of breast cancer treatment.

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**A006 Can expert second opinions reduce treatment disparities for African American breast cancer patients? An exploratory study.** Brittany Campbell1, Marion Harris2, Hope Rugo1, Galen Joseph1, Rena Pasick1. 1University of California, San Francisco, San Francisco, CA, 2Steps to Empowerment, Redwood City, CA.

**Purpose:** The excess breast cancer mortality among African Americans is well documented, and insufficient treatment quality in low-resource settings is a key cause. The second opinion could connect patients with the best available medical knowledge. We explored the extent to which treatment plans can be improved through consultations at NCI-designated Comprehensive Cancer Centers (CCC) that deliver the latest treatments, and to describe the experience of patients and consulting clinicians.

**Methods:** Eligible patients, those who self-identify as African American and have concerns about breast cancer, were recruited from communities and clinics. The research grant covered the cost of consultations. Ethnographic methods (audio-recorded observations and in-depth interviews) were used to ascertain consultation impacts. Data sources were transcripts from consultations; post-consult patient interviews, once following the consultation and again after treatment decisions were made; and one clinician interview per consultation. Standard grounded theory analytic methods were used.

**Results:** A total of 17 consultations were conducted with 14 female patients ages 32-71. Treating health care institutions were public hospitals, an integrated health care delivery system, an academic medical center, private not-for-profit community hospitals, and a private cancer center. Patients sought consultations for concerns such as the possibility that a...
breast change was cancer, diagnosis of lobular carcinoma in situ (LCIS), treatment plans for invasive breast cancers at every stage, management of metastases, and prevention of recurrence. Some changes were recommended in every case, from simple routine procedures to major transformations. For example:

• An LCIS patient was advised to start an aromatase inhibitor, have yearly mammograms and MRIs, and to change her diet.

• A patient with advanced disease was advised to add CDK 4/6 inhibitor to her treatment.

• Whether and how to administer complex intrathecal chemotherapy (injection into the space between the thin layers of tissue that cover the brain and spinal cord) was discussed for a young patient with brain metastases.

• A clinical trial and genetic testing were recommended to a Stage IV breast cancer patient.

Overall consulting doctors’ proposals were adopted. Patients learned about their cancer, the benefits and limitations of their current treatment, and about clinical trials. They appreciated confirmation that they were receiving quality care or recommended changes. CCC clinicians were eager to help patients with the greatest needs.

Conclusions: Second opinion consultations can open communication channels between leading cancer experts and oncologists in low-resource settings, increasing prospects for equal treatment.

A007 Disparities in cancer clinical trial participation: The influences of race and social support among cancer survivors. Dexter L. Cooper, Desiree Rivers, Natalie D. Hernandez, Monica Harris, Lee Caplan, Lawrence McKinney, Brian M. Rivers. Morehouse School of Medicine, Atlanta, GA.

Background: Cancer clinical trials (CCTs) are essential to developing effective cancer treatments; however, there is a disparity in the number of Black CCT participants. Studies have found that Black cancer survivors’ responses to some cancer treatments are less than ideal compared to their White counterparts. With less than 3% of eligible Blacks participating in CCTs nationwide, it is difficult to evaluate the effectiveness of cancer treatments for this group. Social support (SS), among other factors, influence survivors’ decisions about participating in CCTs. Though survivors make the final decision to participate in a CCT, the input from family and friends is valuable to their decision-making process. The purpose of this study is to examine 1) survivors’ awareness about CCTs via discussion with a provider; 2) CCT participation by race; and 3) the effect of SS in discussion about CCTs with a provider on CCT participation.

Methods: This study used constructs based on the Social Ecological Model at the individual, interpersonal, and organizational levels. We merged cohort data from the Health Information National Trends Survey for years 2012, 2014, and 2016. The study included 1,340 cancer survivors who self-identified as White or Black and were at least 18 years of age. Chi-square and binomial logistic regression analyses examined the associations between SS and CCT discussion with a provider and CCT participation.

Results: The sample was mostly White (85.7%), female (59.0%), and married/living as married (62.5%), with a mean age of 65.83 (SD=14.751). Most of the sample had emotional support (87.5%) and instrumental support (tangible help) (77.9%). Only 9.3% of the sample discussed CCT as a treatment option, and 4% participated in a CCT. Bivariate analyses showed that survivors were more likely to have discussed CCT with their provider if they were retired (p=0.04), Black (p<0.001), and received a treatment summary (p< 0.001). Survivors were more likely to participate in a CCT if their employment status was disabled (p=0.012), they were Black (p=0.002), and they discussed CCT as a treatment option (p< 0.001). Binomial logistic regression analyses showed that survivors who were most likely to have discussed CCT as a treatment option were Black (p=0.01), had instrumental support (p=0.05), and participated in a CCT (p< 0.001) when controlling for sociodemographic and health-related variables. Survivors were more likely to have participated in a CCT if they were retired (p=0.04) and discussed CCT as a treatment option (p< 0.001).

Conclusion: Findings indicate that Black cancer survivors have discussions about CCTs with providers if returned, received a treatment summary, had instrumental support, were disabled and discussed CCT as a treatment option; however, they are not more likely to participate in CCTs. Further research to determine factors that affect the discussion about CCT, CCT participation, and the direction SS drives CCT participation among Black cancer survivors is warranted.
A008 Barriers and facilitator to minorities’ participation in cancer clinical trials: Perspectives from a safety-net hospital. Brian M. Rivers1, Monica Harris2, Dexter L. Cooper1, Nedra Lisovicz1, Raegan Durant2, Natalie D. Hernandez1, Desiree Rivers1, Lawrence McKinney1, Bria Carmichael1, Sarah B. Rutland2, Ainny Shamim1, 1Morehouse School of Medicine, Atlanta, GA, 2University of Alabama at Birmingham, Birmingham, AL.

Introduction: Cancer clinical trials (CCTs) are vital to clinical oncology research, in that they provide a foundation for the development and implementation of effective cancer therapies. However, there is a disparity in CCT participation given that only 2.7% of all CCT participants in the U.S. are African-American (AA). Grady Memorial Hospital in Atlanta, Georgia, the setting for this study, is a safety-net hospital with over 80% of its patients on Medicare, Medicaid, or uninsured. The objective of this two-phase pilot study is to utilize a multilevel, qualitative approach to assess the clinical and nonclinical facilitators and barriers to AA participation in CCTs (Phase I) and develop and pilot a multilevel intervention (Phase II).

Methods: Study participants were recruited from a cancer center at a safety-net hospital in Atlanta, GA. Twenty key informant interviews were conducted with key stakeholders at the safety-net hospital and 2 focus groups with AA cancer survivors. Interview guides were adapted from the NIH-funded EMPACT study. The interviews and focus groups were recorded on digital devices upon which the data was transcribed and subsequently analyzed using NVIVO 11 software.

Results: The interview transcripts were analyzed using a combination of hand coding and NVIVO 11 software. Content analysis was conducted using an immersion/crystallizing analysis plan. Common themes regarding Barriers and Facilitators within the context of Institution-level, Participant-level, System-level, and Trial-level will be presented.

Conclusion: These findings will assist in the development and testing of culturally appropriate resources and interventions to increase AA participation in CCTs.

A009 Validation of an instrument to measure health professionals’ health literacy competence. Lenna Dawkins-Moultin1, Lisako McKyer2. 1City of Hope Comprehensive Cancer Center, Duarte, CA. 2Texas A&M Health Science Center, College Station, TX.

Introduction: Health literacy (HL) has been identified as a significant predictor of outcomes across the health continuum, including cancer care. As a result it is recommended that all health professionals receive health literacy training. Some institutions have begun integrating health literacy into training programs, but there is a dearth of reliable assessment tools to measure learners’ knowledge. Only one validated instrument (Health Literacy Knowledge and Experience Scale (HL-KES)) exists that specifically assess health professionals’ health literacy competence, but it was validated for use among nurses. The purpose of this study was to evaluate the reliability and validity of the HL-KES as a suitable measure for assessing the HL knowledge and experience of health promotion professionals.

Methods: Advanced (junior and senior) students (n=250) enrolled in bachelor-level health promotion programs in three large public universities in Texas completed the 29-item HL-KES. Exploratory and confirmatory factor analyses were conducted to test the factor structure. Reliability estimates of the overall scale and subscales were assessed using the item covariance method with coefficient alpha (α).

Results: The analyses identified three factors that accounted for 62% of the total variance. Twelve items loaded on factor 1 (Knowledge of HL challenges), four items loaded on factor 2 (knowledge of HL assessment strategies), and three items loaded on factor 3 (knowledge of HL principles for written healthcare materials). Results from the test of internal consistency indicated the HL-KES had acceptable reliability for the overall knowledge scale (Cronbach’s alpha = 0.77). The sub-scales had Cronbach’s alphas ranging from .31 to .52.

Conclusion: The results suggest the HLKES is a reliable instrument for assessing health promotion professionals’ health literacy knowledge. As a whole, the Cronbach’s alpha for the instrument falls within the acceptable range (.65 - .90). The subscales, however, have low reliability coefficients. Cronbach’s alpha is a function of test length and inter-item correlation and a couple of subscales had just a few items. Reduction in the number of items no doubt attenuated the internal consistency.

A010 Primary prevention across the life course: Findings from the young women’s breast cancer and media study. Ann Carroll Klassen1, Udara Perera1, Suzanne Grossman1, Ana Martinez-Donate1, Augusta Villanueva1, Zujeil Flores1, Amy Leader2, HeeSoon Juon1. 1Drexel University Dornsife School of Public Health, Philadelphia, PA, 2Sidney Kimmel Cancer Center at Thomas Jefferson University, Philadelphia, PA.
Introduction: Breast cancer is typically seen as a disease of mid-life, but growing evidence supports primary prevention throughout women’s lives. Little is known about the salience of breast cancer prevention messages for younger women, especially those at risk for breast cancer disparities.

Description: Our multiphase exploratory project first analyzed a purposive sample of news and popular media messages on breast cancer aimed at young adults. We then used these mainstream and tailored media examples in 7 focus groups with Philadelphia-area African-American, Latina, Asian-American, and sexual minority women age 21-30. Identity-concordant moderators explored knowledge, attitudes, and practices regarding health in general and breast cancer specifically, and media credibility and usage patterns. Then, guided discussion of breast cancer-related media examples was used to explore audience interpretation and response to messaging. Responses to a brief structured survey and transcribed audio-recordings of focus group discussions were analyzed.

Findings: Participants had diverse levels of socioeconomic and health-related resources: 40% were born outside of the U.S., 37% were uninsured, and 37% had < high school education. Most used social media (i.e., 86% Facebook, 71% Instagram), 83% read on-line news at least weekly, and 63% had searched on-line for cancer information. When asked about cancer prevention across the life course, many young women expressed limitations on ideal health behaviors at their current life stage, due to economic constraints or stressors related to school, job or family. Respondents had little knowledge of evidence supporting risk-reducing behaviors, such as breast feeding, diet and physical activity, or limiting alcohol. Most found both mainstream and culturally tailored messages about breast cancer new and compelling; however, some challenged group-specific risk information or saw culturally tailored messages as geared to older, less acculturated women. Although young women recognized the importance of risk reduction, most felt that behavior change would be more feasible, and more important, when they were older.

Conclusions: Young women of all backgrounds and levels of access to information are not well informed about primary prevention of breast cancer. Tailored information has salience but may also need to consider generational and life-stage effects. Planning for health behavior change during young adult transitional stages appears highly salient, but must consider life roles, which widely differ by SES and culture.

A011 Opportunities for connection: A scoping review of telemedicine interventions in colorectal cancer screening in rural and nonrural settings. Chanelle Y. Chua, Carolyn Stoll, Julia Maki, Graham Colditz, Aimee James. Washington University School of Medicine, St. Louis, MO.

Introduction: The relative dearth of financial and human resources in rural areas complicates the delivery of timely medical expertise and treatment to its inhabitants. Travel distances between patients and their providers pose transportation barriers that contribute to low colorectal cancer screening rates in rural areas. Increasing applications of telemedicine technologies in health care may reduce or mitigate problems associated with transportation and insufficient availability of local providers. The objective of this study was to conduct a scoping review to compare types of telemedicine interventions for colorectal cancer screening in rural areas to those that have been studied more broadly, evaluate the quality of existing evidence, and suggest opportune areas for further investigation and application.

Methods: Searches were conducted in Ovid Medline, EMBASE, and Cochrane databases with the guidance of a librarian. We included peer-reviewed full text articles in English and Spanish about telemedicine interventions in CRC screening. Telemedicine interventions for CRC screening were operationally defined as the use of telephone and internet-based technologies to aid patient decision making, reduce transportation barriers, and circumvent lack of local human resources from the first moment of screening awareness through cancer diagnosis. We did not exclude articles based on study design type. Risk of bias was assessed through measures including randomization, blinding, and incomplete outcome reporting. Quality was defined by factors such as risk of bias and representativeness of sampled populations.

Results: Of 2223 non-duplicate studies, 167 articles fell into the following intervention categories: feasibility and logistics, decision aids, reminders, motivational interviewing, and remote expert evaluation. Reminders were the most robust area of the literature, with more RCTs and large-scale studies conducted. Many studies compared the efficacy of automated screening reminders with those performed by staff. Common outcomes that were measured in all categories except remote expert evaluation were patient acceptability and CRC screening completion within designated time frames. Articles about decision aids exhibited heterogeneity of dissemination method and types of informational materials included. Studies on remote expert evaluation were variable in scope and reported results for interobserver reliability and sensitivity. Of the studies included, nine took place or were targeted for application in rural or remote areas. Of those
POSTER SESSION A

nine studies, five were about reminders, reflecting trends in the wider literature.

**Discussion:** Given the paucity of CRC screening interventions that were studied in rural areas, further investigation is needed to determine whether broadly studied telemedicine interventions are applicable, particularly since underserved populations in rural areas stand to benefit disproportionately from evidence-based telemedicine interventions.

**A012 Differences of trust in cancer information from various sources among Hispanic adults in the United States:**

**Analysis of the 2014 HINTS.** Marlene Camacho-Rivera, Jason Morency, Rose Saint Fleur-Calixte. Sophie Davis Program in Biomedical Education/CUNY School of Medicine, New York, NY.

**Introduction:** Across all racial and ethnic groups, recent evidence has demonstrated a widespread adoption of potential eHealth/mHealth tools such as smartphones and social media and networking sites, which can be leveraged to reduce cancer disparities. However, Hispanics are significantly less likely than other racial and ethnic minority groups to seek cancer information; further, those who have sought cancer information experience mistrust and lack confidence in their ability to accurately seek information. Our study aimed to identify social and demographic patterns of cancer information seeking among Hispanic adults in the United States: A012 Differences of trust in cancer information from various sources among Hispanic adults in the United States: Analysis of the 2014 HINTS. Marlene Camacho-Rivera, Jason Morency, Rose Saint Fleur-Calixte. Sophie Davis Program in Biomedical Education/CUNY School of Medicine, New York, NY.

**Methods:** Data from the 2014 Health Information National Trends Survey (HINTS) 4, Cycles 2 and 4 were used; a total of 1051 Hispanic participants were included in the analytic sample. Primary predictor was Hispanic ethnicity, categorized as Mexican American, Cuban or Puerto Rican, and other. Primary outcomes were trust in various cancer information sources (e.g., doctor, family or friends, media sources, internet, health agencies/organizations, and religious organizations). Ordinal outcome variables were dichotomized due to nonproportional odds into low levels of trust and high levels of trust. We analyzed the data using multivariable logistic regression, adjusting for social demographic characteristics (e.g., age, nativity, socioeconomic status, cancer history, and smoking).

**Results:** In fully adjusted models, women were 70% more likely to trust cancer information from family or friends, and newspapers or magazines, compared to men. Compared to younger Hispanics, those ages 65 and older were twice more likely to trust cancer information from religious organizations (ages 65-74 OR = 2.19, 95% CI 1.06-4.53; > 75 OR = 2.59, 95% CI 1.08-6.21), as well as family or friends (ages 50-64 OR = 1.90, 95% CI 1.06-3.42; ages 65-74 OR = 2.14, 95% CI 1.07-4.27; > 75 OR = 2.60, 95% CI 1.17-6.04). Interestingly, the oldest Hispanic participants were 3 times more likely to trust cancer information from the Internet. Hispanics without family history of cancer were 2.7 times more likely to trust cancer information from doctors, compared to those with a family history. There were no ethnic subgroup differences in trust of cancer information source.

**Conclusions:** As Hispanics age, trust in cancer information from nonmedical sources, such as family, internet, and faith-based organizations, increased. As no differences between ethnic subgroups were observed, cancer information through various sources may not need to be further tailored to specific subgroups. As the availability of cancer information has become more widespread from technological advancements, health care and public educational approaches should increasingly include family and friends, as well as religious organizations, to ensure accuracy of cancer information and messaging.

**A013 Parental health communication and satisfaction with medical providers of childhood cancer survivors:**

**Differences by race/ethnicity and language.** Carol Y. Ochoa, Lourdes Baezconde-Garbanati, Joel Milam. University of Southern California, Los Angeles, CA.

**Purpose:** Among childhood cancer survivors (CCS), parents inherently take on the role of informal caregivers. Effective communication between patient and provider or caregiver contributes to better treatment decision making and patient health outcomes. However, few studies have examined the frequency and scope of communication among childhood cancer survivors, caregivers, and medical providers. The purpose of this study was to examine the association between Hispanic ethnicity and language spoken with communication and satisfaction with their CCS health care provider. We hypothesized that Spanish-speaking Hispanic parents would have more barriers with provider communication and would be less satisfied with medical providers than English-speaking Hispanics and non-Hispanic parents. We also hypothesized that Spanish-speaking Hispanic parents would have greater communication with their child about their diagnosis.

**Methods:** We analyzed data from parents of CCS, who were selected from the Los Angeles Cancer Surveillance Program and had been diagnosed between 2000 and
2007 at Children's Hospital Los Angeles (CHLA) or Miller Children's Hospital, Long Beach. We used ANOVA and chi-square statistics to test for differences in demographic characteristics.

**Results:** A total of 173 parents participated in this study, including 50 Spanish-speaking Hispanics, 49 English-speaking Hispanics, and 74 English-speaking non-Hispanics. Spanish-speaking Hispanics were younger, had less than high school education, were lower income, and were less likely to have health care coverage compared to English-speaking Hispanics and non-Hispanic parents. Spanish-speaking Hispanic parents were more likely to report talking to their child about his/her needs for cancer-related follow-up care (p<.001) and health insurance issues (p=.01). Regardless of language spoken, Hispanic parents were more likely to receive health information about their child’s cancer from hospital sources. Spanish-speaking Hispanic parents were more likely than English-speaking Hispanics and non-Hispanic parents to report difficulties with written information (p=.02) and understanding doctors due to language barriers (p=.003). However, there was no statistically significant difference by ethnicity/language in parent satisfaction with their child’s health care provider or in receiving a survivorship care plan.

**Conclusion:** Despite reporting similar rates of satisfaction with CCS medical providers, Spanish-speaking parents were more likely to report communication barriers with providers. Nevertheless, in order to build sustainable relationships with providers, language barriers need to be addressed to improve communication effectiveness. In future studies, we will explore the role of parent-child and parent-provider communication on their health outcomes.

**A014 Development of a culturally grounded brochure to enhance colorectal cancer screening in Southwestern American Indian communities.** Andrew L. Sussman1, Kevin English2, Matthew Frank2, Dolores Guest3, Deborah Helitzer1, Shiraz Mishra1. 1University of New Mexico, Albuquerque, NM, 2Albuquerque Area Indian Health Board, Albuquerque, NM, 3Arizona State University, Tempe, AZ.

Elimination of colorectal cancer disparities is a national priority. Despite the effectiveness of colorectal cancer (CRC) screening tests for average risk adults, these tests are underutilized by American Indians/Alaska Natives. Subsequently, these populations have experienced either no change or an increase in CRC incidence. Prior to conducting a trial to determine the efficacy of interventions of graded intensity on screening behavior among six tribal communities in the Southwest United States, we set out to develop a culturally appropriate and theoretically grounded brochure to increase community demand for CRC screening. In order to ensure the brochure’s health literacy to diverse tribal participants, we utilized the Suitability Assessment of Materials and Comprehensibility of Materials (SAM+CAM) instrument as a basis for structuring this process. Using an iterative process, we conducted two focus groups and made modifications to the brochure. We then implemented the SAM+CAM assessment. We report here on the findings from both the focus groups and the SAM+CAM testing. We organized focus group findings by the SAM+CAM categories, including content, literacy demand, numeracy, graphic material, layout/typography, and learning stimulation/motivation. We will provide quotes and summaries of the relevance for each of these SAM+CAM categories. By structuring focus groups with American Indian participants using these categories, we then made revisions to the brochure. The resulting SAM+CAM scores confirmed that the brochure was suitable and comprehensible to participants. Overall, the SAM+CAM scores were generally high as the overall rating was 90%, which indicates a superior product. Using this participatory and iterative process, we found that structuring the development and revision of the brochure through the SAM+CAM categories provided a useful process to balance the presentation of evidence-based data for CRC screening with community preferences and norms.

**A015 Integrating research and outreach to increase CRC screening knowledge in underserved communities: The Geographic Management of Cancer Health Disparities Program and National Outreach Network Screen to Save partnership.** Mark Cromo1, Rhonda Booser-Year2, Melinda L. Rogers1, Katelyn Schifano3, Jenna Schiffelbein4, Katherine L. Jones1, Marcela Blinka1, Julia F. Houston5, Betsy Grossman6, Lindsay Hauser7, James Zabora8, Mark B. Dignan1, Tracy Onega1, 1University of Kentucky Markey Cancer Center, Lexington, KY, 2University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, Baltimore, MD, 3Virginia Commonwealth University Massey Cancer Center, Richmond, VA, 4Dartmouth-Hitchcock Norris Cotton Cancer Center, Lebanon, NH, 5Johns Hopkins University Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD, 6University of South Carolina Arnold School of Public Health, Columbia, SC, 7University of Virginia Cancer Center, Charlottesville, VA.

**Introduction:** The Geographic Management of Cancer Health Disparities Program (GMaP) is a national NCI program...
with the goal of increasing cancer health disparities (CHD) research. GMaP Region 1 North (RIN) is one of seven GMaP Regional “hubs” based at NCI-designated cancer centers (CCs) across the country, covering the states of DE, KY, ME, MD, NH, VA, VT, WV, and the District of Columbia. The National Outreach Network (NON) is a national NCI program with the goal of conducting cancer education and outreach in underserved communities to reduce CHD. NON Community Health Educators (CHEs) are based at 38 NCI-designated CCs across the country. Six NCI-designated CCs with NON CHEs fall within the GMaP RIN coverage area.

**Methods:** GMaP RIN staff and NON CHEs within the RIN coverage area met bimonthly to collaborate on the Screen to Save (S2S): NCI Colorectal Cancer (CRC) Outreach and Screening Initiative. The goal of S2S was to educate underserved communities on CRC and CRC screening. NON CHEs conducted the projects in diverse urban and rural communities within their CC catchment areas. Participants attended a CRC education event that provided an inflatable colon or a PowerPoint presentation and completed demographic and pre-/post-event surveys to gauge their knowledge of CRC screening. Surveys were submitted to NCI Center to Reduce Cancer Health Disparities program staff for review and data entry. Raw data files were returned to NON CHEs and shared with GMaP RIN staff for analysis. RIN staff provided research expertise to compare results between urban and rural S2S participants.

**Results:** There were a total of 328 participants in S2S (n=200 urban; n=128 rural) in the GMaP RIN/NON coverage area. The median age of urban participants was 59.5 vs. 49.0 for rural participants. 95% of urban participants and 96.1% of rural participants reported having health insurance (public or private), 92.9% of urban and 88.1% of rural participants attained at least a high school diploma or GED. 76.5% of urban and 41.4% of rural participants reported ever being screened for CRC by any method. The percent increase between pre- and post-test scores for the educational intervention was 15% for urban vs. 13.3% for rural participants, with an overall percent increase in knowledge of 14.2%.

**Conclusions:** The urban and rural participants were similar in educational and health insurance attainment levels. Urban residents reported much higher rates of previous CRC screening than rural residents, but this is likely due to the fact that more rural participants were younger than the recommended CRC initial screening age at the time (age 50). The S2S educational intervention was effective in increasing knowledge of CRC screening among both rural and urban participants, with similar increase between the two groups. Overall, this project demonstrated that two different yet complementary programs, GMaP and NON, can work together by utilizing program strengths to successfully implement an educational intervention conducted across a wide and diverse geographic area.


I never knew much about colorectal cancer until it found its way into my home. The one thing I was always told was that it is an “Old Person’s” disease and you shouldn’t even check for it until after 50. Well, I found out that was not true as my wife was diagnosed at age 36 and passed at age 39. My sole purpose in life is to make young adults aware that they should get checked at an earlier age or when they see even the smallest symptoms. I never want anyone else to suffer from lack of knowledge.

**A017 Using social media to communicate breast cancer risk and promote breastfeeding among pregnant African American women.** Cassy Dauphin1, Frances G. Saad-Harfouche1, Maria Keller2, Nikia Clark1, Elisa M. Rodriguez1, D’zare Triplett1, Marc Kiviniemi2, Deborah O. Erwin1, 1Roswell Park Comprehensive Care Center, Buffalo, NY, 2University at Buffalo, Buffalo, NY.

**Purpose of Study:** Incidence rates for aggressive ER-breast cancer in African Americans have continued to increase, and epidemiologic studies (AMBER Consortium) suggest breastfeeding can reduce risks for this deadly disease. Notably, breastfeeding rates are lowest among poor, younger, and African American mothers, offering an opportunity to intervene. Health behavior theories show that perceived risk for health problems can be a motivating factor for behavior change. The purpose of this NCI R21 study was to examine the behavioral impact of a tailored intervention to disseminate new scientific findings about reducing cancer risk for African American women by breastfeeding.

**Methods:** A multimodal approach was used to reach pregnant African American women accessing services through Women, Infant and Children (WIC), community-based organizations and OB/GYNs to invite them to participate in a tailored social media educational intervention. Recruitment was delivered using Telelivet (computer-based mobile messaging platform) and participants were connected to an automated invitation to Survey Monkey to complete eligibility, consent, and pre and post-partum surveys from smart phones. Eligible participants were randomized into a
control Facebook (FB) group receiving only breastfeeding messages or an intervention FB group that received both breastfeeding and breast cancer risk reduction messages. All messaging was tailored for African American mothers. Multiple polls and FB actions were used to increase participant engagement.

**Results:** To date, a total of 612 women were recruited, 356 were eligible, 287 women consented, 261 completed pre-surveys, and 134 have currently completed post-surveys. Participants ranged from 18-54 years of age. Preliminary results show significant differences in breast cancer risk perception with an average presurvey mean of 3.07 to a post-survey mean of 1.31 (p < .001). Perceived behavioral control pre- to post-birth indicates significant increases in breastfeeding self-efficacy in knowledge (p < .001), confidence (p = .03), support (p = .002), skills (p = .01), and ease (p = .01). Qualitative interactions were captured through participation in the FB group and intragroup analysis is ongoing.

**Conclusions:** Results will provide crucial information to determine if risk perceptions can be transformative in creating a shift from formula-as-an-equivalent-feeding-practice to “Breast is Best” among African American women within their social context—basically creating a culture-change model. Process data on intervention methods and the potential role to effectively disseminate this new message to increase breastfeeding will be presented.

**A018 Community outreach navigation of minority and medically underserved women in rural Arkansas to mammography facilities: Evolution and experiential results of the National Witness Project* from the last decade.** Julia Devonish1, Deborah O. Erwin1, Detric Johnson1, Frances Harfouche1, Levi Ross2, Cynthia Maxwell3. 1 Roswell Park Comprehensive Cancer Center, Department of Cancer Prevention and Population Sciences, Buffalo, NY, 2 University of Alabama, Department of Health Science, Tuscaloosa, AL, 3 National Witness Project®, Arkansas Chapter, Little Rock, AR.

“...intensive, community-based, culturally sensitive educational programs incorporating the spiritual environment of the faith community can positively influence screening behaviors in rural, underserved groups of African American women” Deborah O. Erwin, 1999

The Witness Project is a culturally competent, community-based outreach navigation program founded in Arkansas (AR) where access to mammography screening was especially problematic in certain areas. The (now) National Witness Project® (NWP) has been widely disseminated across the country. Women identify NWP as trusted and familiar providers of breast and cervical cancer education and invaluable assistance.

**Objective:** Examine the NWP-AR chapter’s evolution and past 10 years’ experiences navigating rural women.

**Methods:** NWP-AR provides African-American (AA) and all medically underserved women in rural communities with education and outreach navigation services to mammography as needed. They facilitate implementations of modular or mobile units in areas without facilities (service deserts). In 2007 NWP-AR was implemented in 34 counties and 9 in 2017.

**Results:** In 2007 there were 1,374 women enrolled in NWP-AR, 84.6% of whom were rural folk. New enrollees (n=1,305) between March 2002-July 2007 were 54.9+-11.5 years old and mostly AA, Caucasian, or Hispanic (75.7%, 22.1%, 1.7%), married or single (39.9%, 38.2%), and uninsured (82.1%). Medicare or Medicaid use was 31.7%. Initial service location choices were mobile, modular, and freestanding (54.9%, 25.9%, 14.6%). Over time rural women without facilities in their county (n=382) used modular or mobile (62.3%, 30.9%), rural women with facilities in their county (n=725) used mobile or modular (81.5%, 8.7%), and urban women (n=175) used freestanding or modular (61.1%, 19.4%). 2004 AR and national screening rates were 51.0% and 58.3%. In fiscal 2017, NWP-AR held 23 education/outreach events in 9 counties at mostly religious or residential centers (34.8%, 23.9%) and formed 10 new community partnerships in 8 counties. New enrollees (n=446) were ≥40 years of age (78.9%), AA or Caucasian (92.6%, 7.2%, 0.2%), and insured (92.6%). They made 488 contacts with enrollees. Modular units were phased out in favor of mobile units. In the 10 screening events in 8 counties, 138 AA or Caucasian (81.9%, 18.1%) women 40-49 (20.3%), 50-64 (40.6%), and ≥65 (39.1%) years of age were screened. All were insured. Navigation services to screening and later diagnostic testing were used by 67.4% and 2.9%. 2016 AR and national screening rates were 67.8% and 72.4%.

**Conclusion:** In the 1990s NWP-AR pioneered activations of mobile mammography to rural and underserved areas. They have maintained their positive influences on the screening behavior of AA women. Despite a more focused implementation (34 vs. 9 counties), new enrollment rates almost doubled (~241 in 2007 to 446 in 2017), likely due to the feasibility of the mobile bus units. More work is needed as AR rates remain below average.
POSTER SESSION A

A019 Community-based intervention leads to increased cancer knowledge and prevention behaviors in a rural population. Cody Fredrick1, Amanda T. Eggen1, Amy Amessoudji2, Tracy M. Downs3, Elizabeth A. Jacobs4, 1Cancer Health Disparities Initiative, University of Wisconsin Carbone Cancer Center, Madison, WI, 2University of Wisconsin Department of Medicine, Madison, WI, 3Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison, WI, 4Dell Medical School, The University of Texas at Austin, Austin, TX.

Introduction: We conducted a community-based participatory research pilot project to adapt Cancer Clear & Simple (CC&S) for easier dissemination in a rural population, and to evaluate the impact of providing this education on cancer knowledge and risk reduction behaviors.

Procedures: We conceived and implemented this project collaboratively with local rural partners, including a multicounty rural electric cooperative. Our aims were to (1) conduct qualitative interviews with community stakeholders, past CC&S participants, and a sample of prospective participants, and use the findings to revise CC&S for easier dissemination; and (2) test whether CC&S increased cancer knowledge and risk-reduction behaviors by randomizing 66 community members to either the CC&S condition (n=32) or meal planning control condition (n=34) in two rural communities. We surveyed participants before the intervention, immediately following, and 6 months later. We collected data both online and in paper-based surveys, and through clinic verification of reported cancer screenings at 6 months.

Results: We found cancer knowledge increased from pre-to post-intervention for the CC&S group (63% to 81%, p < .001) but not the control group (56% to 59%, p = .23) and, further, the increased knowledge of CC&S participants was sustained at 6 months. The CC&S group was more confident about talking with their doctors about cancer (4.7 v. 4.3, p < .001) and reducing cancer risk (4.7 v. 4.2, p < .001) after the intervention than before, and their increased confidence was sustained 6 months later. We also found a greater intent to participate in cancer risk-reduction behaviors immediately after the intervention for the CC&S group versus the control (99% v. 95%, p = .08) and significantly greater levels of self-reported healthy behaviors among the CC&S group versus the control at 6 months (87% v. 74%, p = .02). Further, 59% of participants consented to allowing clinic-based objective confirmation of screening rates, but numbers of participants due for screening tests resulted in limited power to employ these data as an outcome.

Conclusions: We found that the modified version of CC&S increased cancer knowledge and the intent to participate in risk-reduction behaviors, and likely led to sustained healthy behaviors over time. The research team also confirmed that participants would consent to clinic verification of their screening behavior. As this was a pilot, we plan to conduct a study with a larger number of participants and a cohort of rural residents across a broader, more diverse rural geography.

A020利用社区导引员的方法来改善深南乳腺和宫颈癌的筛查。Claudia M. Hardy1, Kumari Seetela2, Tara Bowman1, Katherine Norris2, Nancy Wright3, 1University of Alabama at Birmingham Comprehensive Cancer Center, Birmingham, AL, 2Alabama Department of Public Health, Montgomery, AL.

This presentation illustrates a community-based intervention utilizing community navigators to identify, recruit, and work to eliminate barriers to improve breast and cervical cancer screening in underserved communities in the Deep South.

Background: The UAB Comprehensive Cancer Center built an academic-community infrastructure called the Deep South Network for Cancer Control via funding from the National Cancer Institute Center to Reduce Cancer Health disparities from 2000-2016. The Deep South Network (DSN) utilized a Community Health Advisors (CHA) model combined with community engagement and coalition building to conduct community outreach and community-based cancer disparity research in medically underserved communities in Alabama and Mississippi. Through the utilization of the CHA model, cancer mammography screening rates among the Medicare population saw a 17% difference between AA women and Caucasian from 1999 to 2014.

Purpose: To utilize the DSN model to train community navigators to identify and recruit rarely or never screened women for breast and cervical cancer screening. Community Navigators with support of the CHAs work to address client barriers to improve screening. Through a collaboration with the Alabama Breast and Cervical Cancer Early Detection Program (ABCCEDP), UAB Community Navigators delivered a community intervention to address barriers to breast and cervical cancer screening.

Methodology: The intervention was delivered in eight Alabama counties: seven rural and 1 urban over a 12-month period. Each county had a paid, community-based navigator who received 8-hour training on navigating clients for clinical
services. Community Navigators delivered community-based education and identified and addressed barriers to increase cancer screening.

**Conclusion:** At the end of the 12-month intervention, the community navigators held 212 events such as health fairs and community presentations in public housing and faith-based groups that yielded a reach of 16,038 individuals. Of these events, 273 women indicated an interest in or need for these screenings with 83% of them between ages 40-54. Navigators worked through client barriers to see an overall significant increase of 5% in women enrolled in the ABBCECP compared to previous years in the nine counties.

**A021 Multilevel approaches to breast cancer disparities in the United States: An integrative review.** Sarah D. Hohl,1 Beti Thompson,2 Yamile Molina3, Electra D. Paskett4,1 University of Washington, Seattle, WA, 2Fred Hutchinson Cancer Research Center, Seattle, WA, 3University of Illinois at Chicago, Chicago, IL, 4The Ohio State University, Columbus, OH.

**Background:** Breast cancer is the most common cancer diagnosed among women and the leading cause of cancer death among women worldwide. Since 1990, breast cancer incidence has remained stable and mortality has decreased 2% per year in the U.S. However, ethnic minority and socioeconomically disadvantaged women have not experienced these gains in breast cancer outcomes. Understanding shared factors at different levels across disparities may be helpful for improving the well-being of multiple marginalized populations in the U.S. as well as potentially in other countries.

**Methods:** We conducted an integrative, qualitative review of the literature from 2008-2018 to describe the burden of breast cancer and multilevel interventions to address disparities among three unique, underserved groups in the U.S. We searched Google Scholar and PubMed as well as county, state, and national public health databases and summarized the relevant literature.

**Results:** African Americans in Chicago, non-Latina White women in Appalachia, and Latinas in the Yakima Valley of Washington State represent three subgroups in the U.S. who suffer disproportionately from breast cancer, including late-stage diagnoses, aggressive subtypes, and poor survival. These characteristics are influenced by biologic, individual, social, and societal factors including gene expression, fear and fatalism, poverty and neighborhood, and access to care. Multilevel interventions across the three geographic areas have included patient navigation and community health workers to bolster education and enhance health care access, support groups, and political advocacy.

**Conclusion:** African Americans in Chicago, non-Latina White women in Appalachia, and Latinas in the Yakima Valley of Washington State share disproportionate exposure to a myriad of social determinants of health that contribute to lower rates of breast cancer detection and treatment as well as poorer survival. Concerted efforts that address these factors are needed to ensure that all women have access to equitable screening, detection, treatment, and survivorship resources.


My poster will educate people about density of breasts, the different levels of density and how breast density affects the results of imaging. What to do about imaging when one has dense breast tissue. How to find out about your breast density. The different kinds of screening measures that can be done now. And of course, speaking up for yourself because early detection is best.

**A023 Results from a town hall meeting: Inflammatory breast cancer listening session led by KOMEN scholars.** Maria Dixon1, Kearston L. Ingraham2, Seronda A. Robinson3, Jodie M. Fleming4, Gayathri R. Devi5, Holly Hough6, Hamzah Kharabsheh7, Dana M. Austin1, Tia A. Tate1, Artsis Woodard7, Joshua Alexander1, Joan P. Packenham8, Nadine J. Barrett9, Kevin P. Williams.1 Biomanufacturing Research Institute and Technology Enterprise (BRITE), North Carolina Central University, Durham, NC, 2Office of Health Equity, Duke Cancer Institute, Duke University Medical Center, Durham, NC, 3Department of Public Health Education, North Carolina Central University, Durham, NC, 4Biological and Biomedical Sciences, North Carolina Central University, Durham, NC, 5Department of Surgery, School of Medicine, Duke University, Durham, NC, 6Office of Clinical Research, School of Medicine, Duke University, Durham, NC, 7National Institute of Environmental Health Sciences, National Institutes of Health Division of Intramural Research, Clinical Research Branch, Durham, NC.

**Introduction:** Cancer is the leading cause of death in North Carolina. While the incidence rate of breast cancer (BC) is higher in White women, African American and Latino women are more likely to die from BC than White women.
Moreover, inflammatory breast cancer (IBC) is a rare and aggressive form of BC, and African Americans are more likely to be diagnosed with IBC compared to whites, have poor BC outcomes, and generally are less likely to get life-saving information and resources to reduce cancer risks. Additionally, work is needed to improve diagnosis rates and decrease time to treatment for IBC patients. Translational research scientists do not get exposure to community engagement opportunities that can add to their knowledge of the research spectrum around a particular disease. Engaging new researchers in this arena can add to addressing cancer disparities research.

Methods: An IBC listening session was conducted during the annual Women’s Health Awareness Day conference sponsored by the National Institute of Environmental Health Sciences and North Carolina Central University. The session was developed by KOMEN translational health disparities researchers as part of their enhanced community engagement training program. Scholars created the marketing plan and listening session guide for the program with guidance and training from staff experts. Scholars were note takers, facilitators, and created summary reports that highlighted guiding questions for the session, which included the following questions: 1) What do you know about BC? 2) Are you aware of different types of breast cancers? 3) Have you heard of IBC? 4) How aware do you think people in your community are about BC and IBC? 5) Where do you get your information about BC and IBC? 6) What are ways we should educate the community with getting information on how to become aware about the signs and symptoms of IBC?

Results: There were 49 African American and Latina participants. Only 15 of 49 attendees had heard of IBC. Most women were aware of causes and symptoms of breast cancer; however, there was a lack of awareness around IBC. Those aware of IBC learned about it from their coworkers, doctors, or had family members die from the disease. Participants recommended more one-on-one education, patient self-advocacy sessions, making education and awareness available online, changing breast cancer communication to include IBC symptoms, and letting people know that you can have breast cancer without the presence of lumps.

Conclusion: Poor awareness, communication, and education around inflammatory breast cancer risk factors were substantial. There is significant need to raise awareness in diverse communities about inflammatory breast cancer risks, screening guidelines, diagnosis, and treatment options. Community-engaged research lead by under-represented researcher scholars in training can add to the translational research training experience.

A024 Planning for scale-up of an evidence-based intervention in community settings: Project HEAL insights from the SPRINT Initiative. Laundette P. Jones1, Jimmie L. Slade2, Felicia Davenport1, Sherie Lou Z. Santos1, Cheryl L. Holt1. 1University of Maryland School of Medicine, Baltimore, MD, 2Community Ministry of Prince George’s County, Seat Pleasant, MD, 3University of Maryland, College Park, College Park, MD.

Project HEAL (Health through Early Awareness and Learning) is an evidence-based intervention rooted in health behavior change theory and aiming to increase cancer awareness and early detection through African American faith-based organizations. This study explored the potential for broader scale-up and dissemination of Project HEAL through the team’s participation in a training program called Speeding Research-tested INTerventions (SPRINT). The SPRINT training was framed using tools from the Business Model Canvas and the Value Proposition Canvas to guide trainees in designing (1) compelling value propositions, (2) a minimal viable product, and (3) questions to gain critical insight from various stakeholders during a process called Customer Discovery. We report on our experiences in the SPRINT training and insights on intervention scale-up that we gained from the training, including key findings from 41 discovery interviews conducted with various stakeholders of the church ecosystem. We learned several valuable lessons from the discovery interviews, including the realization that scale-up will likely be more incremental than immediate. Additional refinement will be needed to scale up the intervention for “real world” application, including making our technology more user-friendly and including additional health topics beyond cancer. The SPRINT training helped our team consider broader scale-up and dissemination in a constituent-informed way. We discuss how insights from the training helped to refine our plans for future intervention scale-up.


Introduction: Breast cancer is the most commonly diagnosed cancer among nearly every racial and ethnic group. With almost 40,000 fatalities every year, breast cancer is the second leading cause of death among women. Better care in the past 25 years has reduced breast cancer deaths by up to 34% in certain communities, but not all communities are benefiting equally from these improvements. To address
these disparities, we launched a navigation-based program as a model to improve outcomes for medically underserved women with breast cancer by reducing barriers to quality care and advancing pioneering treatments for breast cancer. We look at the insurance status of the women educated and navigated over the past two years.

Methods: The program has three objectives: (1) advance an effective and scalable community-based navigation model for reducing disparities in screening and diagnostic follow-up care in medically underserved women; (2) improve access to and use of high-quality breast cancer care and supportive services at Bellevue, Tisch, and NYU Brooklyn hospitals among underserved woman utilizing patient navigation; and (3) increase access to, and participation in, clinical trials for the most promising and innovative therapies for breast cancers among underserved women. Preliminary data were collected between August 2016 and April 2018 from women on their first encounter with the navigator.

Results: Our community navigators have provided outreach to 144 unique sites in New York City, primarily in Brooklyn and lower Manhattan. Community navigators provided health outreach to 8,304 women, of whom 2071 were eligible but not up to date on screening. 387 of these women enrolled in patient navigation and 711 women provided insurance information. 69% of our clients are AA, 25% Hispanic. 24% of our clients were uninsured, 19% had Medicaid, 10% had Medicare, and the remaining women had private insurance. The most salient reported barriers to screening addressed by our navigators included lack of adequate insurance, immigration status, housing and food insecurity, and lack of transportation and child care.

Discussion: Through a combination of outreach, education, and navigation, we have developed a novel interdisciplinary model to reduce barriers for screening and treatment for breast cancer. While many of our clients and patients had insurance, many still had formidable financial challenges. In our experience, comprehensive assessment of financial, social, and logistical barriers is an integral component of the navigation process, and is necessary to overcome the significant roadblocks to high-quality breast cancer screening, diagnosis, and treatment that underserved women face.

A026 Addressing the burden of gastric cancer disparities in low-income New York City Chinese American immigrants.

Simona Kwon1, Yi-Ling Tan1, Janet Pan1, QiQu Zhao2, Renee Williams1, Sara Chokshi1, Devin Mann1, Karyn Singer3, Benyam Hailu4, Chau Trinh-Shevrin1, NYU School of Medicine, New York, NY, 2NYU Langone Family Health Centers, New York, NY, 3Gouverneur Hospital, New York, NY, 4NIH, Bethesda, MD.

Background: Gastric cancer is the third most common cause of cancer death worldwide. In the US, gastric cancer incidence for Chinese Americans is nearly twice that for non-Hispanic whites. Cancer is the leading cause of death among Chinese New Yorkers who experience higher mortality for gastric cancer than other New Yorkers overall. The bacterium Helicobacter pylori (H. pylori) is the strongest risk factor for gastric cancer, and eradication of H. pylori through triple antibiotic therapy is the most effective prevention strategy for gastric cancer. Despite the elevated burden, there are no culturally and linguistically tailored evidence-based intervention strategies to address H. pylori medication adherence and gastric cancer prevention for Chinese Americans in NYC, a largely foreign-born (72%), limited English proficient (61%), and low-income (21% living in poverty) population.

Objective: The study objective was to develop and pilot a community health worker (CHW)-delivered linguistically and culturally adapted gastric cancer prevention intervention to improve H. pylori treatment adherence and address modifiable cancer prevention risk factors, including improved nutrition for low-income, LEP, Chinese American immigrants.

Methods: We used a mixed methods and community-engaged research approach to develop and pilot the intervention curriculum and materials. Methods included: 1) a comprehensive scoping review of the peer-reviewed and grey literature on gastric cancer prevention programs and strategies targeting Chinese Americans; 2) 15 key informant interviews with gatekeepers and stakeholders serving the New York Chinese immigrant community to assess the knowledge and perception of H. pylori infection and gastric cancer among Chinese New Yorkers; and 3) pilot implementation of the collaboratively developed intervention with H. pylori-infected LEP Chinese immigrant participants (n=7).

Results: Study process findings and pilot results will be presented. Preliminary results indicate high patient- and community-level need and acceptability for the intervention. Baseline and 1-month post-treatment outcomes and survey data, qualitative data analysis of the CHW session notes, and key informant interviews will be presented.

Conclusion: Findings suggest that a CHW-delivered culturally adapted gastric cancer prevention intervention can result in meaningful health information and treatment adherence for
at-risk, low-income Chinese immigrant communities. Study findings are being applied to inform a randomized controlled trial being implemented in safety net hospital settings.

A027 [Advocate Abstract] How to promote diversity and inclusion in the community. Winona Hollins Hauge. Northwest/west www.iccnetwork.org Regional Leader, Shoreline, WA.

Reaching underserved communities is not always easy but it remains a critical area of need. To become an effective champion there are three critical areas that you must clearly define before you start your research. One important factor is understanding the population that you are attempting to reach into. Will your research harm or create any unclear expectations? Did you consult with the community to discern what they think they need or would like to see implemented in their area? At the end of the study or the program, will the community see how their cooperation and engagement has made a impact or a difference?

A028 Exploring Asian Indian and Pakistani views about cancer and participation in research: An evaluation of a culturally tailored educational intervention. Veda N. Giri1, Preethi Selvan1, Salini Mohanty2, Ray Lum2, Samantha Serrao2, Amy E. Leader1, 1Thomas Jefferson University, Philadelphia, PA, 2Drexel University, Philadelphia, PA.

Background: Asian Indians and Pakistanis (AIP) are a growing population in the United States (US), and cancer is a leading cause of mortality in this population. Cancer screening rates among AIP populations in the US remain low compared to other racial and ethnic groups. In addition, AIP adults have been historically under-represented in clinical research and reasons are largely unexplored.

Methods: We delivered a culturally tailored educational intervention to improve knowledge, attitudes, and perceptions about cancer risk and preventive screening measures to AIP adults in the Philadelphia area. Participants of AIP descent, ages 18 and older, were recruited during an evening celebration at a local community center. The intervention, an oral presentation, was delivered by a physician of AIP descent with expertise in clinical cancer genetics. The presentation focused on screening measures and applicable genetic tests for breast, prostate, and colon cancers based on family history and individualized risk factors. Participants were assessed before (pre), immediately after (post), and 1 month following the presentation (follow-up) for changes in knowledge, attitudes, and perceptions of cancer risk and risk assessments. Data were analyzed for means, frequencies, and differences in means from baseline to endpoint and baseline to follow-up using SPSS. Only those who completed all three assessments were included in analysis.

Results: Twenty-three participants, 12 female and 10 male participants (1 not reported) of AIP descent, averaging 46 years of age, completed the study. All participants were born in India and had been living in the US for an average of 20 years. Most (n=13) preferred the English language when discussing medical material, while a few (n=3) preferred another language. While there was no significant improvement in overall knowledge or knowledge of screening timelines for prostate and colon cancers, participants showed a significant change in understanding of when screening for breast cancer should begin (p<0.05). Pre- to post-intervention knowledge regarding genetic mutations (p<0.05) and genetic testing (p<0.05) was also improved. Lastly, participants were more willing to talk to their family members about cancer (p<0.05), participate in a medical research study (p<0.01), and undergo genetic testing for cancer risk assessment (p<0.001) after exposure to the intervention.

Discussion: The intervention increased specific aspects of knowledge, willingness to participate in cancer research and risk assessments, and willingness to talk about cancer among AIP adults. This suggests that culturally tailored educational interventions, delivered in community settings, can be influential for this population. The efficacy of this research could be tested in a future randomized controlled trial with longer-term follow-up for sustained impact along with the collection of data regarding the uptake of cancer screening services post-intervention.

A029 Promising effects of a culturally tailored multilevel pilot intervention to increase HPV vaccination uptake among Asian American female and male adolescents. Grace X. Ma1, Shumenghui Zhai1, Lin Zhu1, Philip Siu2, Yin Tan1, Sarah Lai2, Ivette Astudillo3, Safa S. Ibrahim1, Ming-Chin Yeh3, Min Qi Wang4, 1Center for Asian Health, Lewis Katz School of Medicine, Temple University, Philadelphia, PA, 2Chinatown Medical Services, Greater Philadelphia Health Action, Inc., Philadelphia, PA, 3Hunter College, The City University of New York, New York, NY, 4Department of Behavioral and Community Health, School of Public Health, University of Maryland, College Park, MD.
Background: HPV vaccination is recommended for female and male adolescents in the U.S. to prevent HPV-related cancer, yet the uptake remains suboptimal nationwide. Compared with other racial/ethnic groups, Asian American adolescents have the lowest HPV vaccination rates. Successful HPV vaccine depends heavily on parents’ attitudes, perceptions, and willingness to have their adolescents vaccinated.

Objective: This pilot study aimed to examine the intervention effect on the primary outcome of a provider-based, culturally tailored, multilevel intervention to promote HPV vaccination.

Method: A total of 180 parents (110 for intervention group and 70 for control group) with 290 adolescents aged 11 to 18 (170 for intervention group, 120 for control group) were recruited from primary care community health centers in Philadelphia and NYC from 2015 to 2017. Specifically, we compared the uptake of first shot of HPV vaccination at the 6-month post-intervention assessment and completion rate of three shots.

Results: The uptake of at least 1 shot of HPV vaccine was significantly higher among the intervention group (76.36%) than the control (10.00%). The difference between intervention and control group remained statistically significant (odds ratio = 38.47, 95% 13.99 - 105.80) even when we controlled for demographics and health-related covariates, lending support to the significant and strong effects of our intervention on vaccination uptake.

Conclusion: Our finding indicates that provider-based, culturally tailored, multilevel intervention showed promising effect of HPV vaccination uptake among Asian American adolescents. Greater effort and measures are needed for broader implementation of such intervention. Future research is also necessary to explore the application to ethnic minority populations to prevent cancer and reduce health disparities.

Acknowledgement: This project was supported by National Outreach Network (NON) - Community Health Educator (CHE) supplement grant funded by Center for Reduce Cancer Health Disparities (CCHD)-National Cancer Institute (NCI) (Grant Number: U54CA153513; PI: Grace X. Ma, PhD). The authors wish to thank clinical collaborator Chinatown Medical Services (CMS) and their staff for their support and collaboration.

A030 Empowering Latinas to obtain breast cancer screenings: Comparing intervention effects and cost effectiveness. Yamile Molina1, Liliana G. San Miguel1, Catherine Pichardo1, Genesis Rios1, Leslie Diaz1, Stephanie Cardenas1, Esmeralda Cardoso-Mendoza1, Juana Arroyo1, Maria Medina2, Nora Coronado1, Araceli Lucio1, Olivia Hernandez1, Surrey Walton1, 1University of Illinois at Chicago, Chicago, Chicago, IL, 2The Resurrection Project, Chicago, IL, 3Centro Comunitario Juan Diego, Chicago, IL.

Purpose: Latinas suffer disproportionately from breast cancer relative to non-Latina Whites, partially due to lower guideline-concordant screening. Multiple approaches are used to address this disparity including educational interventions and empowerment-related interventions, wherein a subset of the population is trained to share information with other members of the priority population. However, little is known about the relative effects of these different approaches.

Objective: To analyze preliminary data regarding the effectiveness and cost-effectiveness of education and empowerment approaches.

Methods: This ongoing, quasieperimental trial is situated in two lower-income Latino communities in Chicago. Eligibility criteria include: 1) age of 52-74; 2) no mammography use within past 2 years; 3) no previous breast cancer diagnosis; and 4) no prior health volunteerism experience. Women are assigned to a cohort and participate in a three-week intervention (education: breast cancer, diet, physical activity; empowerment: breast cancer, sharing information with networks, health volunteerism). For women who wish to obtain mammography (from either arm), the study team provides navigation to free/low-cost services. Data collected at baseline, post-intervention, and six-month follow-up include standard demographics and self-reported mammography use, which are verified by study navigation records. The perspective for cost-effectiveness analyses was the community-based organization implementing the program. Cost data include overhead, non-personnel, and personnel costs (per task, per person encounter). Cost data were standardized to US dollars in 2018 and extrapolated to the duration of study implementation.

Results: Our current sample is 97 women (51 education; 46 empowerment). Most women were 52-64 years old (70%), had insurance (58%), had less than a 9th grade education (60%), had an annual household income of <$15,000 (67%), and were born in Mexico (86%). More empowerment participants obtained a mammogram than education participants, after adjusting for age, education, income,
POSTER SESSION A

insurance, mammography history, and mammography plans (47% vs. 74%; OR = 3.2, 95%CI [11, 9.00], p=.001). The empowerment intervention was also less expensive. The costs for education and empowerment interventions were $32,919 and $24,983 ($645 and $490 per person), respectively. Hence, empowerment appears to be a dominant strategy.

Discussion: Empowerment approaches may be more effective and more cost effective in promoting mammography than education approaches among non-adherent Latinas. Limitations concern generalizability due to a non-probability based sample, and limited ability for causal inferences due to a lack of randomization. Next steps include incorporating participants’ costs and including unintended effects (e.g., number of non-participant women obtaining mammography).

A031 The influence of diet and physical activity in the relationship between context, obesity, and obesity-related cancer disparities: A systematic review. Catherine M. Pichardo1, Beti Thompson2, Yamile Molina1. 1University of Illinois at Chicago, Chicago, IL, 2University of Washington, Seattle, WA.

Purpose: Latino- and African-Americans suffer disproportionately from obesity- and obesity-related cancers relative to non-Latino Whites (NLWs). A large body of work has focused on addressing these disparities through individual-level obesity-related behaviors (diet, physical activity [PA]). Simultaneously, a growing body of work has highlighted the role of contextual factors on disparities in obesity and obesity-related cancers, including neighborhood and cultural factors. Multilevel frameworks suggest that one way in which contextual factors impact obesity and obesity-related cancers among Latino- and African-Americans is through diet and PA. Yet, little work has evaluated empirical evidence testing this multilevel hypothesis. Such data are warranted to understand if individual-level interventions are sufficient or if direct intervention at the contextual-level is warranted to reduce disparities in obesity and obesity-related cancers.

Objective: To conduct a systematic review and evaluate research that examined the influence of contextual level factors on obesity and breast and colorectal cancer via diet and physical activity.

Method: Between June and July 2015, authors conducted a systematic review via electronic literature searches using PubMed and Web of Knowledge databases. Studies were included if they reported a measure of a) cultural and/or neighborhood factors, b) obesity and obesity-related cancers, c) physical activity and diet, targeted African- and Latino-American populations, and conducted a test of mediation effects of diet and/or PA.

Results: Of the 229 titles identified, 177 abstracts and 7 full text articles were reviewed. Of the 7 articles reviewed, 5 specifically tested diet and PA as pathways in the relationship between contextual factors and obesity. All studies focused on PA-related behaviors as mechanisms, and one included diet. Studies varied in terms of measurement of diet and PA. Among the studies that investigated neighborhood-level factors, only one study found evidence of PA as a mediator. This study found that infrastructure for walking was indirectly related to obesity via accelerometer-measured PA. Two studies examining cultural factors linked acculturation and obesity via PA—specifically if measured as sedentary behavior as well as leisure-time, transportation-related, and work-related PA.

Conclusion: The evidence remains limited in terms of whether individual-level behaviors underlie the effects of contextual factors on obesity- and obesity-related cancers among Latino- and African-Americans. Indeed, little to no research examines these relationships in terms of two more commonly studied obesity-related cancers, and little work has assessed diet as the mechanism by which contextual factors influence obesity. To understand which interventions are optimal for addressing these multifaceted disparities, further research is needed to clarify if and how context influence health behaviors.

A032 Quitline treatment enrollment, dose, and cessation outcomes among safety net patients linked with treatment via Ask-Advise-Connect: Differential efficacy among Spanish- vs. English-speaking smokers. Barbara Piñeiro1, Damon J. Vidrine1, David W. Wetter2, Diana S. Hoover3, Summer Frank-Pearce1, Nga Nguyen4, Susan M. Zbikowski5, Jennifer I. Vidrine1. 1Oklahoma Tobacco Research Center, Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK, 2Huntsman Cancer Institute and the Department of Population Health Sciences, University of Utah, Salt Lake City, UT, 3Department of Health Disparities Research, The University of Texas MD Anderson Cancer Center, Houston, TX, 4Department of Biostatistics, The University of Texas MD Anderson Cancer Center, Houston, TX, 5United States.

Most quitlines offer treatment in Spanish. However, little is
POSTER SESSION A

known about the long-term efficacy of quitline-delivered treatment among Spanish-speaking smokers. This study is a secondary analysis of a 34-month implementation trial evaluating Ask-Advise-Connect (AAC)—an electronic health record (EHR)-based approach designed to facilitate enrollment in quitline-delivered treatment—in 13 community clinics serving low-income, racially/ethnically diverse patients in Houston, TX. Our goal was to compare treatment engagement, counseling dose received, and smoking abstinence among individuals who received treatment in Spanish versus English. Clinic staff were trained to Ask all patients about their smoking status, Advise all smokers to quit, and offer to immediately Connect smokers with treatment through a link within the EHR. Quitline treatment consisted of up to 5 proactive counseling calls. Outcomes included treatment engagement (i.e., enrollment in treatment), treatment dose (i.e., number of counseling calls completed), and biochemically confirmed, self-reported abstinence six months after enrollment. The smoking status of 218,915 unique patients was assessed and recorded in the EHR. The preferred language for 95.2% of patients assessed was Spanish (n=102,146) or English (n=106,312). Among Spanish speakers, smoking prevalence was 8.4% (8,602/102,146). Among English speakers, smoking prevalence was 29.4% (31,264/106,312). The proportion of Spanish-speaking smokers who enrolled in treatment was 10.7% (924/8,602), and 78.5% of these individuals (725/924) agreed to be contacted for the 6-month follow-up. The proportion of English-speaking smokers who enrolled in treatment was 12.1% (3,785/31,264), and 78.1% of these individuals (2,957/3,785) agreed to be contacted for follow-up. Outcomes were examined among the subset of individuals who agreed to be contacted for follow-up. Among those who received treatment in Spanish, the median number of counseling calls completed was 2.26. Among those who received treatment in English, the median number of counseling calls completed was 1.20. Among those who received treatment in Spanish, self-reported 7-day point prevalence abstinence was 25.1% (182/725), and biochemically confirmed abstinence was 7.6% (55/725). Among those who received treatment in English, self-reported abstinence was 14.5% (429/2,957) and biochemically confirmed abstinence was 3.7% (110/2,957). Those who received treatment in Spanish were twice as likely to be abstinent at 6 months (self-report: OR: 1.98; 95% CI: 1.62, 2.40; biochemically confirmed: OR: 2.13; 95% CI: 1.52, 2.97). Findings indicate that streamlined, automated approaches such as AAC have great potential to engage Spanish-speaking smokers in treatment. Once engaged, Spanish speakers completed more counseling calls and were twice as likely to be abstinent at 6 months. It is also notable that large discrepancies were observed between self-reported and biochemically confirmed abstinence.

A033 Barriers to eating fruits and vegetables among a low-income ethnically diverse population. Caprice Brown1, Pam Hull2, Rebecca Selove3, David G. Schlundt4, Joscelyn Silsby5. 1AARP Foundation, Washington, DC, 2Vanderbilt University, Nashville, TN, 3Tennessee State University, Nashville, TN.

A high-quality diet that includes recommended daily amounts of fruits and vegetables (FV) is associated with reduced risk for cancer and improved health outcomes for cancer survivors. There is evidence that some cancer disparities among minorities are associated with diet quality, and there is persistent evidence of poor nutrition and food insecurity among low-income minorities in the U.S. This has led to federal efforts to increase fresh fruit and vegetable consumption among Supplemental Nutrition Assistance Program (SNAP) participants. As part of an evaluation of an intervention to increase fresh fruit and vegetable (FFV) consumption in SNAP households, this study asked: How do perceived barriers to eating more FVs vary by age, gender, race/ethnicity, and level of education? The AARP Foundation implemented the United States Department of Agriculture (USDA)'s Food Insecurity Nutrition Incentive (FINI) Grant Program in two southeastern states. SNAP participants could receive financial incentives through their SNAP cards in the form of coupons or tokens for purchasing FFVs or SNAP items at grocery stores and farmers’ markets in selected communities. Individual households in these communities were randomly selected and invited to respond to an evaluation survey via the internet or a telephone survey. The survey included seven questions from the National Cancer Institute Food Attitudes and Behaviors Study about barriers to eating FVs, with ratings on a scale of strongly agree to strongly disagree. Responses were summed to create composite barriers scores. Completed baseline surveys were received from 1,459 households in Tennessee and Mississippi. There were significant age differences for three barriers, with survey respondents aged 65 and older being more likely to report the following barriers: hard to find FVs where I shop (p<0.023), cost too much (p<0.001), and I do not like (p<0.029). Respondents 18-29 years reported time to prepare as a barrier more often than other age groups (p<0.05). Males gave a higher barrier rating for knowing how to prepare (p<0.044) and females for costing too much (p<0.034). Whites gave the lowest barrier rating for difficult to prepare (p<0.002) and the highest rating for cost (p<0.001), while Hispanics gave the highest rating for personal dislike of FVs (p<0.006). Those with high school or
POSTER SESSION A

less education tended to rate the following barriers higher than participants who had gone to college: don’t know how to prepare (p<0.001), don’t have time to prepare (p<0.008), hard to find where I shop (p<0.006), family dislikes (p<0.001), personal dislike (p<0.001), and average barrier rating (p<0.001). Across all demographic groups, cost was reported as the biggest barrier.

Conclusions: The results suggest that interventions to increase FV consumption for cancer prevention and improved outcomes for minority cancer survivors may need to be tailored to address different needs based on age, gender, ethnicity, and level of education.

A034 Baseline characteristics of participants enrolled in a randomized controlled trial of a diet and physical activity intervention among Hispanic/Latina breast cancer survivors (in progress). Kathleen T. Ullyand1, Margarita Santiago-Torres2, Zaixing Shi3, Rachel Paul4, Amanda Marin-Chollom5, Marisol Castellano1, Yanette Fuentes1, Isobel Conten10, Pam Koch7, Heewon L. Gray1, Ann O. Gaffney1, Dawn Hershman6, Heather Greenlee7, 1Columbia University Mailman School of Public Health, New York, NY, 2Fred Hutchinson Cancer Research Center, Seattle, WA, 3Columbia University Teachers College, New York, NY, 4University of South Florida, Tampa, FL, 5Cook For Your Life, New York, NY, 6Columbia University Irving Medical Center; Columbia University Mailman School of Public Health, New York, NY, 7Fred Hutchinson Cancer Research Center; Columbia University Mailman School of Public Health, Seattle, WA.

Background: Cancer survivors are recommended to consume a diet high in fruits and vegetables (F/V), low in energy dense foods, and engage in 150 minutes of moderate-to-vigorous physical activity (MVPA). Hispanic/Latina breast cancer (BC) survivors have higher rates of obesity and lower rates of physical activity compared to non-Hispanic white women. The Mi Vida Saludable (My Healthy Life) trial is testing the effectiveness of a culturally based behavioral intervention on improving and maintaining diet and physical activity changes among Hispanic/Latina BC survivors (R01CA186080, PI: H Greenlee). The primary outcomes are changes, from baseline to 12 months, in daily servings of F/V, total energy density, and physical activity.

Methods: Mi Vida Saludable is a 2x2 factorial randomized controlled trial conducted in Hispanic/Latina BC survivors living in New York City. The eligibility criteria include: self-identified as Hispanic/Latina female; aged 21 years; diagnosed with stage 0-III BC with no detectable disease; >3 months post-treatment (current use of hormonal therapy allowed); have access to text messaging and the Internet; and available for Saturday intervention classes. Additional eligibility criteria include intake of <5 servings of F/V per day assessed using NIH’s Quick Food Scan Questionnaire) and/or <150 minutes of MVPA per week (assessed via a modified International Physical Activity Questionnaire Short Form). Baseline data collection includes self-reported demographic, medical history, anthropometric measures, technology use, diet, and physical activity. Participants (target enrollment n=200) are randomized to four arms: A) in-person education plus e-communication, B) e-communication alone, C) in-person education alone, or D) control. Randomization is stratified on preferred language (English vs. Spanish) and current use of hormonal therapy. All participants receive a Fitbit, 30-minute health coaching session, and printed materials. Here, we report the screening and baseline characteristics of participants enrolled to date.

Results: As of July 2018, a total of 128 participants have been enrolled and randomized into the study. Baseline characteristics include: mean age of 56 years (SD 9), 56% with annual household income $15,000, 54% with some college education or higher, 44% overweight (BMI 25–<30 kg/m2), 41% obese (BMI 30 kg/m2), mean time since diagnosis 5 years (SD 4), average 2 servings/day of F/V (SD 1), and mean 51 minutes/week of MVPA (SD 92), 59% comfortable using email, and 80% comfortable using text messaging.

Conclusion: To date, the majority of participants enrolled are overweight/obese and on average do not meet the recommendations for cancer survivors on daily F/V intake and MVPA. Over half of participants enrolled have some college education or more, and more women are comfortable using text messaging compared to email. Trial enrollment will be completed in fall 2019 with a target goal of 200 participants.


The role of research has been instrumental in extending cancer survivorship and improving overall cancer care. Despite these advances, African Americans continue to suffer disproportionately from cancer. Research shows that the majority of people with cancer are unaware that clinical trials are an option; given the opportunity, most stated that they would enroll. Fox Chase Cancer Center is committed
to improving health care outcomes for the communities it serves by expanding education and outreach efforts focused on cancer prevention, screening, early detection, treatment, and survivorship. Using a community-based intervention, we designed a Community Ambassador Training (CAT) program to develop a cohort of lay community members to engage primarily African American communities in conversations regarding the importance of research participation. We also evaluated the efficacy of the CAT in increasing participants’ knowledge regarding clinical trials and biospecimen research and their ability to accurately, disseminate this knowledge. Working through community partners and building on prior research efforts, Community Health Educators (CHE) funded by NCI’s Center to Reduce Cancer Health Disparities trained three cohorts of African Americans to become community ambassadors. Thirty-five individuals participated and 19 completed the full training. The seven-week program included didactic teaching that addressed the role of research, the research process, past abuses, and existing laws and regulations. The program also included interactive exercises that empowered participants to feel comfortable sharing information with other community members. Results from the study show that following completion of the program, there was a notable increase in participants’ knowledge and comfort with discussing cancer research with others. During our session, we will share our approach, methods, activities, lessons learned, challenges, and next steps.

**A036 Engaging African American men as citizen scientists to validate a prostate cancer biomarker.** Karriem S. Watson1, Josef Ben Levi2, Tiffany McDowell3, Alfreda Beth-Holloway4, LeAndre Moore5, Ivanhoe Hall6, Alexander Kimbrough6, Pooja Gogana7, Robert A. Winn3, Marcus Murray8, Adam Murphy9, University of Illinois Cancer Center at UIC, Chicago, IL, 2Northeastern Illinois University, Chicago, IL, 3University of Illinois Global Health Alliance, Chicago, IL, 4University of Illinois School of Public Health, Chicago, IL, 5University of Illinois Cancer Center, Chicago, IL, 6UIC School of Public Health, Chicago, IL, 7Robert H. Lurie Comprehensive Cancer Center at Northwestern University, Chicago, IL, 8Project Brotherhood, Chicago, IL, 9Robert H. Lurie Comprehensive Cancer Center at Northwestern University, Chicago, IL.

**Background/Introduction:** The purpose of this study is to examine the feasibility of engaging African American (AA) men as Citizen Scientists (CSs) to support the engagement, recruitment, and retention of AA men in a prostate cancer (PCa) study to validate a new biomarker, Prostate Health Index (PHI) in AA men. AA men are traditionally under-represented in PCa research. Additionally, PCa screening studies that have sought to validate innovative ways of improving the screening of PCa often exclude or do not intentionally focus on the engagement of AA men. Using a Community Engaged Participatory Research (CBPR) model, this study purposes to engage the social networks of AA men trained as CSs to engage and recruit a cohort of healthy controls as a low-cost first step in validating PHI as a PCa screening test in AA men.

**Methods:** Building upon the social networks of the multi-PI team from 3 academic medical institutions and 2 community-based organizations, we sought to identify, recruit, and train 8-12 AA men as CSs. A CS training curriculum was developed and adapted from other CS training models to meet the specific needs of AA men engaged in PCa research. A training series of 5 two-hour modules was developed for the CSs; module 5 is a booster. Validated surveys and post-training evaluations were administered to CSs to assess medical mistrust, cancer knowledge, and adverse childhood experiences. Post-training questionnaires were used to assess quality of training and areas for improvement. Sessions were conducted using CBPR principles to allow CSs to inform the recruitment and retention approaches for AA men in the CSs social network. CSs and PIs collaboratively developed a series of recruitment events within their social networks. IRB approval was obtained across the three academic partners involved.

**Results:** Nine AA men from the social networks of the multi-PI team have been identified. The 9 CSs include 3 PCa survivors, 2 faith-based leaders, 1 fraternity order member, 1 civic leader, 1 barber, and 1 community social worker. The CSs have completed 3 of 5 modules. All the 9 CSs have completed CITI IRB training and are key personnel in the research protocol. Attendance at meetings ranged from 75-100%. Medical mistrust was high among AA CSs. All CSs strongly agreed that their contribution to AA health equity was a reason for their participation. To date, one pilot community event has been developed from the social network of the faith-based and civic CSs. Six events have been planned for summer/fall 2018 to reach Year 1 recruitment goals.

**Conclusion:** Early outcomes indicate that it is feasible to engage/train AA men as CSs to conduct PCa disparities research. Attendance and survey data suggest that AA male CSs are willing to support AA-focused PCa disparities research. Pending the assessment of the recruitment feasibility of AA men, this represents a potentially scalable model for engaging AA men in cancer disparities research and for leveraging social networks to support recruitment and retention of AA men in cancer disparities research.

My poster will focus on partnering and working together to fight or eliminate disparities. It will focus on the need for health systems, community groups and public organizations to come together in working to educate and bring together prevention and treatment.


Introduction: Inflammatory breast cancer (IBC) is an understudied and aggressive breast cancer subtype, accounting for 7-10% of all breast cancer-related deaths in the United States. IBC is more common among African American (AA) women, who also develop higher rates of treatment resistance when compared to other races and survival rates are lower after adjusting for nonbiologic and socioeconomic factors. IBC typically lacks a clinically apparent tumor mass, leading to misdiagnoses and treatment delays. There is little research on the IBC patient perspective regarding quality of care, cost, or side effects of therapy.

Methodology: In order to address critical needs in IBC clinical care and outreach across North Carolina and nationally, the Duke Consortium for IBC organized an interactive community engagement session. Attendees (n=174) at the local and national level included patients, advocates, NC government representatives and stakeholders (28%), health care providers (15%), staff (15%), academic research and clinical faculty from local universities and national IBC centers/laboratories (13%), trainees (9%), and other (16%). Facilitated small groups (3-8) discussed open-ended questions related to 1) gaps preventing timely diagnosis and treatment, 2) advocacy and grassroots programs, and 3) integrating research and outreach. Representative patients and facilitators/community partners were also contacted post-meeting for in-depth responses. All notes were recorded and thematic analysis using NVivo 12 Pro qualitative software was performed by three independent researchers. Grounded theory shaped both design and analysis.

Results: A total of 506 unique responses were recorded and six major themes were identified: barriers to care (57.7%), education (16.4%), outreach/awareness (43.3%), fundraising (6.3%), legislative process/priorities (1.4%), and “other” (3.0%). Within those themes, three topics emerged: a) provider education, b) barriers to diagnostic and/or treatment delays, and c) raising awareness of IBC and late disease breast cancer in communities.

Conclusions: This is the first report, to our knowledge, of a community engagement session and focused interviews that included clinicians, researchers, and patients/community stakeholders to address the unique needs and challenges for IBC patients. The study highlights the critical need to address lack of education around IBC at the provider and hospital level, and the need for better interaction with academic medical centers. Because treatment can be lengthy, social determinants, such as low socioeconomic status, may play an even larger role in patients with IBC. There is also a need for observational data on where knowledge gaps exist among providers and how missed diagnoses impact the patient in order to design improved interventions.

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A039 Utilizing community-based participatory research to facilitate the conduct of research in a safety-net hospital. Dexter Cooper1, Reagan Durant2, Desiree Rivers1, Natalie Hernandez1, Jennifer Creighton1, Brian Rivers1, Monica Harris1, 1Morehouse School of Medicine, Atlanta, GA, 2University of Alabama at Birmingham, Birmingham, AL.

Background: Safety-net hospitals, often in inner-city communities, provide a considerable level of care to low-income, uninsured, Medicare, Medicaid, and vulnerable populations. Establishing and performing research studies at safety-net hospitals may require additional planning due to the protections provided to ensure ethical research and the characteristics of the populations they serve. Community-based participatory research (CBPR) is a partnership approach to research that equitably involves community members, organizational representatives, and academic researchers in all aspects of the research process. The purpose of this study is to 1) report the application of community-based participatory research to develop the capacity to conduct a multilevel qualitative research study focused on minorities’ participation in clinical trials in a...
POSTER SESSION A

Methods: This qualitative study discusses the implementation of CBPR in the preintervention process of a multilevel qualitative research study within a safety-net hospital cancer center in Atlanta, GA. The seven principles of CBPR guided the structure of project meetings with hospital leadership and administration, process for development of research documents, and obtaining regulatory approval.

Findings: Navigating the research approval process in a safety-net hospital and fostering relationships with key hospital leaders and administrators were critical to the initiation of the study. The study followed a university Institutional Review Board (IRB)-approved protocol; however, there were hospital procedures and policies specific to the safety-net hospital that required modifications to the timeline and protocol. In addition to the IRB approval, the study had to undergo a separate approval process by two hospital regulatory boards. The CBPR approach fostered processes that enabled hospital leadership and administrators to contribute their expertise with shared responsibility and ownership. Through CBPR, the academic research team was better able to understand effective strategies for conducting research in a safety-net hospital. Building trust and establishing rapport with hospital leadership and administrators involved a series of meetings, collaboration on community and hospital-based events, transparency by describing the study’s purpose, and what knowledge was being generated and how it would be used. Through the CBPR approach, a process was established to feed back the data, jointly interpret the data, disseminate the data, and translate the data into interventions and/or policy.

Conclusion: The information provided from this study is beneficial to future studies that partner with safety-net hospital cancer centers. When planning a study, researchers should follow CBPR principles to build trusting relationships with the hospital leadership and administrators.

A040 Barriers to African American participation in clinical trials: A qualitative study of Central Brooklyn residents.

Cicely K. Johnson, SUNY Downstate Medical Center, Brooklyn, NY.

In 2014, African-Americans made up 13% of the population, yet only comprised 5% of clinical trial participants. For diseases that are more associated with Blacks like sickle health, and other diseases with high incidence rates for Blacks like prostate, colorectal, and lung cancers, it is imperative to explore the root reasons for why Black participation in clinical trials remains so low. The study was conducted through Pfizer and with the Arthur Ashe Institute for Urban Health, a community-based nonprofit organization founded in 1992 by tennis champion and humanitarian Arthur Ashe. The Institute, located in multiethnic Brooklyn at SUNY Downstate Medical Center, utilizes a Community Health Empowerment Model, and works on health education and training with the community. This study utilized a convenience sample of 14 participants recruited in our partner barber shops and hair salons, as the Institute conducts CBPR in nontraditional settings. The participants were broken into three focus groups: men, women, and the Institute’s Health and Beauty Council, which consists of barbers and stylists with whom the Institute partners for training and education. The results were tabulated by gender (9 women and 5 men) to explore the issue of low participation. Reasons differed by gender; however, some main themes were a lack of knowledge, fear of addiction, medical mistrust, patient-provider relationships, health literacy as a barrier, cultural health practices, and how to reach a targeted audience for participation. To provide a snapshot of the group, 64% had never participated in a clinical trial, 86% were between 18-60, 93% had health insurance, 33% had an associate’s degree or higher, and 71% of annual household incomes were below $31,000. Central Brooklyn is an area in dire need of continuous research in health care. Disparities are pronounced given the mix of income neighborhoods and significant populations of African American, Caribbean, and Latino populations. The borough is crippled with chronic conditions such as asthma, COPD, cardiovascular conditions, diabetes, HIV, and cancers. In addition, there are a large number of immigrants, many undocumented, with barriers to health care. Year after year, in NYC’s Community Health Profile of Central Brooklyn, in comparison to 41 other NYC neighborhoods, Central Brooklyn ranks below average (bottom 10) in the areas of general health, maternal and child health, infectious diseases (influenza, HIV/AIDS), chronic diseases (heart disease, diabetes, lung disease), prevention in doctors’ offices (cancer screening and immunizations), and access to medical care. The participants had lower levels of income, education, and marriage (social support) rates, yet the qualitative approach captured their knowledge and sentiments towards participating in clinical trials. The results can severely impact future approaches towards increasing Black participation in clinical trials and can help tailor a more culturally aware approach to diversifying clinical trial participation.
**POSTER SESSION A**

**A041 University of California Moores Cancer Center**

**CancerDAT: Development of an online tool to reduce cancer disparities by engaging and linking local organizations and researchers.** Corinne R. McDaniels-Davidson, Jesse Nodora, Samir Gupta, Sandip P. Patel, Tanya Penn, Maria E. Martinez. 1San Diego State University, San Diego, CA. 2Moores Cancer Center, UCSD, La Jolla, CA.

The purpose of Moores Cancer Center (MCC) CancerDAT is to reduce cancer disparities through the development of an online tool that will facilitate research partnerships, build the capacity of community-based organizations, and encourage community engagement. CancerDAT is a part of the MCC Community Outreach and Engagement Initiative (COE), which aims to decrease the burden of cancer in San Diego County, the MCC catchment area. San Diego is geographically and demographically unique, bordering the Pacific Ocean and Mexico. Across and within neighborhoods, the population varies greatly in socioeconomic status, acculturation, and languages spoken. In order to effectively recruit from, collaborate with, and intervene in communities, cancer researchers and practitioners must understand these unique sociodemographic characteristics and community needs. To achieve this kind of understanding, researchers need access to local data and local organizations and leaders, as well as information about existing efforts to address cancer disparities in a given community. Many organizations in San Diego are devoted to reducing cancer disparities; their efforts, however, are hampered by an inability to fully engage in research and implement evidence-based practices. Local community needs assessments have identified barriers to organizational participation in these activities, including an inability to access relevant and current local data, a lack of knowledge about adopting and adapting interventions for their communities, and a lack of connection to local academics open to collaborative research. The MCC COE, in partnership with their Community Advisory Board, will address these needs by: 1) assessing the catchment area cancer burden across neighborhoods; 2) facilitating transdisciplinary basic, translational, and clinical research; and 3) disseminating evidence-based practices and resources for cancer prevention, screening, and treatment. To facilitate this, the MCC COE collaborated with the UC San Diego Altman Clinical and Translational Research Institute and consortium partner San Diego State University to develop CancerDAT (moores.healthdat.org). This tool will be used by academics and community partners to identify and address cancer disparities across communities. For example, breast cancer mortality rates vary greatly in different San Diego communities: the age-adjusted death rate in the Del Mar region is 6.06/100,000 compared with 49.67/100,000 in the Jamul region. These disparities can be easily visualized and identified by CancerDAT users. CancerDAT is a free, user-friendly, online platform that provides: 1) mapping of neighborhood-level cancer outcomes, demographics, behaviors, and social determinants of health; 2) descriptions of best practices to address cancer disparities; 3) neighborhood programs and resources that address disparities; 4) links to community-engaged academics interested in collaborating; and 5) links to existing relevant local collaboratives.

**A042 Increasing the participation of minorities in research in a biorepository in UC San Diego, California.** Sharmeela Kaushal, Jim Salinas, Katherine Crouthamel, Jason K. Sicklick, Alfredo A. Molinolo. BTTSR, Moores Cancer Center, UC San Diego, La Jolla, CA.

**Background:** The UC San Diego (UCSD) Moores Cancer Center Biorepository (BR) is a College of American Pathologists (CAP)-accredited core. The BR provides a full array of services including tissue biobanking following informed consent, under an IRB-approved protocol. However, internal review demonstrated low enrollment of minority populations.

**Methods:** In January 2018, the BR launched the MORE (Minorities Outreach Repository Effort) Initiative to: 1) increase research participation by minorities, 2) evaluate the perceptions of research participation by minority groups, 3) evaluate the disease group distributions of minorities at our institution, and 4) increase the participation of minorities in clinical research. Oncology clinic schedules were prescreened, and patients were identified for potential enrollment. Eligible patients were interviewed and informed consent was obtained in collaboration with the treatment teams. The research consent form was translated from English into Spanish, Russian, Vietnamese, Farsi, Tagalog, Simplified Chinese, and Arabic to enable the participation of non-English speaking patients. Race and ethnicity data were obtained from the Epic electronic medical record. Perception of minorities towards tissue collection was evaluated as the percentage of patients who declined consent. Disease distribution was obtained from the California Cancer Registry (data specific for the MCC).

**Results:** Since MORE began, we increased minority participation in our study by 213%. The percentage of declines was similar between Hispanics and non-Hispanics in general, although there was a significantly higher number of declines among Asians and non-Hispanic African
Americans, 8% vs. 19% (p =0.01). Disparities were observed in disease distribution with Hispanics having lower incidences of skin cancers, soft tissues/bone sarcomas (12.94% vs. 86.57%; p =0.066), and the highest for liver diseases (41.76% vs. 57.14%; p=0.00001), as compared with all other populations. Surprisingly, the number of patients consulting for genitourinary (GU) and breast diseases is significantly lower in Hispanics, as compared with all other ethnic groups (16.08% as compared with 83.45% for GU, and 20.41% as compared with 79.14 % for breast). In addition, from 420 who self-identified as belonging to a minority group, only 37.5% needed translation.

Conclusions: The MORE initiative has been demonstrated to be an efficient way of increasing the participation of minorities, and has allowed us to better understand research participation perceptions and disease distribution in this group. We are now moving to follow up these preliminary results with a full research trial, to start early next year.


Introduction: Effective interventions tailored for rural Spanish-speaking Latina breast cancer survivors are needed to address their psychosocial health disparities.

Purpose: Describe development of a rural community-based cognitive-behavioral stress management program, Nuevo Amanecer-R (NA-R) (New Dawn-R) and baseline characteristics of rural Latina breast cancer survivors enrolled in the RCT testing the program.

Methods: Using community-based participatory research (CBPR) strategies, we applied a translational model appropriate for underserved populations that integrated an evidence-based intervention, a community best-practices program, and formative research to develop a program that could be delivered by trained breast cancer survivors (peers) in rural settings. We trained community recruiters to enroll, and collect hair and saliva biospecimens from, Spanish-speaking Latinas with nonmetastatic breast cancer in 3 rural California communities. Women were randomized to receive the program immediately or in 6 months. Primary outcomes include the Functional Assessment of Cancer Therapy-Breast Quality of Life (FACT-B) Total Score and its Physical, Social, Emotional, Functional Well-being, and Additional Concerns about Breast Cancer subscale scores (higher scores=better quality of life), with assessments at baseline, 3 months, and 6 months.

Results: Based on input from survivors, advocates, and clinicians, modifications to the initial program for rural Latina survivors included further simplification of language, more visuals, developing stress management videos in Spanish and English, and expansion from 8 to 10 sessions to increase skills practice and healthy lifestyles information. Trained peers are delivering the 10-week NA-R program through weekly in-person 90-minute sessions in participants’ homes. Components include managing the initial impact of cancer, finding cancer information and support, thoughts and mood management skills, behavioral stress management skills, and goal-setting. Of 231 women approached, 54 (24%) refused, 24 (10%) were ineligible, and 153 (66%) were randomized (76 to intervention, 77 to control group). To date, all baseline, 90% of 3-month, and 92% of 6-month assessments are completed. Participant characteristics are: mean age of 54.8 years (range, 28 to 88); 69% have < high school education; 66% are married; 80% have public/no health insurance; and 48% experienced financial hardship in the past year. Baseline FACT-B mean scores are: Total Score, 96.7 (possible range 0-144); Emotional Well-being, 17.3 (possible range 0-24); Functional Well-being, 18.2 (possible range 0-28); Social/Family Well-being, 18.2 (possible range 0-28); Physical Well-being, 20.4 (possible range 0-28); and Breast Cancer Concerns, 22.7 (possible range 0-36).

Conclusions: Using CBPR principles in the design and implementation of community-based RCTs enhances cultural appropriateness, congruence with community contexts, and recruitment and retention.

A044 Black identity, hair product use, and breast cancer: Exploring breast health issues in Black women. Dede K. Teteh1, Marissa Ericson2, Eudora Mitchell3, Phyllis Clark4, Rick Kittles5, Susanne Montgomery5, 1City of Hope, Duarte, CA, 2University of Southern California, Los Angeles, CA, 3Quinn Community Outreach Corporation, Moreno Valley, CA, 4Healthy Heritage Movement, Riverside, CA, 5Loma Linda University, Loma Linda, CA.

Introduction: The parent study investigated the potential role of hair products for breast cancer etiology in a community
sample of Black women. Black women are diagnosed and die from breast cancer more than White women. Hair across the African diaspora is synonymous with identity. Black women use more hair products containing endocrine-disrupting chemicals than other races. Currently there is no hair, identity, and health scale. To better understand the cultural influence of hair product usage for Black women, given the possible link between product use and breast cancer, we assessed identity, perceived risk, knowledge, and attitude about Black hair and breast cancer. The purpose of this study was to validate a hair, identity, and breast health scale in a diverse sample of Black women.

Methods: In phase 1 of our study we explored the cultural and personal meaning of hair for Black women (N=125). Transcribed qualitative interviews were analyzed using grounded theory methods. Survey items were created based on emerging themes. In the survey phase of the study, Black women completed a 27-item scale to rate the degree of agreement with statements related to identity, hair products, and breast cancer diagnosis. Principal component analyses were conducted to investigate the underlying factor structure of influence of hair and identity on cancer diagnosis. A confirmatory factor analysis (CFA) confirmed whether one, two, or three factors best explain our identity, hair product use, and breast cancer diagnosis scale.

Results: Our participants (N = 211) comprised 70% African American, 18% African, and 7% Caribbean Black women aged 29 to 64. Factor analysis yielded two factors that accounted for 61% of the total variance. Five items tapping into sociocultural perspectives about hair and identity loaded on Factor 1 and accounted for 32% of the total variance. Cronbach’s alpha for this 5-item subscale was 0.82 (95% CI = 0.77-0.86). Six items assessing hair product usage, perceived risk, and breast cancer diagnosis accounted for 29% of the total variance. Cronbach’s alpha for the 6-item subscale was 0.82 (95% CI =0.74-0.86). Confirmatory factor analysis confirmed the two-factor structure (root mean square error of approximation= 0.03; Comparative fit index= 0.91; Tucker Lewis index = 0.88) for this newly created identity, hair product use, and breast cancer diagnosis scale.

Conclusions: As we seek to better understand cultural influences that perpetuate disparities in mammography screening rates, the impact of hair on identity for Black women should also be recognized. Our hair, identity, and breast health scale may provide insights to comprehend the social and behavioral patterns of Black women in relation to breast cancer prevention and hair product risk. Considering these sociocultural perspectives of women across the African diaspora may yield culturally appropriate strategies that inform interventions about identity, hair product risk, and breast cancer prevention.

A045 Racial/ethnic, language, and health literacy disparities on perception of voluntariness during informed consent for pediatric cancer clinical trials. Paula Aristizabal,1 Anissa MA2, Blanca Perdomo,2 Jesse Nodora,4 Maria E. Martinez. 1University of California San Diego, Dept. of Pediatrics, Division of Pediatric Hematology/Oncology, Rady Children’s Hospital-San Diego, UCSD Moores Cancer Center, San Diego, CA, 2University of California San Diego, School of Medicine, La Jolla, CA, 3Rady Children’s Hospital-San Diego, San Diego, CA, 4University of California San Diego, Dept. of Family Medicine and Public Health, UCSD Moores Cancer Center, La Jolla, CA.

Background: Valid consent for research requires that the decision for participation be both fully informed and voluntary. Previous studies on informed consent have shown that when presented with a clinical trial for their child, parents often do not understand the many components of informed consent, including voluntariness of participation. In addition, individuals with limited English proficiency have reported lower understanding and satisfaction during informed consent. There is limited research on factors associated with perception of voluntariness during participation in pediatric cancer clinical trials. Our aim was to examine contextual factors associated to perception of voluntariness in parents who had consented to participation of their child in a clinical trial for cancer treatment, focused on characterizing differences between non-Hispanics and Hispanics, as the latter is the fastest-growing ethnic group in the U.S.

Methods: Parents (n=97) of children aged 0-17 years with newly diagnosed cancer, who had consented to participation in their child in a clinical trial for cancer treatment, were prospectively recruited. Participants completed questionnaires assessing sociodemographics, health literacy, perception of voluntariness, decisional regret, satisfaction, and acculturation level, if Hispanic. Outcomes and their correlates were analyzed using logistic regression.

Results: Fifty participants (51.5%) were Hispanic and 47 (48.5%) non-Hispanic. We found that parents who were Hispanic compared to non-Hispanics (p<0.001), Spanish-speaking compared to English-speaking (p=0.048), and those with lower health literacy (p<0.001) had lower perception of voluntariness. Decisional regret was overall low and satisfaction was overall high across all subgroups.
and neither measure was significantly impacted by sociodemographics, health literacy or acculturation.

Conclusions: In this study, with equivalent numbers of Hispanics and non-Hispanics, we found that Hispanic parents of children with newly diagnosed cancer, and particularly Spanish-speakers and those with low health literacy, had inadequate perception of voluntariness. To our knowledge, this is the first study to associate lower health literacy with lower perception of voluntariness in parents of children with newly diagnosed cancer despite overall high rates of satisfaction with the informed consent process for pediatric cancer clinical trials. True voluntariness of participation is essential to the ethical practice of informed consent, and our study suggests that many participants with low health literacy, particularly Hispanics and Spanish-speaking individuals, are not making truly informed decisions. Tailored interventions can improve decision-making, reduce clinical trial participation inequities and, ultimately, eliminate survival disparities by effectively and equally translating discoveries and treatment benefits to diverse populations.

A046 Colorectal cancer screening among Chamorro on Guam: Barriers and access to care. Tessa P. Diaz. University of Guam, Mangilao, Guam, USA.

Colorectal cancer (CRC) is the second most common cause of cancer death on Guahan (Guam), Chamoru, the Indigenous peoples of Guahan, have the highest mortality rates in CRC on the island, which implicates the need for earlier detection. Limited research has been conducted on CRC screening behavior among Chamoru. To address the gap, this study seeks to understand, explore, and predict factors associated with CRC screening among Chamoru, and to address the research questions: (1) How does access to care impact colorectal cancer screening among Chamoru on Guam, and (2) What are barriers to colorectal cancer screening among Chamoru on Guam? Guided by Andersen’s Behavioral Model of Health Service Utilization, individual predictors were categorized as predisposing, enabling, and need factors that facilitate or hinder CRC screening. A mixed quantitative and qualitative methods approach was utilized. First, screening data from the 2010 Guam Behavioral Risk Factor Surveillance System were used to model the association between CRC screening and predisposing, enabling, and need factors. Second, semistructured in-depth interviews with Chamoru men and women were conducted on why they opted for or against CRC screening. Purposive and snowball sampling was implemented to recruit participants due to the potentially sensitive and stigmatizing subject of colon/rectum screening processes. Binary logistic regression was used in quantitative analysis to determine significant predictors of CRC screening utilization. Qualitative analysis implemented grounded theory to determine relevant themes and key findings. Quantitative results show that having an annual check-up and educational attainment of high school or greater significantly predicted CRC screening. Qualitative analysis points to five themes in CRC screening decision-making: (1) being proactive in one’s health care; (2) intergenerational consciousness of cancer diagnosis and related screening behaviors; (3) social stigma associated with colonoscopies; (4) “If I’m gonna die, I’m gonna die”; and (5) negative perceptions of the medical system. Findings provide insight toward cultural and health beliefs as facilitators and barriers to CRC screening with broader implications for political status as a determinant of health. Further research toward culturally tailored screening interventions is recommended to address cancer disparities in the context of health care access and health equity for Chamoru.

A047 An ethnographic study of African American men’s prostate cancer treatment decision-making. Nynikka R. Palmer1, Richard L. Street2, Dean Schillinger3, Janet K. Shim1, Sarah D. Blaschko3, Benjamin N. Breyer1, Rena J. Pasick1. 1University of California, San Francisco, San Francisco, CA, 2Texas A&M University, College Station, TX, 3Alameda Health System, Oakland, CA.

Purpose: Compared to White men, African American men bear a disproportionate burden of prostate cancer (PCa), including higher mortality, widespread undertreatment, and greater dissatisfaction with care and decisional regret. We explored the process of treatment decision-making to inform future interventions to achieve patient-centered communication and guideline-concordant care.

Methods: We conducted an ethnographic cohort study at two public hospitals following African American men newly diagnosed with PCa, from diagnosis through treatment decision. Data sources included audio-recorded observations of urology and radiation oncology appointments, field notes from observations of multiple clinic appointments, and two in-depth interviews with patients (post-diagnosis and post-treatment decision). We explored how patients chose their treatment, who they consulted, and the information they sought. Audio recordings of clinic appointments and in-depth interviews were transcribed verbatim. We used an iterative process of coding and team discussion to conduct a thematic analysis of qualitative data to examine the experiences, refine codes, and identify key themes.
POSTER SESSION A

**Results:** Among 16 African American men diagnosed with PCa, four key themes emerged regarding treatment decision-making: feelings of anxiety/fear, impact of others’ cancer narratives, interactions with clinical team, and sociocultural support. Men expressed a desire to quickly get past PCa due to anxiety/fear and viewed surgery as their best option to achieve this goal. Patients’ sense of urgency varied based on diagnosis (low-risk vs. intermediate- or high-risk PCa). Many men reflected on negative things they heard from other people’s cancer experience, often not related to PCa, which elevated their own apprehension of certain treatment options. Patients expressed confidence in and level of comfort with their urologist and his/her recommendation, despite the absence of a second opinion or radiation oncology consultation. Notable sociocultural dynamics emerged, such as men hiding their diagnosis from family, and family members questioning care plans (e.g., active surveillance vs. active treatment). Partners, family members, and friends played an important role, despite their absence at clinic appointments.

**Conclusions:** Study results thus far reveal a range of influences on PCa treatment decision-making among African American men, including fear/anxiety and sociocultural networks that may contribute to rushed and ill-informed decisions. A more nuanced probing of sociocultural aspects is needed. Future studies should further explore these factors as nodes shaping decision trajectories, and therefore as potential points for intervention. For example, educational efforts might highlight the availability of time to consider treatment options and the value of second opinions. PCa survivors’ stories could also be a powerful resource, although efforts may need to demystify misinformation that incites fear.

**A048 Creating a mobile device-based educational intervention for African American women with hereditary breast cancer risk.** Delawnia Comer-HaGans1, Vickii Coffey1, Giesela Grumbach1, Shirley Spencer1, Carolyn Rodgers1, Ravneet Kaur2, Karen Aguirre3, Ifeanyi Beverly Chukwudzie1, Vida Henderson2, Karriem S. Watson2, Catherine Balthazar2, Angela Odoms-Young2, Robert A. Winn1, Kent F. Hoskins2.

1Governors State University, University Park, IL, 2University of Illinois at Chicago, Chicago, IL, 3University of Illinois Cancer Center, Chicago, IL.

**Background:** Our foundational work found very low rates of attendance at a genetic counseling (GC) consultation among AA women with hereditary breast cancer (BC) risk who were referred for GC, and a strong desire among women and their primary care physicians (PCPs) for culturally sensitive educational material to help women understand the purpose of GC. We are creating a story-based educational intervention delivered on a mobile device platform that is designed to motivate AA women with familial BC risk to attend GC. Content for the intervention is informed by constructs from the Integrative Model of Behavioral Prediction and by themes identified through qualitative research with high-risk AA women. Kreuter’s model for culturally tailoring health interventions guided the creation of the intervention.

**Methods:** Using an iterative process encompassing semistructured, one-on-one interviews and group story circles with AA women referred for GC (primarily nonattenders), we identified themes that represent barriers and motivators to attendance for AA women. The storyline and educational content for the script were based on the themes identified. The script and artwork were tested with focus groups that included members of the target audience AA women with a family history of BC) and key community stakeholders. We are also conducting key informant interviews with PCPs providing care for AA women. The intervention, which will include live-action video sequences and segments of animation to illustrate key educational content, is based on the script that emerged through this iterative process.

**Results:** Findings from semistructured interviews (N=20) were augmented with data collected from group story circle sessions with a subgroup of women who participated in the one-on-one interviews (N=11). Nine thematic domains emerged from the combined data that are relevant to attendance at a GC appointment: (1) health education/health literacy, (2) trust, relationships, communication with providers, (3) empowerment, (4) health beliefs, (5) motivation/facilitators of breast care, (6) family support and secrecy, (7) religion/spirituality, (8) barriers, and (9) fear resulting from equating genetic counseling with receiving a cancer diagnosis. The findings were used to create a story-based script. Focus groups conducted with community stakeholders and the target audience led to revision in the overall design and style of the intervention (e.g., increased use of live actors and decreased animation) and additional content revisions (e.g., addressing familial secrecy and self-efficacy for women who do not have a referral for GC from a physician). Additional findings from focus groups will be presented and the completed educational video will be previewed.

**Conclusion:** A technology-enabled, culturally sensitive educational intervention that motivates AA women with increased BC risk to attend a GC consultation will facilitate
implementation of a population health approach to eliminating BC disparities.

**A049 Program for the identification, management and monitoring of patients and families at high risk of cancer in a Colombian National Cancer Reference Institution.** Maria Carolina Sanabria-Salas, Gonzalo Guevara-Pardo, Antonio Huertas, Vilma Medina, Ana Lucía Rivera-Herrera, Juan Carlos Mejía, Jesús Acosta, Carolina Wiesner-Ceballo. Instituto Nacional de Cancerología, Bogotá, Colombia.

Cancer is the second cause of mortality due to noncommunicable diseases in Colombia. In 2015 incident cases of breast (BC), gastric (GC), colorectal (CRC), and ovarian cancer (OC) attended at the Colombian National Cancer Institute (NCI) were 685, 498, 470, and 127, respectively. Although hereditary cancer syndromes are the minority of all cancer cases, the precise identification of individuals and relatives at high risk is a key aspect to the implementation of surveillance/screening, chemoprevention, and preventive surgery strategies for affected and unaffected carriers. In our country there are few studies conducted on hereditary cancer, and little is known about the spectrum of syndromes affecting Colombian families. In the Colombian NCI, we have designed and develop a comprehensive program for the registration, identification, diagnosis, management, and surveillance of cancer cases at high risk. Two main strategies where defined within this pilot program: 1) adjustment of the international protocols to the institutional context for identification and referral criteria of cancer patients with suspected syndrome to genetic counseling, genetic testing criteria, management, and surveillance, and 2) implementation of an institutional registry of patients with hereditary cancer, among other strategies. Also, first-degree relatives (FDR) of the affected carriers are offered to be tested and followed through the Center for Cancer Prevention and Early Detection (CPRED), recently established by the Colombian NCI. This Institutional ongoing program is providing genetic risk assessment to an average of 20 cancer patients per week since April 2018. The most frequent cancer we have attended is BC (56%), followed by CRC (10.5%), OC (6%), GC (5.5%), and others (22%). The average age at diagnosis was 47.3 for BC, 50.6 for CRC, 33.6 for OC, 39.4 for GC, and 47.8 years old (yo) for other cancers. Genetic testing has been offered to the patients according to the international guidelines. From all BC cases, the following fulfilled the Hereditary Breast and Ovarian Cancer (HBOC) criteria: i) 44.3% were diagnosed ≤ 45 yo, ii) 24% were diagnosed with triple-negative breast cancer (TNBC) at ≤ 60 yo, iii) 4% were TNBC cases diagnosed at > 60 yo + ≥ 1 FDR/second-degree relative with BC at < 50 yo, iv) 8% were patients with bilateral BC, v) 4% had a second primary tumor, and vi) 1.3% had Ashkenazi Jewish ancestry. From CRC cases, 50% were diagnosed at < 50 yo regardless of family history of gastrointestinal cancers and 30% were diagnosed at ≥ 50 yo and fulfilled criteria for Lynch or Li Fraumeni syndromes. In the case of GC, 60% of the patients had diffuse gastric cancer subtype at < 50 yo. Finally, all OC cases were submitted for genetic testing since all were diagnosed at < 50 yo; 43% were tested for HBOC since they corresponded to papillary serous subtype and 29% fulfilled criteria for Peutz Jeghers syndrome. To our knowledge, this is the first genetic cancer risk assessment program in the country, based in the largest Colombian cancer hospital.

**A050 Molecular testing for minority patients with or at high risk for cancer.** Rajbir Singh, Maliyah A. Al-Bayan, Saritha Kadari, Marlidine Ni Nganteh, Marche J. Jackson, Lanique M. Woodson, Abdullah S. Shamsuddin, Brenda Y. Lemus, Siddharth Pratap, Samuel E. Adunyah, Philip E. Lammers. Meharry Medical College, Nashville, TN.

**Purpose:** Meharry Medical College is a participant in eMERGE (Electronic Medical Records and Genomics), a multicenter network sponsored by NHGRI/NIMHD with the primary goal to develop, disseminate, and apply approaches to research that combines biorepositories with electronic medical records (EMR) for genomic discovery and medicine implementation research. The consortium also focuses on ethical issues involving privacy, confidentiality, and interaction with the broader community. Individual institutions created protocols around research questions individualized to their populations.

**Methods:** We enrolled 500 African Americans with or at high risk for the four most common cancers (prostate, colorectal, breast, lung) to examine possible genetic and proteomic differences to account for health disparities in this population. We will perform DNA, RNA, and proteomics analyses pertinent to these cancers and obtain corresponding clinical history from the EMR with planned long-term follow-up.

**Results:** 500 subjects (211 female) were enrolled over 11 months from Nashville General Hospital, including the following cancer/at-risk participants: breast 59/37; colorectal 17/128; prostate 31/136; lung 16/76. Most individuals stated that they participated for potential benefit to themselves, family members, or humankind and only 11% of potential participants declined. Little concern has been voiced for providing samples for genetic analysis. A genetic counselor...
will meet with the participants who are found to have pathogenic or likely pathogenic mutations, while study investigators will share results with those that are not found to have mutations. Participants will be queried regarding understanding of the genetic testing results and followed for one year to evaluate if they underwent recommended testing and to follow for cancer outcomes.

**Conclusion:** The inclusion of diverse groups in genomic research is critical to identify possible reasons for health disparities and to study the understanding of genetic testing and ethical issues surrounding this topic. In this study, African-Americans are participating willingly in clinical research to examine possible genetic and/or social bases for cancer disparities.

**Acknowledgment:** NIMHD (U54MD007593) to the Meharry Translational Research Center (MeTRC); National Human Genome Research Institute (NHGRI); National Institute of Allergy and Infectious Disease (NIAID).

**A051 Race and gender differences in awareness of colorectal cancer screening tests among recently diagnosed colon cancer.** Leslie R. Carnahan, Lindsey Jones, Katherine Brewer, Yamile Molina, Garth Rauscher. University of Illinois at Chicago, Chicago, IL.

**Background:** Non-Hispanic Black (NHB) populations, compared to non-Hispanic Whites (NHW), are less likely to receive guideline concordant colorectal cancer (CRC) screening. CRC screening barriers are multifaceted and involve factors including health care access and utilization, sociodemographic characteristics, and individuals’ beliefs and awareness about cancer, screening tests, and guidelines. Inability to recall or recognize CRC tests and low knowledge of screening guidelines may contribute to disparate outcomes across the colon cancer continuum.

**Objective:** In the present study, we sought to 1) characterize the prevalence of urban colon cancer patients’ awareness of screening tests and guidelines, and 2) examine if awareness and knowledge of guidelines were associated with mode of cancer detection (screen-detected versus symptomatic presentation).

**Methods:** The Colon Cancer Patterns of Care in Chicago study was a descriptive cross-sectional study that examined racial, gender, and SES disparities in CRC screening, care initiation, diagnostic stage, and subsequent treatment. Eligible patients were NHB and NHW, aged 45-79, with first primary invasive colon cancer, and were recruited from nine diverse, urban health care institutions. After consent, participants completed an in-person interview wherein they responded to questions related to the recall and recognition of colon cancer stool, sigmoidoscopy, and colonoscopy screening tests and knowledge of screening guidelines, diagnostic pathways and treatment, sociodemographic characteristics, and health care access and utilization. They received $100 for completing the interview and consenting to medical record abstraction. Logistic regression was used to model the association between knowledge and awareness variables and colon cancer mode of detection (symptomatic versus screen detection), incorporating nonresponse weights created to account for differences in response rate by facility, age, race and gender, and models were, and controlling for age, race, gender and the composite SES variable in all models.

**Results:** Recall of stool testing and sigmoidoscopy was low (13% and 5%); name recognition of these tests was 59% and 30%, respectively. Correct guideline knowledge was low for all three tests (7% for sigmoidoscopy, 14% for FOBT, and 19% for colonoscopy). Recall, recognition, and knowledge were lower for NHB and socioeconomically disadvantaged patients. Inability to name or recall a single test was associated with reduced screen-detection compared with recall of at least one test (36% vs. 22%, p=0.01).

**Discussion:** Our results should help to identify target populations in need of enhanced education and additional prompting by their health care providers to ensure that they obtain the necessary surveillance for colon cancer over the long term.

**A052 Insurance status is a predictor of mode of colon cancer detection but not stage at diagnosis: What this means for early detection.** Leslie R. Carnahan, Lindsey Jones, Katherine Brewer, Garth H. Rauscher. University of Illinois at Chicago, Chicago, IL.

**Background:** Colon cancer is among the most incident and one of the most common causes of cancer-related mortality in the United States. Regular screening is the primary method of preventing excess colon cancer-related morbidity and mortality. Self-reports of on-schedule screening through endoscopy were much higher among insured individuals in the US compared to those without insurance (57% versus 24%) in 2015. Privately insured colon cancer patients are more likely to be diagnosed at earlier stages than patients who are uninsured or on Medicaid. Insurance status may influence whether colon cancer is detected via screening or symptomatic discovery and can impact the likelihood
POSTER SESSION A

of a late versus early stage diagnosis. Insurance may also influence access to initial follow-up care, which could impact the timeliness of diagnosis and/or treatment.

Objective: We examined patterns of health insurance continuity/discontinuity leading up to a colon cancer diagnosis, as well as associations between insurance status and three outcomes: mode of cancer detection (screen-detected versus symptomatic), diagnosis stage, and clinical delay.

Methods: The Colon Cancer Patterns of Care in Chicago examined racial and SES disparities in colon cancer screening, care initiation and treatment, and diagnostic stage. Eligible patients were non-Hispanic (NH) Black and NH White, aged 50 and older, with colon cancer, and were recruited from nine urban health care institutions. After consent, participants completed an in-person interview wherein they were asked about health insurance access and timing of coverage during diagnosis and treatment and the 5 years prior, diagnostic pathways, treatment, sociodemographic characteristics, and health care utilization. Logistic regression with marginal standardization was used to model the association between insurance variables and colon cancer outcomes. Nonresponse weights were included in all analyses.

Results: After adjusting for age, race, gender and SES, being uninsured any time five years prior to diagnosis or during diagnosis or treatment was associated with a 20-percentage-point (95% CI: 0.08, 0.33) increased prevalence of symptomatic detection. Symptomatic detection in turn was associated with a 15-percentage-point increase in late-stage diagnosis (95% CI: 0.03, 0.27); however, 47% of screen-detected patients were nonetheless diagnosed at a late stage (stage 3 or 4). As a result, insurance status was not associated with stage at diagnosis. Insurance status was also not associated with clinical delay.

Discussion: For health insurance to effectively prevent late-stage colon cancer diagnosis, adults must not only utilize their insurance benefit to get screened, but also screening must have a strong association with early-stage detection. Findings highlight the need to further study and intervene on factors contributing to late-stage colon cancer diagnoses despite screen detection.

A053 Watchful Living: A pilot lifestyle intervention for African American and Hispanic prostate cancer patients on active surveillance and their partners. Dalnim Cho¹, Karen Basen-Engquist¹, Richard Simpson², Hilary Ma³, Curtis Pettaway¹, Yisheng Li³, Steven Canfield³, Cindy Carmack¹, John Davis¹, Jeffrey Jones⁴, Lorna H. McNeill¹.¹The University of Texas MD Anderson Cancer Center, Houston, TX, ²University of Arizona, Tucson, AZ, ³The University of Texas Medical School at Houston, Houston, TX, ⁴Baylor College of Medicine, Houston, TX.

Background: Prostate cancer is the most commonly diagnosed cancer in both African American and Hispanic men. Prostate cancer mortality rate is 2.4 times higher among African American men than that among non-Hispanic white men. Further, Hispanic prostate cancer patients report poorer quality of life than their non-Hispanic white counterparts. Active surveillance is a safe treatment option for low-risk prostate cancer patients in which patients’ conditions are actively monitored, and preliminary studies have shown that lifestyle interventions have a promise to reduce disease progression and improve quality of life for active surveillance patients. However, none have specifically targeted African American or Hispanic men. Also, none have included partners, who are the main source of support for prostate cancer patients.

Objective: This ongoing study seeks to pilot test a lifestyle intervention, Watchful Living, for African American and Hispanic men on active surveillance and their partners. The primary aim is to determine the feasibility of recruiting and implementing Watchful Living. Secondary aims are to: 1) evaluate the preliminary efficacy of the intervention in improving diet, physical activity, quality of life, and inflammation and 2) conduct a process evaluation of the intervention.

Methods: We will adapt an existing, evidence-based intervention. Our intervention adaptation process is based on the Intervention Mapping Adapt and typology of adaptation, which were specifically developed for racial/ethnic minorities. First, we will conduct a needs assessment (in-depth interview) with prostate cancer patients and their partners. Participants will be asked about their physical activity and eating behaviors, impacts of cancer, determinants of lifestyle behavior changes, social support for lifestyle behaviors from partners, and their interests in lifestyle behaviors program. All feedback will be used to revise existing intervention materials and components before implementation, to ensure that the intervention is responsive to dyads’ needs and culturally relevant. Second, we will conduct an RCT in which 30 dyads will be assigned to intervention group and 10 dyads will be assigned to control group. Intervention group will receive biweekly telephone coaching calls and two nutrition counseling sessions over 6 months. Participants will be assessed at baseline, month 3, and month 6, and blood will
The Appalachian region includes 13 states, ranging from southern New York to Mississippi. The region encompasses large areas experiencing high unemployment rates, poverty, and high rates of chronic disease, including cancer. Patient navigation (PN) is a patient-centered intervention designed to address barriers to timely cancer screening and treatment. Results of a prior project in the region indicated that existing PN training programs did not adequately address issues specific to working in Appalachia. To address this gap, we developed a culturally relevant PN training program to be delivered across the Appalachian region. We supported and delivered 20 trainings to over 300 participants from 2015 through the present, averaging 15 attendees per session. Participants included nurses, social workers, patient navigators, community health workers, and administrators living and working in Appalachia. The training’s focus on integrating the unique aspects of Appalachian culture into patient navigation for cancer screening and care was rated high by participants. Additionally, participants appreciated the opportunity to network, since many participants work in isolation. Despite our model of providing multiple trainings in various locations throughout Appalachia, we noted there were still barriers to attendance. We conducted a formative evaluation to understand the challenges and identify solutions. We spent considerable time focusing on curricula development, but more attention was needed for detailed logistical considerations such as 1) earlier engagement of local community resources, including potential barriers to attending workshops and 2) local assistance in selecting training sites that would attract maximum attendance. Application of the guiding concepts in planning and data describing the workshop locations, participants, and evaluation results will be presented.

A056 Supporting the next generation of researchers: The effects of a U54 Partnership. Marilyn Drennan1, Helena Loest2, Beti Thompson1, Graciela Unguez1, 2Fred Hutchinson Cancer Research Center, Seattle, WA, 3New Mexico State University, Las Cruces, NM.

Background: The REACH Education Core of the U54 Partnership between New Mexico State University (NMSU) and Fred Hutch is reaching under-represented (UR) students through summer internships in the laboratories of U54-funded investigators on both campuses.

Objective: The objective of this study is to provide information on successful educational outcomes of under-represented students.

Methods: The Partnership generated an extensive participate tracking database. Outcomes included undergraduate graduation, entry into advanced degree programs, awards, and publications. Using the tracking database, we identified the number of students who achieved these outcomes. In addition, we evaluated student attitudes, efficacy, and participation in collaborative research activities.

Results: We facilitated research internships for 83 undergraduates (83% UR) and 23 graduate students (74% UR). Of the undergraduates, 96% completed their BS degree and 86% are on track to complete a graduate degree. Of the graduates, 96% have completed their graduate degree. Since the inception of the partnership in 2002, 72 (56%) of the total Partnership publications have students as coauthors. A total of 133 student participants are now employed in cancer-related research. A total of 697 students have been exposed to the Partnership’s cancer and health objectives.

Conclusions: The Partnership has had a high impact in preparing future scientists who will contribute to the diversification of the biomedical research workforce. The educational components of this Partnership have had exceptional successes.
Implications: This study demonstrates that institutions of higher learning can implement research experiences to maintain, strengthen, and evaluate effective programs for current and future under-represented scientists.

A057 Biospecimen donation among breast cancer survivors: Opportunities for research among nondonors.
Arnethea Sutton, Vanessa Sheppard, Megan C. Edmonds, Yvonne Cummings, Justin Thomas, Jessica Chavis. Virginia Commonwealth University, Richmond, VA.

Purpose: Participation in genomic research may further advance effective therapies, yet samples are often not sociodemographically diverse. Information is lacking about strategies to improve biospecimen donation. This pilot study focused on identifying strategies to enhance biospecimen donation among nondonors.

Methods: Women diagnosed with hormone receptor-positive (HR+) breast cancer who initiated hormonal therapy were recruited from three integrated health systems. Our sample was limited to women >21 years of age and diagnosed within the past 12 months. The analytical sample (N=144) consisted of women who consented but did not return a saliva sample within one year of baseline; 67% were White, 27% were Black, and 2% represented other races. A brief informational intervention was developed via published literature and preliminary data. Respondents received intervention materials, which included a personalized information letter, a colorful low-literacy instruction sheet, a postage-paid envelope, and collection kits. Descriptive and bivariate statistics were employed to describe and compare factors associated with biospecimen donation.

Results: Overall, 29 surveys (20%) were returned, and 17% returned saliva kits. No significant differences were noted by demographic or clinical factors between those who provided biospecimen (vs. not). Women with higher levels of functional well-being and lower ratings of religiosity/spirituality were more likely to return specimens (p <0.005) after receiving the enhanced materials. The most frequently cited factors related to returned specimens were found among participants with higher levels of knowledge and concern about provision of saliva and the usability of biospecimen samples in biomedical research.

Conclusion: A brief print intervention inclusive of personalized messages may enhance receipt of biospecimens among diverse survivors. The inclusion of messages with a focus on spirituality and functional wellness may increase biospecimen provision among nondonors; however, further work is needed to support this claim.

A058 Examining preferential mode of obtaining health information in African American women with elevated risk for breast cancer.
Tera Ivy, Ifeanyi Chukwudozie, Vida Henderson, Silvia Tejeda, Ganga Vijayasiri, Catherine Balthazar, Robert Winn, Kent Hoskins. 1Governors State University, University Park, IL, 2University of Illinois Cancer Center, Chicago, IL, 3University of Illinois at Chicago, Chicago, IL, 4University of Michigan, Detroit, MI.

Background: Breast cancer is the second leading cause of cancer death in the U.S. and is substantially higher in African American (AA) women. Early detection is crucial in decreasing breast cancer mortality and racial disparities. Research shows that low-income minority women are less likely to get breast cancer screening. Previous studies demonstrate that use of technology increases cancer screening rates. However, there are limited studies on the preferred mode of consuming health information for AA women, particularly those with increased risk of developing cancer.

Objectives: The objective of this study is to examine preferences in receiving and accessing health information among AA women with a family history of breast and/or ovarian cancer.

Methods: We conducted a mixed-methods study to address our research objective. For quantitative data, African American women (aged 26–67) were recruited from a Federally Qualified Health Center in the Southside of Chicago who were identified with elevated breast cancer risk via a risk assessment tool. Women were asked to complete a survey that assessed their preferred method of receiving health information. Data were analyzed using SPSS software. To supplement the quantitative data, qualitative data were collected during two focus groups conducted with AA women aged 25–69 with a family history of breast cancer. Bivariate analyses were performed to determine women’s preferences in receiving and accessing health information, and if these preferences differed by age (<40 and ≥40).

Results: The analytical sample consisted of 85 AA women with increased breast cancer risk. Sixty-nine women completed the surveys and 16 women attended focus group sessions. The majority of the study participants found reading materials (100%), listening to recordings (73%), and watching videos (96%) or animation (62%) were useful modes of
receiving health information. There were no differences in these preferences by age groups. All women aged ≥40 years preferred receiving information explained by a person (p-value = 0.032). Most of the women had a cell phone with texting capabilities (90%). Seventy-eight percent of cell phone owners used their cell phone to access health information on the Internet, and 64% of these women were aged <40 years (p-value = 0.004). Other vital avenues of accessing health information that emerged from the focus groups included social media and health fairs.

**Conclusion:** Understanding African American women’s preferences for receiving and accessing health information can inform development of interventions designed to improve adherence to cancer screening recommendations. Additional research is needed to better understand the impact that accessing health information through various media has on cancer screening rates.

**A059 Promoting workforce diversity for cancer and cancer health disparities researchers: Approaches used by the Geographic Management of Cancer Health Disparities Program (GMaP) Regions 3 and 5.** Miria Kano1, Sara Cole2, Shiraz I. Mishra1, Andrew L. Sussman2, Beti Thompson1. 1The University of New Mexico Comprehensive Cancer Center, Albuquerque, NM, 2Fred Hutchinson Cancer Research Center, Seattle, WA.

**Background/Rationale:** A barrier to improving access to quality care for underserved minority groups, as well as advancing research on health disparities, is the lack of workforce diversity in the United States. Research reports that minority physicians and scientists continue to be significantly under-represented in medical and scientific communities. Funded by the National Cancer Institute’s Center to Reduce Cancer Health Disparities (CRCHD), GMaP is rooted in the conviction that a diverse workforce is essential for advancing cancer research and reducing cancer health disparities (CHD). We consider the overall scope and programming of two GMaP Regions, Region 3, serving Central to Southern California, Arizona, New Mexico, Texas, Oklahoma, Kansas, Nebraska, and Colorado, and Region 5, serving Central to Northern California, Oregon, Washington, Alaska, Hawaii, America Samoa, and Guam. We will focus on approaches to professional development training and consider how each enhances opportunities for minority students and early-career investigators to participate in a diverse research workforce and create health equity in the U.S.

**Approaches:** We will discuss the multidisciplinary strategies used by GMaP Regions 3 and 5 to recruit students, early-career investigators, and cancer and CHD researchers into sustainable networks designed to provide meaningful training, engagement, and funding opportunities for ethnically/racially and/or geographically diverse individuals. We will review Region 3’s travel-based strategy in which training encounters are conducted at multiple regional partner institutions, and Region 5’s Career Development Workshop in which individuals from partner institutions travel to Seattle for an annual multiday training.

**Results:** We will share feedback from these learning encounters, and specific examples of these approaches to ascertain that although time and resource intensive, such training encounters are successful and beneficial to GMaP individuals. Outcomes will include data from our overall GMaP programmatic evaluations, training feedback, and scientific product publication/dissemination and successful funding received by under-represented participant members.

**Conclusion:** Creating a diverse cancer research workforce is challenging; however, continued engagement with under-represented students, faculty, and early-career researchers who desire training to participate fully in NIH/NCI funding mechanisms is vital to reverse structural, educational, and resource-related trends that perpetuate an inequitable research workforce. Although identifying promising candidates and providing support in sufficient flexible ways to be truly beneficial for each individual member may be slow and resource intensive, this research demonstrates that each encounter and training helps take members one step closer to her/his professional goal.

**A060 [Advocate Abstract] Pathways to ovarian cancer.**

**Kimberly Richardson,** Independent Advocate, Chicago, IL.

Ovarian cancer has common symptoms but how easily are they ignored in the African American community? How is the diagnosis shared amongst family members, particularly amongst females in the immediate family? Is there a cultural stigma that prohibits African American women from being specific about the type of cancer they’ve been diagnosed with? Can answers to these questions result in earlier detection for the next generation of ovarian cancer survivors? I will explore how and why symptoms can be ignored by age groups from 30 to 65 and the role the gynecologist can play in earlier detection of ovarian cancer. I will lead a discussion on the stigma of cancer in the black community and why African American women tend not to disclose the specificity
POSTER SESSION A

A061 Screen to save: Educating Utahns about colorectal cancer prevention and screening. Jennyffer Morales1, Garrett Harding1, Jane Ostler1, Susan Alba1, Janae Decker1, Allison Whitworth1, Victoria Meade1, Hannah Holm1, Lisa Anderson2, Alyssa Geisler1, Allison Elmer1, Nathan Begaye1, Jeff Yancey1, Donna Branson1, John Sweetenham1, Ana Maria Lopez2.
1Huntsman Cancer Institute, Salt Lake City, UT, 2Baylor University, Waco, TX.

In 2016, the National Cancer Institute (NCI)’s Center to Reduce Cancer Health Disparities (CRCHD) launched Screen to Save: Colorectal Cancer Outreach and Screening Initiative (S2S). The initiative’s primary goal aligned with Blue Ribbon Panel Cancer Moonshot recommendations to increase colorectal cancer (CRC) screening rates by 80% by 2018. Nationally, S2S was implemented by Community Health Educators (CHEs) from NCI-Designated Cancer Centers. S2S implementation Phase 1 included education and awareness, and phase 2, connection to at-home screening and a 3-month follow-up survey. Huntsman Cancer Institute (HCI) at the University of Utah participated in phase 1 and a modified follow-up survey. In 2016, Utah’s Public Health Indicator Based Information System reported that 72.7% of Utah adults aged 50-75 received CRC screening. In addition, an HCI community health needs assessment identified CRC screening rates as a health disparity in four rural/frontier Utah health districts. HCI’s existing collaborations and partnerships helped facilitate S2S activities in summer and fall of 2017. HCI’s outreach team, which included trained graduate-level interns and Community Health Workers (CHWs), implemented S2S presentations and health events with local and rural populations, including Pacific Islander, American Indian, and African-American groups. Educational materials were provided by CRCHD and culturally tailored by HCI CHEs. CRC prevention and screening education was delivered in English and Spanish through one or more of the following methods: PowerPoint presentation, flipchart, and giant inflatable colorectal cancer education exhibit. Participants were given a pre-test before the intervention and a post-test following the educational component. De-identified survey data were sent to NCI and combined with data from other participating S2S sites. HCI’s goal of 100 surveys was surpassed with 124 collected. Data analysis from Phase 1 of S2S showed an increase in knowledge and intention to screen as a result of HCI’s educational intervention. More importantly, data highlighted the need for understanding connections between lifestyle, individual behaviors, and CRC risk—specifically, risks due to poor nutrition and obesity.

In addition, data showed the need for awareness of CRC screening options such as the fecal occult blood test (FOBT) or the fecal immunochemical test (FIT). Knowledge of the FOBT/FIT increased from 48.75% (pre-intervention) to 83.55% (post-intervention). In addition, the CHE collaborated internally with HCI Communications and Public Affairs to host a Twitter chat and Facebook Live event. This poster will elaborate on S2S survey findings, social media analytics, partnership building, and future steps for CRC education and health equity activities in Utah.

A062 Utilizing Inside Knowledge materials to improve gynecologic cancer knowledge in underserved populations. Mary C. Puckett1, Julie S. Townsend1, Jenny R. Patterson2, Ena Wanliss1, Sherri L. Stewart1, 1Centers for Disease Control and Prevention, Atlanta, GA, 2Scimetrika, Durham, NC.

Background: About 30,000 women die each year from gynecologic cancer in the U.S., which disproportionately affects women from underserved populations. To improve gynecologic cancer awareness and outcomes, the Centers for Disease Control and Prevention’s (CDC) Inside Knowledge: Get the Facts about Gynecologic Cancer (IK) campaign was developed and educates women about risk factors, symptoms, recommended screening, and prevention strategies for ovarian, uterine, cervical, vaginal, and vulvar cancers. CDC also funds a network of national organizations to specifically reduce cancer-related health disparities.

Methods: We fostered a partnership between three organizations in CDC’s cancer disparity reducing national network consortium and the IK campaign to deliver tailored educational sessions using IK materials. The National Behavioral Health Network (NBHN), which helps those with mental illnesses and addictions; Nuestras Voces (NV), which helps Hispanics; and the Selfmade, which helps those of low socioeconomic status, participated in this study. These organizations administered pre- and post-session surveys to assess changes in gynecologic cancer knowledge.

Results: Overall, 125 women participated in six educational sessions held by NBHN, NV, and Selfmade. NBHN session attendees had significantly increased knowledge that smoking increases risk for cervical cancer (78.1% pre-session vs. 94.6% post-session). NV session attendees significantly increased their awareness of never having given birth/infertility as a risk factor for ovarian cancer (16.7% pre-session and 42.1% post-session). Among SHM attendees, 100% correctly identified family history as a risk factor for ovarian cancer.
cancer, and significantly more participants correctly identified Ashkenazi Jewish background as an ovarian cancer risk factor (18.2% pre-session vs. 79.4% post-session). Knowledge about HPV vaccine prevention for cervical, vaginal, and vulvar cancers was significantly increased among only NV and Selfmade attendees (54.6% pre-session vs. 82.1% post-session and 30.3% pre-session vs. 85.7% post-session, respectively). Attendees in all sessions increased correct identification of some gynecologic cancer symptoms, but specific changes varied by organization.

**Conclusions:** Holding facilitated educational sessions with IK materials was effective in increasing awareness of gynecologic cancer among many women across organizations participating in this study; however, uptake of information differed by organization. Additional resources that contain specific interventions most appropriate to a particular underserved population (e.g., receipt of HPV vaccine among Hispanic women) may be beneficial for increasing healthy behaviors that lead to a reduction in gynecologic cancer disparities.

**A063 Feasibility and acceptability of an online LGBT cultural competency training for oncologists: The COLORS training.** Julia S. Seay, Matthew Schabath, Amanda Hicks, Merry-Jennifer Markham, Matthew Schlumbrecht, Meghan Bowman, Jennifer Woodard, Neysari Arana, Gwendolyn Quinn. Sylvester Comprehensive Cancer Center, Miami, FL, Moffitt Cancer Center, Tampa, FL, UF Cancer Center, Gainesville, FL, New York University, New York, NY.

**Background:** LGBT cancer survivors experience substantial disparities in cancer survivorship outcomes, including poorer overall health and lower satisfaction with their oncology care. Researchers and clinicians have called for increased LGBT competency training among oncologists to address health disparities within these underserved communities; however, presently there are few medical schools that require such training. Further, while some general LGBT cultural competency trainings are available, to date, no trainings are tailored to the needs of oncologists specifically. Recently our multi-institutional team developed an interactive online LGBT cultural competency training for oncologists (Curriculum for Oncologists on LGBT populations to Optimize Relevance and Skills [COLORS]) and is now piloting the training among oncologists within three cancer centers in the state of Florida.

**Methods:** The development of the online LGBT cultural competency training involved substantial input from LGBT community members and advocates. The training modules included both general and oncology-specific content. After the online training website was finalized, we recruited oncologists from Moffitt, Sylvester, and UF Health Cancer Centers to participate in the training and provide feedback via self-administered questionnaire. Here we report descriptive data on participant sociodemographic characteristics, pre- and post-training LGBT-related knowledge, attitudes, and practices, as well as participant evaluations of the online LGBT cultural competency training. As the study is ongoing, formal significance testing regarding pre-post changes is forthcoming.

**Results:** To date, 20 oncologists, ages 38-71 (30% women; 30% Asian, 5% Black, 60% White, 5% Middle Eastern; 10% Hispanic; 75% cisgender and heterosexual) have completed the training. Pre-training knowledge was low among participants, with only 33% of participants answering >90% of knowledge items correctly. Participant knowledge increased following training completion, with 85% of participants answering >90% of knowledge items correctly. Similarly, changes in attitudes were mostly positive among participants, with 70% of participants reporting an increase in favorable perspectives toward LGBT people after completing the training. Moreover, 80% of participants reported increasing their endorsement of LGBT-serving clinical practices after completing the training. Overall, oncologist evaluations of the training were favorable, with 90% rating the training as either “excellent” or “very good,” and 95% stating they would refer another oncologist to the training.

**Conclusion:** These pilot study results indicate online LGBT cultural competency training may be both feasible and acceptable for oncologists. Our findings will support a larger project to formally evaluate the effectiveness of this training in improving oncologist knowledge, attitudes, and practices, as well as survivorship outcomes for LGBT patients.

**A064 The Meharry Cancer Summer Undergraduate Research Program: Increasing undergraduate exposure to cancer health disparities via summer research experiences.** Evangeline Motley-Johnson, Katelyn Atkinson, Aliecia Bouligny, Del-vecie Brown, Samuel Delk, Jordan Finch, Kennedi Fitts, Dorian Hill, Faith Mungai, Dalancee Trabue, Kierra Whitelow, LaMonica Stewart. Meharry Medical College, Nashville, TN.

Few under-represented minorities (URM) pursue careers as physicians and biomedical researchers. This lack of diversity within the scientific and clinical workforce greatly influences our ability to address the public health burden and disparities

92
POSTER SESSION A

associated with cancer. To enhance the diversity of the cancer workforce and fully address the problem of cancer health disparities, we must increase the number of URM students who obtain the MD and/or PhD degrees and train in the areas of cancer biology and oncology. To address this issue, we established the Meharry Cancer Summer Undergraduate Research Program (SURP). The Meharry Cancer SURP is a 10-week intensive, cancer-focused research experience that exposes undergraduate students to the area of cancer health disparities. It is designed to provide participants with a better understanding of how biomedical, behavioral, and clinical research influences cancer outcomes and to inspire participants to pursue careers in cancer research. In the first year of the program, a nationwide search was conducted to identify and select ten undergraduate students who were interested in pursuing careers in medicine and biomedical science. Each student performed a research project with an experienced cancer investigator from either Meharry Medical College or Vanderbilt University Medical Center. The research projects, which included preclinical studies, translational research, and epidemiologic/community-based studies, focused on cancers that disproportionately affect African-Americans and other racial and ethnic minorities. To ensure students understood fundamental concepts common to all cancers and cancer health disparities research, all program participants attended a weeklong cancer biology minicourse. They also attended cancer biology/cancer health disparities research seminars that allowed them to interact with oncologists and cancer researchers from groups traditionally under-represented in biomedical science and to be exposed to career opportunities within the areas of cancer research, oncology, and cancer health disparities. Furthermore, students participated in career development workshops that allowed them to explore cancer-related career options, create individual development plans, and obtain information needed to apply and successfully gain entrance into MD and PhD training programs. Together, these program activities increased student awareness of the fields of cancer biology and cancer health disparities and provided knowledge and tools necessary to successfully pursue cancer-focused careers.

A065 The Cancer Research Education Program (CREP): Training the next generation of cancer health disparities researchers through the Southeast Partnership for Improving Research and Training in Cancer Health Disparities (SPIRIT-CHD). Fern Tsien1, Paula Gregory1, Gwendolyn Quinn1, Vani N. Simmons1, Z’Kera Sims2, Megan E. Sutter2, Ayesha Umrigar1, Arnold H. Zea1, Cathy Meade2, Clement K. Gwede2, 1Louisiana State University Health Sciences Center, New Orleans, LA, 2Moffitt Cancer Center, Tampa, FL.

The Southeast Partnership for Improving Research and Training in Cancer Health Disparities (SPIRIT-CHD) unites Louisiana State University Health Sciences Center (LSUHSC) and Moffitt Cancer Center (MCC) to advance translational research on cancer health disparities and to establish a Cancer Research Education Program (CREP). The CREP addresses a national priority to develop an educational training pipeline for one-on-one mentoring of undergraduates and medical students by a diverse group of LSUHSC and MCC faculty with unique expertise to conduct cancer health disparities research and outreach in underserved communities. The CREP supports 8-week internships providing: (1) hands-on summer research experiences; (2) a curriculum focusing on biobanking, precision medicine, and cancer health disparities; and (3) community outreach experiences in underserved communities. The curriculum includes web-based training modules, immersion experiences (e.g., biobank tour), professional development workshops, and learning activities (e.g., book and journal clubs). Data from the students’ pre/ post summative (impact/outcome) evaluations determine the acceptability and impact of these research and educational activities, students’ knowledge, career aspirations, goal attainment, and their satisfaction based on nationally normed scales. Baseline and post-training data will be analyzed in August, at training completion, to assess program impact. Long-term yearly follow-up data will focus on the impact of CREP on student career trajectories. These data will help modify the CREP for years 2-4 of the SPIRIT-CHD. Seventy-five percent of the student participants in the first cohort were female. Students self-identified as Black/African American non-Hispanic (62.5%), White Hispanic (25%), and Asian non-Hispanic (12.5%). Student projects included genomic, immunologic, and cellular wet-lab research (analyzing proliferation of renal cell carcinoma, RNA sequencing and bioinformatics of Luminal B breast carcinomas, expression differences of polyamine enzymes in prostate cancer) and clinical studies (detection, prevention, and treatment of anal cancer in HIV-positive populations). Dry-lab projects focused on the analysis of Behavioral Risk Factor Surveillance System to assess policy-related trends in colorectal cancer screenings, studying the effectiveness of barbers as lay health educators for skin cancer prevention, and smoking cessation among Hispanics. CREP students also participated in cancer education outreach events to explain their projects to the communities at an elevated risk for certain types of cancer. This program has applicability...
A066 Inaccuracy in parental reports of adolescent human papillomavirus vaccination: A multilevel analysis of the influences of state-level and individual-level factors. Milkie H. Nguyen Vu, Minh Luu, Regina Haardörf er, Carla J. Berg, Cam Escoffery, Robert A. Bednarczyk. Emory University, Atlanta, GA.

Background: Accurate reporting of human papillomavirus (HPV) vaccination status is necessary for monitoring coverage and identifying under-vaccinated populations. While parental recall or reports are commonly used to identify adolescent HPV vaccination status, these self-reports may be subjected to bias. The Socioecological Framework suggests that factors at the individual (e.g., education), interpersonal (e.g., interactions with health care provider), community (e.g., state median income), and policy levels (e.g., state-level HPV vaccine policy) can influence the accuracy of parental reports.

Objective: We explored potential multilevel correlates of the accuracy of parental reports of adolescent HPV vaccination status.

Methods: Data from parents of 19,751 adolescents (2016 National Immunization Survey-Teen) were analyzed using multilevel modeling. We examined the adolescent's age, sex, race/ethnicity, maternal education, and household poverty status (individual-level); the number of health care providers seen (interpersonal-level); state-level median income (community-level); and state policy regarding HPV vaccine (i.e., whether a state has a policy mandating HPV vaccine for school entry or educating residents about HPV vaccine) (policy level). Outcomes included: 1) inaccuracy in reporting vaccine initiation (≥1 dose) and 2) inaccuracy in reporting completion (3 doses).

Results: In the sample, 20.6% and 22.2% inaccurately reported initiation and completion, respectively. Compared to parents of White adolescents, parents of those who were Black (OR=1.6 and 1.5), Hispanic (OR=1.4 and 1.7), or of multiple races or other race (OR=1.8 and 1.8) were more likely to inaccurately report initiation and completion, respectively. Households with higher maternal education (OR=0.7 and 0.9) and nonpoverty status (OR=0.5 and 0.6) were less likely to inaccurately report. Compared to those who had seen 0 or 1 provider, those who had seen more providers were less likely to inaccurately report (OR=0.9 and 0.9 for seeing 2 providers, OR=0.8 and 0.9 for 3+ providers). Neither state-level median income nor state HPV vaccine policy was associated with either outcome.

Discussion: Parents of racial/ethnic minority adolescents and households with more socioeconomic disadvantages were more likely to inaccurately report HPV vaccine initiation and completion. These results have implications for vaccine estimates drawn from self-reports. Future research can examine and target sources of inaccuracies in these groups, for example, uncertainty in provider communication, low health literacy, or social desirability in reporting. Having seen more providers was associated with higher accuracy, suggesting the importance of increased access to vaccine records. State vaccine policy does not appear to have an impact on the accuracy of parental reports, pointing to a need to further examine differential policy implementation or enforcement.


Making Strides Against a Rare Disease: Renal Medullary Carcinoma (RMC) seeks to provide an overview of an extremely rare cancer that was first described as a novel form of renal malignancy in a series published by Colonel Davis of the Armed Forces Institute of Pathology in 1995. This study was based upon retrospective analysis of tumors coded as renal pelvic carcinoma from patients aged less than 40 years. Where race had been recorded, all patients were black and all had sickle erythrocytes on histologic examination. On this basis the tumor, which was termed medullary carcinoma on morphologic grounds, was designated the seventh sickle cell nephropathy.

A068 Results to date: Efforts to increase cancer health disparities training in Geographic Management of Cancer Health Disparities Program Region 1 North. Marcela Blinka, Mark Cromo, Julia F. Houston, Mark Dignam, Nathan Vanderford, B. Mark Evers, Janice Bowie, Adrian Dobs, James Hebert, Tisha Felder, Roger Anderson. Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University, Baltimore, MD, Markey Cancer Center, University of Kentucky, Lexington, KY, University of South Carolina,
Arnold School of Public Health, Columbia, SC, “University of Virginia Cancer Center, Charlottesville, VA.

Introduction: The National Cancer Institute (NCI) Center to Reduce Cancer Health Disparities (CRCHD) Geographic Management of Cancer Health Disparities Program (GMaP) initiated in 2009 brings together investigators, trainees, students, and community health educators to network and share information, scientific resources, and tools to promote cancer and cancer health disparities research, as well as community education outreach within and across regions. To reach their goals, CRCHD initiated 7 GMaP regional “hubs” across the United States to enhance their capacity in areas of disparities research, contribute to the next generation of researchers, and achieve measurable reductions in cancer health disparities. Each hub is led by Regional Coordinating Directors (RCDs) who facilitate connections, provide funding and training resources and “leverage the strengths of its people, programs, and resources to provide greater access to cancer information.”

Methods: The GMaP Region 1 North (R1N) hub is based at the Markey Cancer Center in Lexington, Kentucky. RIN partners with Johns Hopkins University’s Sidney Kimmel Comprehensive Cancer Center, the University of South Carolina, and the University of Virginia Cancer Center to serve Delaware, Kentucky, Maryland, Maine, New Hampshire, Vermont, Virginia, West Virginia, Washington, DC, and West Virginia. The overall goal of GMaP RIN is to enhance the capacity of regional cancer centers, associated academic partners, community partners, and early-stage investigators to contribute to the reduction of cancer health disparities in the region. As part of the Continuing Umbrella of Research Experiences (CURE) Program, GMaP RIN promotes the F31, K series, and Diversity Supplement funding opportunities to potential applicants. RIN implemented pilot awards and travel scholarships for CURE-eligible candidates; developed a listerv to communicate with researchers, trainees, and potential applicants; and maintains regular contact with trainees to answer questions and encourage applications for NCI CURE Program and other grant opportunities.

Results: RIN awarded 11 pilot projects, 22 travel scholarships, helped identify mentors and 146 potential applicants for NCI CURE Program grants, and collaborated with points of contact (POC) at colleges and universities, including Historically Black Colleges and Universities to identify potential applicants for NCI CURE and other funding.

Conclusions: Methods have been successful in increasing interest in NCI Cancer health disparities training opportunities. RCDs are critical in establishing and maintaining linkages to support mentor-mentee relationships supported by available funding mechanisms; to engage institutional support for pre- and post-award activities, especially for new investigators; and for shrinking delays in the IRB review and approval process. RCDs have identified process barriers and work with regional POCs to eliminate these barriers and increase efficiencies to further the GMaP mission.

A069 “‘She was like, ‘I’m done. I’m not taking this anymore’”: Health care provider perspectives about breast cancer survivors’ nonadherence to adjuvant endocrine therapy. Tisha M. Felder1, Sue P. Heiney1, Rubin L.3, Daniela B. Friedman3, Regina Franco4, James R. Hebert5, Marvella E. Ford6. 1College of Nursing, University of South Carolina; Cancer Prevention and Control Program, Arnold School of Public Health, University of South Carolina, Columbia, SC, 2College of Nursing, University of South Carolina, Columbia, SC, 3Department of Health Promotion, Education, and Behavior, Arnold School of Public Health, University of South Carolina, Columbia, SC, 4Center for Integrative Oncology & Survivorship, Cancer Institute, Greenville Health System., Greenville, SC, 5Department of Epidemiology and Biostatistics, Arnold School of Public Health, University of South Carolina; Cancer Prevention and Control Program, Arnold School of Public Health, University of South Carolina, Columbia, SC, 6Department of Public Health Sciences, Medical University of South Carolina; Hollings Cancer Center, Medical University of South Carolina, Charleston, SC.

Background: For women diagnosed with hormone-receptor positive breast cancers, adjuvant endocrine therapy (AET) can significantly reduce their risk of recurrence and mortality. Yet, nearly two-thirds of breast cancer survivors do not take AET as prescribed. AET nonadherence rates are even higher among women who are both financially disadvantaged (e.g., Medicaid enrollees) and African American. Health care providers (HCPs) not only prescribe AET but also educate and support women who are taking AET. Thus, it is imperative to elicit HCP perspectives as part of the solution to addressing nonadherence to AET.

Purpose: To describe HCPs’ perspectives about factors that influence survivors’ nonadherence to AET.

Methods: We recruited HCPs from oncology sites in South Carolina to participate in semistructured interviews (May 2016 - May 2017). We audio recorded, transcribed, and analyzed the interviews using Assarroudi et al.‘s (2018) method of directed qualitative content analysis.
POSTER SESSION A

**Results:** Twenty-three HCPs completed interviews. Most HCPs were non-Hispanic White (n=20, 87%) and female (n=19, 83%). Many HCPs had been in their professions for 15 years (n=11, 48%) and held a variety of positions, such as nurses (n=13, 57%), oncologists (n=4, 19%), and social workers (n=2, 9%). From the interviews, we derived 6 main intervention targets (consisting of 19 specific modifiable factors) informed by the World Health Organization’s Multidimensional Adherence Framework and Taplin et al.’s (2012) Multilevel Context of Cancer Care Model. The most frequently discussed intervention targets were individual patients (n=23 HCPs), health care systems/teams (n=23) and therapy-related concerns, e.g., complexity or duration of treatment regimen (n=23). The most frequently discussed modifiable factors were AET-related side effects (n=23, 160 mentions), general patient education about AET (n=20, 114 mentions), and patient-provider communication (n=23, 108 mentions).

**Conclusions:** Our findings suggest that future AET adherence interventions should target multiple levels (e.g., individual patients + HCPs) and aim to improve knowledge, skills, and/or perceptions about patient-provider communication, AET, and AET-related side effects. Future research should explore the extent to which HCP perspectives about AET align with perspectives from breast cancer survivors, particularly among survivors who are African American and financially disadvantaged.

A071 Use of finasteride in the Prostate, Lung, Colorectal and Ovarian Cancer Prevention (PLCO) Trial cohort: Effects of sociodemographic factors and a black box warning. Jarrett A. Johnson, Paul F. Pinsky. National Cancer Institute, Rockville, MD.

**Background:** In 1992, finasteride, a 5α-reductase inhibitor, was approved by the Food and Drug Administration (FDA) for the treatment of benign prostatic hyperplasia (BPH). Finasteride also showed early signs of lowering prostate-specific antigen (PSA) levels, indicating that it may be useful for the prevention of prostate cancer. The Prostate Cancer Prevention Trial (PCPT) was conducted from 1994 to 2003 and showed that finasteride reduced overall prostate cancer incidence; however, it also appeared to increase the incidence of high-grade disease. Consequently, in 2011 the FDA issued a black box warning based in part on the PCPT results. Little is known, however, about the effect this warning had on finasteride use among men after 2011. The purpose of this study was to assess the use of finasteride, for BPH or other reasons, among a sample of Prostate, Lung, Colorectal, Ovarian Cancer Prevention Trial (PLCO) participants. Specifically, we wanted to assess the effects of sociodemographic characteristics (e.g., age, race/ethnicity) and BPH on finasteride use and the effect of the FDA’s black box warning on finasteride use after 2011.

**Method:** This was a retrospective longitudinal study. Men’s age, race/ethnicity, and BPH status were ascertained from questionnaires. Medication use was ascertained from linkage to Medicare Part D claims data from 2010 to 2014.

**Results:** The sample contained 14,044 PLCO men with at least one year of part D claims data. The majority self-identified as non-Hispanic white (12,429; 88.5%); 236 (1.7%) were black, 753 (5.4%) were Asian, and 239 (1.7%) were Hispanic. Median (25th/75th) age in 2010 was 73 years...

Background: Prostate cancer (PC) is the second leading cause of cancer-related death among Black men who present with higher incidence, mortality, and survival compared to other racial groups. Age-appropriate screening via the prostate-specific antigen (PSA) test and a digital rectal examination (DRE) is critical and a mainstay for clinical practice supported by all major recommending health organizations. The DRE has been noted as a barrier to screening for Black men, as has Black men's lack of trust in health care providers and the medical system, and may thus be factors contributing to the PC racial disparity.

Objective: The purpose of this study was to assess the impact of medical mistrust on Black men's intention to undergo the recommended DRE screening in conjunction with a PSA.

Methods: A cross-sectional study using convenience sampling was conducted with Black men residing in New York and California, some born in the Caribbean (n=288), and some born in the United States (n=95).

Results: Overall medical distrust was high across all age groups but with more individuals under 40 reporting higher levels of mistrust (mean=17.6) than those over 40 years (mean=16.78). Birthplace was not significantly related to DRE screening intention, though medical distrust was higher among Black men not born in the US. With respect to intentions to use a DRE as part of screening, among those under the age of 40 years, being single (Adjusted Odds Ratio [AOR]=0.14), having low (AOR=0.09) and high (AOR=0.02) income in comparison to middle-class income, and medical mistrust (AOR=1.53) were associated with intentions to not get a DRE in the next year. On the other hand, among those who were 40 years and above, despite high levels of medical mistrust, men nevertheless intended to get a DRE in the next year. Medical mistrust was significantly associated with intentionality to get a DRE (AOR=1.08) and their lack of embarrassment was also associated with a positive DRE intentionality (AOR=2.20).

Conclusion: Medical mistrust is thought to affect health care-based decision and has been linked to poor health outcomes. However, in our sample, in men classified as high risk for prostate cancer (Black, 40 years and above) medical mistrust did not affect intentionality to get a DRE as part of screening. Therefore, interventions targeted to reduce medical mistrust may be more effective among younger black men (under 40 years). More research needs to be conducted to assess the social reasons for the cause of the PC racial disparity.

A073 A qualitative exploration of social support needs of diverse patients with breast cancer in the adjuvant phase of treatment. Andrew J. Paladino1, Janeane Anderson1, Rebecca Krukowski1, Lee Schwartzberg2, J. Carolyn Graff1, Tameka N. Jones2, Gregory A. Vidal1, Mehmet Kocack1, Ilana Graetz2. 1University of Tennessee Health Science Center, Memphis, TN, 2West Cancer Center, Memphis, TN.

Background: Women diagnosed with breast cancer transitioning from the active phase of treatment to the adjuvant phase of treatment experience fewer opportunities to receive support from their oncology team. During this period of time, the frequently unfulfilled social support needs reported by many oncology patients may be exacerbated for these women. Having social support is a critical component of cancer care and is associated with positive patient outcomes, including medication adherence and survival. Our study uses qualitative methods to evaluate the social support needs of a diverse group of women in the adjuvant phase of treatment and investigate any potential impact on cancer disparities.

Method: Four 90-minute focus groups (N= 28) were conducted among women with breast cancer treatment who were prescribed tamoxifen or aromatase inhibitors, and then stratified by race (Black and White) and length of adjuvant treatment (i.e., < 6 month or > 6 month). These focus groups were held at a regional cancer center in the Mid-Southern US, a region with high Black-White breast cancer outcome disparities. The data were examined in accordance with conventions of thematic analysis to assess many topics related to the breast cancer experience including social support needs.
POSTER SESSION A

**Results:** Both Black and White participants expressed a preference for having frequent and consistent access to providers to minimize feelings of isolation and meet new and persisting emotional and informational social support needs. Specifically, a participant highlighted how critical it was that she was “able to call my primary care provider” and spend “quite some time” so that she could get questions answered and ease her fears. The support from friends and family was also highlighted by the women. In addition, several women from each focus group expressed the importance of having loved ones present during important medical visits. For example, some participants mentioned patients needing “family or anybody around to discuss the findings” or having “someone to hug.” Most notably, participants sought and provided social support to each other in the focus group itself, exhibiting a phenomenon referred to as “experiential social support.” This was best exemplified by several recommendations in each focus group to “form support groups” and “meet once a month” as an outlet to discuss experiences and reciprocally provide support.

**Conclusions:** Irrespective of race, women in the adjuvant phase of treatment reported needing more resources to meet their social support needs during this period of increased stress and less provider contact. The women found experiential support to be a vital component in meeting social support needs. Providers should consider implementing standardized methods to address the unmet social support needs of patients. For example, providers could assess for deficits in social support on a continuous basis (e.g., screening questions) and offer resources such as support groups and assigned patient advocates to fill gaps.

**A074 Increasing Latino representation in cancer health disparities: The Éxito! Program.** Arley Pérez1, Kipling Gallion1, Rena Pasick2, Amelie Ramirez1, 1UT Health San Antonio, San Antonio, TX, 2University of California San Francisco, San Francisco, CA.

**Introduction:** Cancer is the leading cause of death among Latinos, making it critical to develop the next generation of researchers who can tackle and solve Latino cancer issues. However, the field of cancer control lacks Latino representation. Éxito! Latino Cancer Research Leadership Training aims to increase ethnic diversity in cancer health disparities (CHD) by encouraging Latino master’s-level students and master’s-trained health professionals to complete a doctoral degree toward a successful career in CHD.

**Experimental Procedures:** The Éxito! Program is based on the Minority Training Program in Cancer Control Research (MTPCCR), led by Dr. Rena Pasick at the University of California San Francisco. Éxito! was created after it was demonstrated that MTPCCR’s Latino participants (12%) had an even lower rate of going to doctoral programs compared to African American (36%) and Asian participants (33%). Éxito! comprises two main components: a 5-day summer institute (SI) workshop and paid internships. During the SI, participants are exposed to interactive activities, tips/tools for applying and completing a doctoral degree, mentorship, and Latino CHD research. Internships are available for all SI program participants and alumni. The purpose of internships is to provide direct experiences for the student in Latino CHD research, and thereby greatly enhance their research skills. Éxito! program outcomes metrics include: monitor the number of participants who apply and are accepted into a doctoral program; increase participants’ confidence to successfully apply to a doctoral program; and ultimately increase the number of participants who will successfully pursue a career in Latino CHD research. Outcomes are collected through five surveys: pre-/post-SI surveys, pre-/post-internship surveys, and an annual Alumni survey.

**Results:** Since its inception in 2011, Éxito! has successfully trained 175 SI participants and awarded 37 internships. All students were U.S. citizens with the majority being U.S. born (77%), single (71.4%), and having no children (85%). At the time of attending the SI, the average age for participants was 28. Most participants came from California (29%), Texas (29%), and Puerto Rico (9%). Over the eight years of the program, results from the SI experience have demonstrated significant improvements across all measures of academic self-efficacy, as well as significant improvements in confidence towards applying to a doctoral program in the next five years. Internships successfully improved in students’ research skills. Currently, 31 of SI alumni are currently enrolled in a doctoral program and seven have recently graduated from their doctoral program.

**Conclusion:** Since its successful inception, Éxito! has been able to address issues specific to Latino students, recognize the value of their culture, and foster their confidence to pursue a doctorate and a career in cancer control research.

**A075 Gender diversity in academic oncology programs.** Crystal S. Seldon1, Awad A. Ahmed1, Ricardo Llorente1, Stella K. Yoo1, Emma B. Holliday1, Charles R. Thomas4, Reshma Jaggi2, Curtland Deville Jr.5, 1University of Miami Miller School of Medicine/ Sylvester Comprehensive Cancer Center and
POSTER SESSION A

Jackson Memorial Hospital, Miami, FL, 1University of Southern California/Keck School of Medicine, Los Angeles, CA, 1The University of Texas MD Anderson Cancer Center, Houston, TX, 2Oregon Health & Science University/ Knight Cancer Institute, Portland, OR, 1University of Michigan, Ann Arbor, MI, 4John Hopkins University School of Medicine, Baltimore, MD.

Purpose: This study sought to examine gender diversity among academic faculty of medical oncology, hematology/oncology, and radiation oncology residency programs in the United States (U.S.), Canada, and Spain.

Methods: Data from the Association of American Medical College (AAMC) were used to examine faculty composition of medical oncology, hematology/oncology, and radiation oncology departments in U.S. institutions for the years 1977 and 2017. For international data, public webpages listing post-graduate training programs in medical oncology and radiation oncology were examined and the genders of department heads were recorded.

Results: In the U.S., in 1977, women made up 8%, 9%, and 7% of the total workforce among hematology/oncology, medical oncology, and radiation oncology faculty positions, respectively, compared to 44%, 40%, and 27%, respectively, in 2017. Regarding departmental leadership, in the U.S., 9% (8/89) of radiation oncology department chairs were women. In Canada, for radiation oncology, 11 department heads were men, 1 was a woman, and 1 department could not be determined (8-15% women). For medical oncology, 10 department heads were men, 3 women, and 2 were unknown (20-33% women). In Spain, 12 radiation oncology heads were women, 28 men, and 8 were unknown (25-42% women); for medical oncology, 14 department heads were women, 52 were men, and 11 were unknown (25-42% women).

Conclusions: Women have historically increased in representation in the U.S. oncology workforce; however, they remain under-represented relative to the overall U.S. population. Women were also under-represented at the level of chair in the U.S., Canada, and Spain. Further research and efforts are needed to enlist and advance women in oncologic fields both nationally and internationally and understand barriers to training, practice, and advancement.

A076 Adherence to adjuvant endocrine therapy: Do racial disparities persist among the insured? Dennis Tolsma1, Mahlet G. Tadesse2, Arnethea Sutton1, Lee Cromwell1, Georges Adunlin1, Teresa M. Salgado1, Jun He1, Martha Trout1, Brandi E. Robinson1, Megan C. Edmonds1, Hayden B. Bosworth1, Vanessa B. Sheppard1, 1Kaiser Permanente (Georgia) Center for Research and Evaluation, Atlanta, GA, 2Georgetown University, Washington, DC, 3Virginia Commonwealth University School of Medicine, Richmond, VA, 4Samford University, Birmingham, AL, 5Virginia Commonwealth University School of Pharmacy, Richmond, VA, 6Southeast Permanente Medical Group, Atlanta, GA, 7Duke University School of Medicine, Durham, NC.

Purpose: Adjuvant endocrine therapy (AET) improves survival in women with hormone receptor-positive (HR+) breast cancer (BC). Yet medication adherence is suboptimal. The aim of this study was to assess adherence to AET among insured women using innovative statistical approaches.

Methods: Black and White women diagnosed with HR+ BC were identified from two health maintenance organizations. Automated pharmacy records captured oral AET prescriptions and refill dates. Logistic regression identified predictors of adherence defined in terms of proportion of days covered (PDC) (> = 80%) and medication gap of ≤ 10 days. A zero-inflated negative binominal (ZINB) regression model identified variables associated with the total number of days of medication gaps.

Results: A total of 1,925 women met inclusion criteria. Eighty percent of women were adherent per the PDC measure; 44% had a medication gap of ≤ 10 days; and 24% of women had zero days without any medication gaps. Race and age were significant predictors of adherence in all multivariable models. Black women were less likely to have PDC > = 80% than Whites (OR=0.72; 95%CI: 0.57-0.90; p<0.01), and they were less likely to have a medication gap of ≤ 10 days (OR=0.65; 95%CI: 0.54-0.79; p=0.001). Women 25-49 years old were less likely to have PDC > = 80% than women 65-93 years old (OR=0.65; 95%CI: 0.48-0.87; p<0.001), and they also were less likely to have a medication gap of ≤ 10 days (OR=0.73; 95%CI: 0.57-0.93; p<0.01). In the zero-inflated negative binominal model, Black women were less likely to having no medication gaps compared to Whites (OR=0.46; 95%CI: 0.54-0.79; p<0.001), and women 25-49 years old were less likely to have no medication gaps compared to women 65-93 years old (OR=0.61; 95%CI: 0.42-0.88; p<0.01).

Conclusions: Disparities in adherence to AET persist among insured women, particularly in Black and young women, highlighting a need for interventions among this population. Novel statistical approaches to study adherence, such as the ZINB approach, appear to constitute a useful alternative to the dichotomous PDC variable to tailor analysis to adherence patterns.
Examining the relationship between various informal sources of social support and the physical well-being among cancer survivors. Shaia M. Strayhorn, University of Illinois at Chicago, Chicago, IL.

Cancer survivors have previously reported lower quality of life scores compared to non-cancer survivors. More specifically, the quality of life domain of physical well-being has previously been shown to be significantly worse among cancer survivors compared to non-cancer survivors. Previous studies have observed that specific sources of informal social support (i.e., support from family and friends) can improve a cancer survivor’s physical well-being. However, no studies to date have assessed if support from fictive kin (or individuals who are not related by marriage or blood but are considered to be an extension of the family) and church members may also play a role on the physical well-being of cancer survivors. The purpose of this study was to examine the association between four informal sources of social support (i.e., family, friends, fictive kin, and church members) and the physical well-being among cancer survivors. Findings were based on data collected from the National Survey of American Life (NSAL) dataset. Physical well-being was measured using the following item from the NSAL dataset: “How would you rate your overall physical health at the present time?” A total of 238 cancer survivors (n=70 non-Hispanic whites, n=36 Caribbean Blacks, n=132 African Americans) comprised the study sample. Multiple imputation analyses were conducted within SAS to assess the associations between the informal sources of social support and the physical well-being among cancer survivors. All multiple imputation analyses were controlled for gender, age, race, household income, years of education, marital status, employment status, length of time residing in the U.S., and insurance coverage. Neither friends (β= -0.07, SE=0.09, p=0.42) nor fictive kin (β=0.06, SE=0.13, p=0.66) were significantly associated with the physical well-being of cancer survivors. Support from family was marginally associated with physical well-being (β=0.16, SE=0.08, p=0.05). A positive association was observed between support from church members and physical well-being (β=0.22, SE=0.09, p=0.01). Findings from this study suggest that support from church members can play an important role on the physical well-being of cancer survivors. Researchers of future health promotion interventions should consider collaborating with churches as a means of improving the physical well-being among cancer survivors.

Cause for concern: Understanding Black women’s concerns with endocrine therapy. Arnethea L. Sutton, Vanessa B. Sheppard. Virginia Commonwealth University School of Medicine, Richmond, VA.

Background: Although endocrine therapy (ET) has been shown to improve breast cancer-related outcomes, Black women tend to initiate and adhere to ET at lower rates than White women. Black women also express more concerns about ET when compared to their White counterparts. Beliefs about medication, specifically in regard to concerns about ET, are related to women’s decisions to adhere or not adhere to their medication. This study seeks to 1) understand Black women’s concerns about ET and 2) identify factors related to black women’s concerns about ET.

Methods: This study is part of the Women’s Hormonal Initiation and Persistence Study (WHIP), which sought to observe women’s patterns of endocrine therapy adherence over time and elucidate factors (e.g., clinical, sociocultural) that relate to medication adherence and discontinuation. Eligible women were at least 21 years of age, diagnosed with hormone receptor-positive (HR+) breast cancer, and initiated endocrine therapy at least 12 months post-diagnosis. Participants completed one telephone or online survey; data also included medical records and pharmacy refill records. This secondary analysis will identify specific concerns about medication as measured by the concern subscale of the beliefs about medicines questionnaire (BMQ) and regression analyses will identify factors (e.g., age, religiosity) related to those concerns. The BMQ concerns scale scores range from 5-20.

Results: A total of 150 Black women were eligible and completed all study activities. A majority (71%) were over the age of 50 and were college educated (81%). All women were insured. Concerns about ET were moderate (m=11.8 SD 3.1). Most women worried about the long-term effects of ET (65.2%). Most women were not concerned that they would become too dependent on ET (83.9%). Bivariate analysis indicates significant relationships between concerns about medication and satisfaction with care (p=0.018), religiosity (p=0.033), provider communication (p=0.013), and education (p=0.035). In the multivariable regression model, Black women who were least satisfied with their care expressed more concerns about ET (p<0.0002). No other factors were selected to the model.

Conclusion: Women’s satisfaction with their care impact beliefs about their ET, which may contribute to nonadherence to this life-saving treatment. Further work is needed to fully understand women’s ratings of satisfaction with care and
A079 Social-pain clusters in diverse women with breast cancer, and associations with sociodemographic factors and mortality. Candyce H. Kroenke⁴, Stacey Alexeeff⁴, Scarlett Lin Gomez⁴, Marilyn L. Kwan¹, Lawrence H. Kushi¹. ¹Kaiser Permanente Northern California Division of Research, Oakland, CA, ²University of California, San Francisco, San Francisco, CA.

Background: Social factors and physical pain are related bidirectionally and as a function of temperament and disease processes, but the relevance of this to population research is unknown. We developed social-pain clusters, or groups that were similar with regard to social and pain characteristics, in a large, population-based cohort of women with breast cancer, evaluating associations of resulting clusters with sociodemographic factors and mortality.

Methods: The study population included 4,279 women from the Pathways Study, a prospective cohort study of women diagnosed from 2006-2013 with stages I-IV breast cancer in Kaiser Permanente Northern California, who provided data on social (social integration, social well-being, loneliness, social well-being) and bodily pain measures at study baseline. Measures included the Medical Outcomes Study Social Support survey, the Functional Assessment of Cancer Therapy, a single-item measure of loneliness from the Center for Epidemiologic Studies-Depression measure, and a previously derived measure of social integration (Kroenke et al.). We used latent class analysis to develop social-pain clusters and used BIC criteria to select the optimal number of clusters. We further evaluated associations of age, race/ethnicity, education, and income with clusters in multivariate-adjusted logistic regression analyses, with adjustment for depressive symptoms, and also evaluated associations of clusters with sociodemographic factors and mortality.

Results: Cluster analysis produced three clusters including a “resilient” cluster characterized by low social and pain symptomatology (including 30% of study participants), a “distressed” cluster characterized by high symptomatology (20% of participants), and an intermediate cluster characterized by high pain and compromised social function but otherwise high support (50% of participants). Sociodemographic factors associated with higher odds of categorization in the distressed (vs. resilient) cluster included age (OR=1.04, 95% CI: 1.02-1.05), income <$25K (OR=9.30, 95% CI: 5.72-15.13), API race/ethnicity (OR=2.51, 95% CI: 1.72-3.67), and graduate-level education (OR=1.60, 95% CI: 1.16-2.22). Age, low income, and API race/ethnicity were also related to higher odds of categorization in the intermediate (vs. resilient) cluster. However, those in the distressed (HR=1.38, 95% CI: 1.06-1.80), but not intermediate (HR=1.05, CI: 0.83-1.33), cluster had a higher risk of overall mortality.

Conclusions: Age, low income, and API race/ethnicity predicted higher social and pain symptomatology in a population-based breast cancer cohort, independent of depressive symptoms. The clustering of these symptoms was related to higher overall mortality.


A080 Rates of Invitation, participation, and willingness to engage in medical and clinical research: Findings from attendees at two gender-specific community-based screening programs. Kearston L. Ingraham¹, Joan Packenham², Demetrius Harvey¹, Steven Patierno¹, Nadine J. Barrett¹. ¹Duke Cancer Institute, Durham, NC, ²National Institute of Environmental Health Sciences, Durham, NC, ³Black Men’s Health Initiative, Durham, NC.

Introduction: Community-based screening programs are associated with increased access to care, particularly for traditionally underserved people of color, the poor, and those who face barriers to health care and resources. The utility of health fairs to increase access to care by providing screenings and services that include accountable and clearly articulated follow-up plans can, in part, address health disparities. Interestingly, the same populations that community-based screening programs typically serve are grossly under-represented in medical and clinical research, including biospecimen donation. Lack of diversity in medical and clinical research, including clinical trials and biobanking, has significant consequences, including lack of generalizability to broader diverse communities and limiting access to potentially life-saving and risk-reducing research.

Methodology: Funded by the NCI (P30CA014236), the Duke Cancer Institute Office of Health Equity engaged community partners to conduct a population health assessment entitled Project PLACE (Population Level Approaches to Cancer Elimination). We collected 2,315 surveys of which 232 were respondents attending two gender-specific, community-based screening programs held in April 2017 and September 2018. Variation in rates of invitation, participation, and willingness to engage in medical and clinical research was evaluated.
2017. We assessed access and participation in clinical research and biobanking, and likelihood to participate in medical research in the future among program attendees who completed the survey. We asked the following questions via self-administered pen and paper surveys: 1. Have you ever been asked to participate in a clinical trial or medical research? 2. Did you decide to participate in the clinical trial or medical research? 3. Have you ever been asked to donate bio specimens (blood, saliva, or other tissue) for the purpose of medical research? 4. Did you decide to donate the bio specimen? 5. How likely would you be to participate in medical research in the future?

**Results:** Two-hundred and thirty-two (232) respondents completed the survey questions related to research participation. Thirty percent of respondents have been asked to participate in clinical research in the past, of whom 22% did participate. Twenty percent (22%) of respondents have been asked to donate bio specimens for research, of whom 16% have donated. Fifty percent (50%) of respondents report that they would or are likely to participate in medical research in the future.

**Conclusions:** This study highlights community-based screening programs as a viable outlet to reach and engage participants in medical and clinical research. Of note, 50% of respondents who were primarily African American/Black are likely to participate in medical research in the future. Multiple factors including the longevity of the screening programs, and the quality of partnerships and engagement between the DCI and collaborating community organizations may also influence these outcomes.

**A081 Trial Library: A pilot study to examine feasibility, acceptability, and preliminary estimates of efficacy for an online clinical trial matching website on patient-promoted conversations for prostate cancer clinical trials.** Hala T. Borno, Brian Bakke, Anke Hebig Prophet, Yoon-Ji Kim, Jan Yaeger, Jessica Chao, Pelin Cinar, Celia Kaplan, Eric Small, Christy Boscardin, Ralph Gonzales. University of California, San Francisco, San Francisco, CA.

**Background:** The ability of clinical trials to effectively translate into therapeutic interventions for the general population can be limited by a lack of representative participants in these trials. There is an acute need to develop informational resources regarding cancer clinical trials that meet the linguistic and literary needs of under-represented and vulnerable populations. Current practices utilize a one-size-fits-all approach that may be inaccessible to a diverse audience. Given the increased utilization of online resources for health information among a diverse patient population and across age groups, we developed a website, called Trial Library, which may serve as a prostate cancer clinical trial matching tool. We hypothesize that use of the Internet-based clinical trial matching tool in clinic will increase the number of patient-initiated conversations with physicians about clinical trial options, and by extension, improve enrollment to therapeutic cancer clinical trials among a diverse participant pool.

**Procedures/Design/Aims:** This is a nonrandomized, nontherapeutic interventional pilot study. The study will be performed in genitourinary medical oncology clinic at UCSF Helen Diller Family Comprehensive Cancer Center. We will measure the feasibility and acceptability of a clinical trial matching tool that includes two unique features: user-validated clinical trial content and navigation schema. We will measure preliminary estimates of efficacy of the online clinical trial matching tool in triggering patient-promoted conversations regarding clinical trials and ultimately clinical trial enrollment.

**Discussion:** Trial Library is designed to be an accessible informational resource for patients from diverse levels of health literacy and English proficiency. This pilot study will provide important preliminary results to inform the design of the website and subsequent testing outside of clinic. Additionally, this website will ultimately serve as a model for clinical trial information that can be translated across tumor types.

**A082 Influencing women’s attitudes toward participation in breast cancer clinical research: Improving inclusion of women of color.** Noe R. Chavez 1, Alan Nunez 2, Angela K. Wong 1, Tanya A. Chavez 1, Ellen Rippberger 3, Christine Thai 1, Angelica Sanchez 1, Ombeni M. Idassi 1, Krista M. Round 1, Kendall Kennedy 1, Margarita Robles 1, Jackelyn A. Alva-Ornelas 3, Jerneja Tomsic 1, Chidimma M.K. Kalu 1, Laura L. Kruper 1, Veronica C. Jones 1, Sharon Clancy 1, Amy C. Polverini 1, Courtney Vito 1, Karen Harold 1, Terry Hyslop 3, Carola M. Zalles 1, Daniel B. Schmolze 1, Christopher Sistrunk 1, Victoria L. Seewaldt 1. 'City of Hope National Medical Center, Duarte, CA, 2Duke University, Durham, NC, 3JFK Medical Center, Atlantis, FL.

The United States is increasingly racially and ethnically diverse. In fact, California is now a majority-minority region, with a greater percentage of its population comprised of racial minorities than whites. Yet, minorities are continually under-represented in clinical research trials, which provide
crucial information on which the future of cancer treatments is built. Without representative inclusion of participants of color in clinical research, we cannot develop effective preventative and treatment approaches for everyone. This current study investigates the factors, including characteristics of study consenters, that may influence women—particularly women of color (WOC)—to accept or decline participation in breast cancer-related trials. We assess these factors through a brief survey, administered to patients immediately after they were invited to participate in a breast cancer-related clinical study. From the beginning of study accrual to the present, twenty-three patients have taken the survey. We anticipate accruing 200 participants at a rate of 25 per month. For the preliminary analyses, we split participants in two groups: white women (WW) (n = 14) and women of color (WOC) (n = 9). We conducted independent sample t-tests to compare the responses of WW and WOC. More WOC (M = 1.44, SD = 0.73) reported that it is important that their consenter is of the same ethnicity or race than WW (M = 1.00, SD = .00), t (21) = -2.32, p < .05. Similarly, WOC (M = 1.44, SD = .73) also reported that it is important that the person inviting them to participate in research look like people in their community, compared to the importance placed on this factor by WW (M = 1.00, SD = .00), t (21) = -2.32, p < .05. More WOC (M = 2.33, SD = 1.23) also cited “feeling overwhelmed” with their medical condition as influential in their decision to participate in clinical research than WW (M = 1.31, SD = .48), t (20) = -2.75, p < .05. Although both groups positively rated their interaction with the consenter, we observed marginal differences between WOC and WW. WOC (M = 7.00, SD = .00) gave higher ratings to the variable of “consenter created an atmosphere of trust and support” compared to ratings given by WW (M = 6.29, SD = 1.07), t (21) = -1.99, p = .06. Though participants are generally satisfied with their consenter interaction, different factors influence WW and WOC as they decide whether to participate in clinical research. When identified, these factors can be used to inform more inclusive consenting processes.

**A083 Diversifying breast cancer clinical trial accrual: An approach to recruitment at a Comprehensive Cancer Center.** Tanaya A. Chavez1, Christine Thai1, Angelica Sanchez1, Laura L. Kruper1, Veronica C. Jones1, Sharon Clancy1, Amy C. Polverini1, Lisa D. Yee1, Courtney A. Vito1, Noé R. Chávez2, Alan Nuñez1, Ellen J. Rippberger1, Angela K. Wong1, Karen Herold1, Chidimma M.K. Kalu1, Jackelyn A. Alva-Ornelas1, Jerneja Tomsic1, Krista M. Round1, Margarita Robles1, Ombeni Idassi1, Kendall J. Kennedy1, Terry Hyslop2, Carola M. Zalles3, Christopher Sistrunk1, Victoria L. Seewaldt1. 1City of Hope, Duarte, CA, 2Duke University, Durham, NC, 3JFK Medical Center, Atlantis, FL.

**Background:** Breast cancer (BC) prevention clinical trials (CTs) play a vital role in the progress of preventative measures and treatments for all races and ethnicities. However, Northern European whites (NE/W) continue to be disproportionally enrolled (e.g., 93.5% were non-Hispanic white in the STAR trial), while minorities such as Asians, blacks, Latinas, and Native Americans (NA) lag in participation. Current studies suggest that minorities are not approached as frequently as NE/W; however, they are just as willing to participate. Here we present a successful recruitment strategy to improving minority accrual in CTs at a Comprehensive Cancer Center located in Duarte, CA.

**Method:** Results from community focus groups suggested the need to mentor local youth who strive to pursue a career in the medical field. Consequently, from February 2016 to July 2018, four bilingual, bicultural clinical research assistants (CRAs) were recruited from the catchment area of City of Hope (CoH). The CRAs, in collaboration with seven surgeons, two radiologists, and one medical oncologist, led the recruitment for three nontherapeutic BC prevention CTs at CoH.

**Results:** All four CRAs were 1) first-generation American, 2) fluent in Spanish or Vietnamese, 3) born and raised in Southern California, and 4) pre-health. Of the 3,148 patients who were screened, 398 were eligible for enrollment, 369 consented, and 58 declined. Primary languages and races/ethnicities of those who declined include the following: 7% Armenian, 9% Chinese, 78% English, 2% Thai, and 5% Spanish; 28% Asian, 3% black, 28% Latina, 2% NA, and 67% white (22% NE, 17% Middle Eastern/North African). Demographics of the consenting population include the following: primary language - >1% Armenian, 4% Chinese, 89% English, >1% Korean, and 7% Spanish; race/ethnicity - 14% Asian, 6% black, 30% Latina, 5% NA, and 75% white (40% NE). Of the white population (n = 277), 11% were Middle Eastern/North African, 53% NE, and 36% Latina. Accrual surpassed both the CoH catchment area (11.3% Asian, 8% black, 24% Hispanic, 1% NA, and 32% NE/W) and the CoH interventional/nontherapeutic CT population (10% Asian/Pacific Islander, 4% black, 21% Hispanic, >1% NA, and 55% NE/W).

**Conclusion:** Contrary to current accrual of CTs, here we show that minorities can have a large representation in CT accrual, as long as they are provided the opportunity. Accrual of Asians, Latinas, and NAs exceeded the catchment area and accrual of other CoH CTs. Interestingly, Chinese-speaking women comprised the highest declination group of the non-
POSTER SESSION A

English speakers, and Asians and Latinas declined the most outside of non-whites. Cultural competency and bilingualism appear to be characteristics of a CRA that may help in accruing minority women into CTS. Our findings suggest that they are just as willing to participate, and the first step is to simply ask.

A084 The forgotten race: Under-representation of Asians in clinical research. Stacey N. Doan¹, Christine Thai¹, Angela K. Wong², Tanya A. Chavez³, Angelica Sanchez², Laura L. Kruper², Veronica C. Jones², Sharon Clancy², Amy C. Polverini², Lisa D. Yee², Courtney Vito², Alan Nunez², Ellen J Rippberger², Noe R. Chavez², Karen Herold², Chidimma M.K. Kalu², Jackelyn A. Alva-Ornelas², Jerneja Tomsic², Krista M. Round², Margarita Robles², Ombeni M. Idassi², Kendall J. Kennedy², Christopher Sistrunk², Victoria L. Seewaldt², ¹City of Hope Medical Center, Claremont McKenna College, Claremont, CA, ²City of Hope Medical Center, Duarte, CA.

The United States (US) is racially and culturally diverse. Still, white women disproportionately comprise clinical trial participants, stemming largely from the fact that minorities often decline participation. Clinical trial findings, therefore, have not been representative of the diverse patient population, and have stymied progress in precision medicine and cancer prevention. According to the CDC, among Asian/Pacific Islander females, the leading cause of death is cancer. Moreover, they have more total cancer-related deaths than any other racial group. Per the 2017 US Census, Asians are the third largest minority group of the population (6.6%). Despite the grave health disparities faced by a sizable proportion of the population, the literature is sparse with regards to their research engagement. For example, several studies have focused on Black and Hispanic consenting rates, including one study that demonstrated no significant differences between the two groups (Wendler, Kington, Madans, Wye, Christ-Schmidt, Pratt et al., 2005) and another that indicated relatively lower enrollment rates among Hispanics and Blacks (Murthy, Krumholz, Gross, 2004). This gap in research is largely due to the marked heterogeneity with respect to language, nationality, and acculturation status. We examined Asian participation in three therapeutic, noninterventional trials that aim to develop early detection methods and accurate prognosis in women at high risk for breast cancer. Primarily, we collect leftover tissue and/or cells from fine needle aspirations (FNA) to better understand the cellular microenvironment that correlates with breast cancer development. We analyzed demographic data across these studies to investigate refusal rates among Asian women. Across the three trials, 3,119 participants were screened. Of the total number screened, 426 participants were eligible, 368 consented, and 58 declined. Of those who declined, 23.5% were Asians, 13.9% Hispanic, 8.3% Blacks, 5.6% Native Americans, and 11.4% White/non-Hispanic. Notably, Asians had the highest refusal rate. Fisher’s exact test (two-tailed) was conducted to examine refusal rates for Asians compared to Whites, Blacks, and Hispanics. Results suggest that Asians had significantly higher rates of compared to Whites (p = .02, observed odds ratio = .42, 95% CI [.20, .86]), but were not significantly different than Blacks or Hispanics. The under-representation of Asians in research may exacerbate health disparities. Thus, further studies should examine ways, such as increasing racial and cultural competency, for increasing Asian representation in clinical research studies. Ultimately, we believe that illuminating under-representation of the “forgotten” Asian population in clinical research can inform future interventions that promote chemoprevention and treatment of this high-risk population.

A085 Challenges and successes in recruiting African Americans with early-stage, non-small cell lung cancer to an NIMHD-funded, NCORP-based patient navigation trial. Marvella E. Ford¹, Debbie C. Bryant¹, Kathleen B. Cartmell¹, Katherine Sterba¹, Dana R. Burshell², Elizabeth G. Hill², Joanne Kim¹, Allan De Toma¹, Kendrea D. Knight¹, Ta’Myiah Reed¹, Kathryn Weaver¹, Elizabeth Calhoun², Nestor F. Esnaola¹. ¹Medical University of South Carolina, Charleston, SC, ²University of North Carolina-Chapel Hill, Chapel Hill, NC, 3Clemson University, Clemson, SC, 4Wake Forest School of Medicine, Winston-Salem, NC, 5Arizona Health Sciences Center, Tucson, AZ, 6Houston Methodist Hospital, Houston, TX.

Background: Enrollment of early-stage lung cancer patients to randomized trials has historically been challenging. The STARS Trial enrolled 36 of 1,030 intended patients from 28 sites, while the ROSEL Trial recruited 22 of 960 intended patients from 10 sites. Unfortunately, evidence shows African Americans with early-stage NSCLC are significantly less likely than their European American counterparts to undergo resection and may also be less likely to participate in lung cancer trials as well.

Purpose: The purpose of this research is to describe interim recruitment results from an NIMHD-funded, NCI NCORP-based patient navigation trial conducted with African Americans with early-stage, probable/proven non-small cell lung cancer (NSCLC).

Design: The protocol-driven, barriers-focused patient navigation intervention is being conducted in the context of
POSTER SESSION A

A two-arm cluster-randomized trial testing the effectiveness of the intervention in increasing rates of lung-directed curative-intent therapy (surgery and SBRT) in African Americans with Stage I-II NSCLC. The 2 study arms consist of the protocol-driven, intensive navigation intervention vs. usual care. The trial includes 20 study sites in 11 US states. Specific activities to enhance recruitment in the present trial include reaching out to referring physicians (e.g., primary care, pulmonologists, radiologists) to increase referrals of African American patients to the participating NCORP sites, and partnering with the leaders of community engagement activities at the sites to raise community-level awareness of the trial.

Results/Conclusions: To date, 200 African American patients have been recruited and the trial is now on target to meet its expected accrual goal of 222 patients. The majority of potential participants were ineligible due to receipt of surgical resection or radiation therapy prior to enrollment (24%), not having been told that they had probable/proven NSCLC prior to study contact (22%), or a previous history of lung cancer (10%). The median age of the 200 participants is 65 years (range 40-86 years). Most are unmarried (70%) and have a high school diploma or less (71%). The number of enrolled-to-date African American participants in this ongoing trial exceeds the total number of participants recruited to the STARS Trial or to the ROSEL Trial.


Background: Recruiting participants who are representative of the population as a whole is essential to ensure the development of treatments that benefit all rather than a select few. Understanding the reasons patients accept or decline participation, and then making adjustments to the recruiting process based on these findings, is one way to encourage study participation.

Aim: To better understand what factors influence a potential participant’s decision to either accept or decline participation in breast cancer trials.

Methods: These are preliminary data from a pilot study that uses a short questionnaire to investigate which factors influence a woman’s consent or decline to study participation. Women are approached for this study after being asked to participate in one of three other breast cancer trials targeting women who either have breast cancer or are at high risk for breast cancer. Women are approached for this study regardless of their decision to participate in the previous study. Participants are asked a set of questions about 1. the specific interaction they had with the consenter from the previous study, 2. general characteristics of a consenter, and 3. research in general. Demographic information is also collected for future analysis of responses based on race/ethnicity, income, education level, and primary language.

Results: A total of 24 participants have completed the questionnaire so far, with an accrual rate of approximately 25 patients per month. Participants ranked the importance of the various factors on a 4-point scale with 1 being “not important at all” and 4 being “very important.” Factors that participants indicated were the least important to their decision to participate were: financial compensation (x̄ 1.07), racial/ethnic parity between consenter and consentee (x̄ 1.19), consenter looking like someone from their community (x̄ 1.19), gender parity (x̄ 1.19), religious beliefs (x̄ 1.38), pleasing their doctor (x̄ 1.56), and feeling overwhelmed (x̄ 1.85). Factors participants indicated were the most important to them were: the desire to benefit others in the future (x̄ 3.63), to benefit their family (x̄ 3.56), to acknowledge the contributions of past generations (x̄ 3.20), the feeling participation was “the right thing to do” (x̄ 3.15), presence or lack of potential side effects associated with participation (x̄ 3.15), feeling empowered by the consenter (x̄ 3.15), feeling the consenter was listening (x̄ 3.11), and trust in research (x̄ 3.07).

Conclusions: Concerning the consenter, physical characteristics such as race/ethnicity and gender parity were less important than the actual interaction with the consenter, including their flexibility, listening skills, and ability to make the patient feel empowered. For research in general, the idea of contributing to the “greater good” emerged as a powerful motivation to participate. An emphasis on this, as well as well-trained consenters, may help studies attract more participants.

A087 Community Research Navigators (CRN): The bridge to increasing Latino participation in clinical research. Mayra Serrano, Marisela Garcia, Rick Kittles, Kimlin Tam Ashing. City of Hope, Duarte, CA.

The participation of underserved ethnic minorities in biomedical research is critical to achieving progress in health equity. Increasing ethnic minority including Latino accrual in
biomedical research, including clinical trials, is a formidable challenge that requires improving participant trust and commitment and overcoming of barriers to participation. Latinos make up about 18% of the US population. Yet Latinos are not adequately targeted in research studies, currently constituting only 7.6% of NIH clinical trial participants and only about 2%-5% of participants in cancer clinical trials. The National Cancer Institute (NCI) has recommended patient navigation as a research strategy that may be adapted to overcome ethnic minority biomedical research and clinical trial participation barriers. City of Hope has participated in training community research navigators (CRN) to increase diversity participation. These CRNs are trained to address gaps in knowledge, medical mistrust, access to participation, and engagement of under-represented groups in biomedical research. The research navigator draws from the patient navigation and promotora model and the community-engaged research approach. CRNs’ curriculum include the importance of biomedical to disease prevention, diagnosis, and treatment; the value to group and family participation. Clinical Trials, HIPPA, human subject protection, ethics; patient-provider communication, cost and coverage, and family communication and decision making. In total, we trained and mentored a team of 30 CRNs from our community partner Pomona’s Health Promoters for increased public education and Latino participation in research. CRNs were 25-74 years old, 97% female, 96% foreign-born, and 54% < high school education. Their pre- and post-test results showed an increase in willingness to participate in research (p < .005); increase in knowledge of the importance of biomedical including clinical research (p < .000); and an increase in confidence in improving community’s attitude and knowledge about clinical research (p < .000). Our findings suggest that the CRN training is effective in improving appropriate knowledge and confidence to conduct community research navigation. This approach holds the promise of utility and applicability to address barriers to research enrollment and increase Latino biomedical research participation.

A088 Perceived barriers for participating in areca (betel) nut cessation. Patrick Francis P. Sotto1, Ana Joy Mendez2, Thaddeus A. Herzog3, Casiera Cruz1, Jade S.N. Chennaux1, Chandra Legdesogi, Yvette C. Paulino1. University of Guam, Mangilao, Guam, 2University of Hawaii, Honolulu, HI.

Background: Areca (betel) nut is a known carcinogenic substance consumed by 11% of the population in Guam. To address this rising public health concern, a cessation program was piloted for chewers. Results of the pilot were used to inform the delivery of the Betel Nut Intervention Trial (ClinicalTrials.gov ID: NCT02942745). Despite the intent of the program to help individuals overcome a potentially harmful behavior, recruiting betel nut chewers is difficult. Therefore, the purpose of this study is to explore the perception of betel nut among chewers and nonchewers in Guam, and to identify the factors preventing a chewer from wanting to quit and from wanting to join the cessation program.

Design: Individual and group discussions were facilitated, utilizing questions designed to elicit responses relevant to perception of betel nut. Questions were adjusted to accommodate both chewer and nonchewer participants. Recurrent themes were extracted from the interviews and categorized into reasons associated with quitting and with joining a cessation program.

Results: Nine interviews were facilitated with 17 chewer and nonchewer residents in Guam, with mean age = 36.4 years (standard deviation = 12.4). Results yielded 5 general categories, aggregated by chewer and nonchewer responses. Subcategories were further extracted to determine barriers for quitting (e.g., addiction, sociocultural importance, betel nut is harmless), and barriers to joining a cessation program (e.g., time, transportation, hypocrisy).

Conclusions: Factors associated with reasons not to quit chewing and not to participate in a cessation program are variable. Current findings highlight a lack of available information regarding the harmful effects of betel nut consumption (i.e., carcinogenicity). The social and cultural construct within Guam’s community may be a highly contributing factor to the overall acceptability of betel nut consumption practices, and for the lack of expressed need to quit. In addition, the findings also suggest that a cessation program designed for betel nut chewers should be mobilized to accommodate a chewer’s time and transportation restraints. Future considerations include the implementation of betel nut health outcomes into a youth curriculum, and the development of a cessation program both convenient to chewers and specific to young betel nut chewers.

A089 Addressing both community and institutional barriers increases accrual of minority patients in breast cancer clinical trials. Amelia A. Trant1, Lucas Walz2, Whitney Allen1, Hannah Verma1, Mindy Le2, Jose DeJesus3, Christos Hatzis1, Andrea Silber1. 1Yale School of Medicine, New Haven, CT, 2Yale University, New Haven, CT, 3Yale School of Public Health, New Haven, CT.
Background: Clinical trials (CT) allow new treatments to become standard practice. Diversity in CT benefits both participating and future patients, but traditionally underserved ethnic/racial minorities participate in CT at lower rates than Whites. Previous studies have claimed that personal and community barriers prevent participation, but the intersection of community and institutional factors has been understudied. For the past two years, the Oncology Welcomes New Haven into Trials (OWN IT) initiative at the Yale Cancer Center has taken a multitiered approach to breast cancer minority CT accrual.

Methods: Focus groups at community centers were held to better understand community perspectives on CT. Ongoing outreach was performed by physicians and community health workers at local events. Institutional barriers were addressed through executive council representation, grand rounds presentations, and didactic lectures with health care providers at multiple federally qualified health centers. Studies with eligibility criteria favorable to minority patients were opened. An anonymous, 5-minute survey was conducted at regular visits with Smilow Breast Center patients to gauge awareness of and access to CT. The survey was performed on iPads with the Qualtrics application in English or Spanish. Survey data were compared to the Yale Cancer Center Clinical Trials Office, Connecticut Tumor Registry, and U.S. Census records. Two-tailed Fisher’s exact tests were used for all analysis.

Results: In Sept. 2015, only 11% of 98 CT participants were minorities even though minorities accounted for 17% of breast cancer incidence in New Haven County and 16% in Connecticut. By Sept. 2017, 22% of 89 were minorities, p=0.049. Survey results confirmed a reduction in the disparity: 162 patients were asked to take the survey—12 declined, and 150 completed it. The ethnic/racial breakdown of the participants was as follows: 69% White, 10% Black, 9% Hispanic/ Latino, 3% Asian, and 9% unknown; this is in line with both the Connecticut Tumor Registry data and expected incidence based on the 2010 U.S. census. The percentage of patients invited to participate in CT and the percentage of offers declined were as follows: invited 41%, declined 19% (White); 60%, 33% (Black); 29%, 0% (Hispanic/ Latino); 25%, 0% (Asian); and 36%, 0% (unknown). There were no significant differences in invitation or decline rates between White and minority patients or between individual racial/ethnic groups. Black and Hispanic/Latino patients were significantly less likely than White patients to be aware of CT prior to the survey with only 58% confirming prior knowledge compared to 95% of white patients, p < .01.

Conclusions: Efforts to increase minority participation in CT through institutional and community engagement were successful. Patient education regarding CT should be increased for minority patients. This approach will be used with other disease types at the Yale Cancer Center.

A090 Contextualizing the association between social isolation and smoking among socioeconomically disadvantaged adults: Psychosocial, life-contextual, and health care factors. Kassandra I. Alcaraz1, Ryhan N. Vereen1, Antonika Souder2, Alan Bienvenida1. 1American Cancer Society, Atlanta, GA, 2Texas Health and Human Services Commission, Midland, TX, 3Emory University, Atlanta, GA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PRO2) of the Conference Proceedings.

A091 Insurance status and ethnicity/race are associated with late-stage presentation for breast cancer patients. Katy E. Balazy1, Cecil M. Benitez2, Clare E. Jacobson1, Rie Von Eyben1, Kathleen C. Horst1. 1Stanford Cancer Center, Stanford, CA, 2Stanford School of Medicine, Stanford, CA.

Objective: To determine whether insurance and ethnicity/race are associated with late-stage presentation for breast cancer patients.

Materials/Methods: Patients with breast cancer treated from 2012-2017 were identified (n=1,060). There were 189 patients with stage 0/ductal carcinoma in situ (DCIS), 442 with stage I, 318 with stage II, 74 with stage III, and 38 with stage IV disease. Patients were identified as having either public insurance (Medicare or Medicaid) (n=466) or private insurance (n=594). They were classified into four ethnicity/race categories: Asian, Hispanic, White, and Other. A logistic regression model was run using stage as the outcome to analyze odds ratios for later stage presentation. The model included age, ethnicity/race, insurance, marital status, and language. Two additional interactions improved the fit of the model and were included: age with ethnicity/race, and ethnicity/race with insurance.

Results: There were significant associations between stage and insurance status for Asian and Hispanic patients, and trends for White and Other patients. In general, Asian, White and Other patients with private insurance had lower odds of later-stage disease, while those with public insurance had higher odds of later-stage disease (specifically stages II, III,
POSTER SESSION A

or IV). Asian patients had significantly lower odds of later-stage presentation if they had private insurance (OR=0.48, 95% CI 0.27-0.88). There was a similar trend for White (OR=0.83) and Other patients (OR=0.49), but not statistically significant. The pattern was opposite for Hispanic patients, who had higher odds of later-stage presentation if they had private insurance instead of public insurance (OR=2.82, 95% CI 1.32-6.11). When compared to other ethnicities/races, Hispanic patients with private insurance had 1.86 times the odds of later-stage disease compared to White patients, 2.55 times the odds compared to Other patients, and 3.03 times the odds compared to Asian patients. On the other hand, Hispanic patients with public insurance fared better than other ethnicities/races. They had 0.55 times the odds of later-stage disease compared to White patients, 0.45 times the odds compared to Other patients, and 0.52 times the odds compared to Asian patients.

Conclusion: There was a significant association between ethnicity/race, insurance, and stage. Asian patients with private insurance demonstrated the lowest odds of late-stage disease, while Hispanic patients with private insurance had highest odds of late-stage disease. For those with public insurance, Hispanic patients had the best odds of early-stage breast cancer compared to Asian, White, and Other patients. The trend toward private insurance being associated with lower-stage disease may be expected for Asian, White, and Other patients; however, the reason why Hispanic patients with private insurance present with later-stage disease remains to be explored.

A092 Cancer caregiver burden and mental health outcomes: Differences by race/ethnicity. Maria D. Thomson, Abigail Cadua, Robin Matsuyama, Laura A. Siminoff. Virginia Commonwealth University, Richmond, VA, 2Temple University, Philadelphia, PA.

Background: Informal caregivers (CGs) play a critical role in caring for cancer patients at end of life, often to the detriment of their own health outcomes. However, much of the literature focuses on white CGs, with little specifically addressing the experiences and health outcomes of African American cancer CGs.

Purpose: To compare the outcomes of perceived burden, depression, and distress between white and African American cancer CGs with a focus on the role of social support and CG preparedness to provide care.

Methods: Informal caregivers providing end-of-life care to cancer patients were recruited from an academic cancer center. CGs were administered the following scales: CES-D, Zarit Burden, Distress Thermometer, Preparedness for Caregiving, and demographics. One item each assessed health status and social support from church/religious groups.

Results: Caregivers (n=90) were mostly female (77%), married/partnered (61%), and reported a median annual household income of $45,500. African American CGs (n=44; 49%) reported significantly lower distress [2(88); p=0.04], depression [2(86); p=0.04], caregiver burden [3.8(76); p=0003], and greater social support [2(88); p=0.02] from church/religious groups compared to white CGs. No univariate differences in perceived preparedness to provide care, health status, or spirituality were found. Multiple regression models for depression [R2=0.4, F(8,77)=6.8; p<.0001], distress [R2=0.17, F(8, 78)=3.2; p=.003], and caregiver burden [R2=.5, F(8, 78)=11.3; p<.0001], were significant. CGs who were African American reported greater preparation and better health and had lower depression and distress. Lower CG burden was associated with CGs who were African American, older age, and reported greater CG preparation.

Conclusions: African American CGs reported lower CG burden and better mental health outcomes compared to white CGs. Some key intervention targets such as perceived CG preparation to provide care have important associations with health outcomes for all CGs. However, there are likely other components such as social support from church/religious groups that vary in level of importance depending on the unique sociocultural perspectives of racial/ethnicity groups. Interventions are needed that support cancer caregivers and protect their own health outcomes. Developers should consider the diversity of experiences and meanings attributed to cancer caregiving when choosing intervention targets.

A093 Employment and work experiences after breast cancer treatment. Christine C. Ekenga, Cora McElwain, Maria Perez, Donna B. Jeffe. 1Washington University in St. Louis, St. Louis, MO. 2Washington University School of Medicine, St. Louis, MO.

Background: Employment is a social determinant of health. However, few longitudinal studies have examined employment outcomes in African-American women with breast cancer. We examined factors associated with return to work over 2-year follow-up in a sample of African-American
breast cancer patients participating in a randomized controlled trial of a cancer-information intervention’s impact (vs. standard of care) on quality-of-life and treatment adherence outcomes.

**Methods:** Interview and medical-record data from 227 newly diagnosed African-American breast cancer patients (stage 0-II), who enrolled a mean 6 days from surgical post-op visit or start of neoadjuvant therapy, were analyzed in association with return to work; four more interviews were conducted over two years. Potential predictors included sociodemographic variables (age, marital status, income, education, insurance status), treatment(s) received (surgery type, chemotherapy, radiation), comorbidity, and elevated depressed mood (Center for Epidemiologic Studies Depression Scale [CES-D] score > 15). Multivariable logistic regression models were used to identify factors independently associated with return to work.

**Results:** At enrollment, 100 patients (44%) were employed part- or full-time; 71 of employed patients returned to work during 2-year follow-up. Study arm and other treatment and sociodemographic variables were not significantly associated with return to work and was not included in the final model. Patients with elevated depressed mood at baseline were less likely to return to work than nondepressed patients (adjusted odds ratio = 5.8, 95% CI = 1.7-9.3).

**Conclusions:** Patients with elevated depressed mood were less likely to return to work over 2-year follow-up. Screening for depressed mood at diagnosis and providing treatment might be an effective strategy to improve continued workforce participation in African-American breast cancer patients.

**A095 The inadequacy of conventional definitions for representing underserved cancer patients.** Bradford E. Jackson1, Yan Lu1, Tracey Barnett2, Bhavana Tanna3, Bassam Ghabachi1, Rohit P. Ojha1, JPS Center for Outcomes Research, Fort Worth, TX, 2UNT Health Science Center, School of Public Health, Fort Worth, TX, 3JPS Center for Cancer Care, Fort Worth, TX.

**Background:** Several cancer organizations have emphasized the need for etiologic and prognostic research targeting underserved populations. Most studies have operationalized the term underserved as uninsured or impoverished, but unknown is whether these characteristics sufficiently represent the underserved. Therefore, we aimed to assess whether conventional definitions of underserved adequately represent an underserved cancer population.

**Methods:** We used data from the JPS Center for Cancer Care institutional registry (accredited by the Commission on Cancer). This center is part of a public hospital network and is the primary source of care for underserved cancer patients in Tarrant County, Texas. We also obtained data for all cancer patients.

**A094 The relationship between migration and integration stressors and tobacco use in an indigenous Mixteco migrant community.** Gilberto Lopez1, Heather Mattie2, Vaughan Rees2, David R. Williams3. 1University of Rochester, Rochester, NY, 2Harvard University, Boston, MA.

Cigarette smoking is one of the leading causes of chronic disease morbidity and mortality across the world. In the U.S., Latinos have a lower prevalence of smoking when compared to other ethnic/racial groups, but when disaggregated there exist significant differences within Latino subgroups (Bandeira et al., 2015). In the scientific literature, little attention has been given to tobacco use among indigenous Mexican migrants. This study analyzes the relationship between experiences (stressors) linked to migration and tobacco use in an indigenous Mixteco migrant community. Migration stressors include the negative experiences on an individual’s journey to the United States while integration stressors are the negative experiences of integrating into society once arriving in the U.S. We hypothesize that there is a significant relationship between the level of migration and integration stressors and tobacco use. A sample of 901 indigenous Mixteco participants from a high-emigrating town in the southern Mexican state of Oaxaca completed structured questionnaires focused on migration history, demographics, and health outcomes. In the US, cross-sectional data were collected in the corresponding satellite communities in southern California. Statistical analyses were conducted using Stata 15 and R version 3.4.3. We generated descriptive statistics for sample characteristics, which are stratified by gender (men/women) and tested for association. A series of logistic regression models were used to predict the association between migration stressors and integration stressors and cigarette smoking. This study yields new information on the relationship between migration, integration, and tobacco use among indigenous Mexican migrants. Although the primary predictor of interest showed no significant association with our outcome, certain findings add to the existing literature on migration and health. These findings include gendered differences in smoking, higher odds of smoking among return migrants, and higher odds of smoking among English language speakers.
diagnoses in Tarrant County from the Texas Cancer Registry for comparison. Our eligible population included individuals aged ≥18 years diagnosed with a first primary cancer between 2008 and 2015. We applied conventional definitions of underserved to cancer patients in Tarrant County, where underserved was defined as uninsured or residence in a census tract where >20% of residents were below the poverty level (i.e., impoverished). We estimated ratios of relative frequency (RRF) and bootstrapped 95% confidence limits (CL) comparing sociodemographic and cancer characteristics between the conventionally defined population (i.e., uninsured or impoverished) and the JPS reference population. RRFs unequal to 1 suggested that the distribution of the characteristic differed between the conventionally defined population and the reference population.

Results: Our study population comprised 7,751 underserved cancer patients at JPS, of whom 82% were aged >65 years, 46% male, and 54% racial/ethnic minorities. The most common cancer diagnoses were female breast (14%), lung (12%), and colorectal (10%), and 34% were diagnosed with advanced-stage cancers. RRFs for sociodemographic characteristics ranged between 0.47 and 0.91 when comparing uninsured to the reference population. RRFs for sociodemographic characteristics ranged between 1.1 and 2.5 when comparing impoverished to the reference population. Similar departures from RRF=1 were observed for cancer characteristics.

Discussion: Our results suggest that conventional definitions of underserved may not adequately represent underserved cancer populations. The complex characteristics of underserved populations may be underappreciated. Public hospitals that form the health care safety net warrant greater attention for cancer research targeting the underserved.


Introduction: Hospitals are increasingly using different patient engagement platforms to improve patient education, engagement, and satisfaction. Most of these patient engagement platforms are smartphone based. This requires patient awareness and understanding of basic technology. Einstein Medical Center serves a large socioeconomically and racially diverse population in North Philadelphia. We undertook a feasibility study before introducing any patient education/engagement platforms in our population. Our primary objective was to assess the use of smartphones and Internet by cancer patients in a socioeconomically diverse population. Our secondary objective was to assess feasibility of introducing technological platforms to improve patient education, engagement and satisfaction.

Methods: A onetime cross-sectional survey of patients attending the outpatient clinic and infusion center were interviewed by a trained interviewer during a one-week period in July 2018. The questionnaire was designed to assess demographic information, questions related to patients’ smartphone and Internet availability, and use for health.

Results: We surveyed 75 patients in one week (N=75). Their ages ranged from 21 to 91 years old. There were 25 (33.3%) male and 50 (66.7%) female patients. Around 32 patients had at least a college education and 42 had a high school level education or less. 53 (71.6%) patients owned a smartphone and all of those owners could browse the Internet and download applications on their phone. 20 (26.67%) patients used an iPhone platform and 34 (45.33%) patients used an Android smartphone. Most of the patients who had a smartphone were willing to download applications that can help monitor their cancer and health.

Conclusion: Though our hospital is located in a socioeconomically disadvantaged area, the vast majority of patients own a smartphone and are willing to use them to monitor their cancer care. We can confidently use this technological advancement to help improve patient education, engagement, and satisfaction in this setting.

A097 Propensity score matching analysis of payer status’s effect on the survival of colon cancer patients. Runhua Shi, Lawrence Shi, Glenn Mills. LSU Health Sciences Center, Shreveport, LA, “Caddo Parish Magnet High School, Shreveport, LA.

Background: There will be 97,220 new cases and 50,630 colon cancer deaths in the United States with over 1,000,000 survivors in 2018. Factors that could affect colon cancer survival include age, stage, treatment, and others. Previous studies have shown a statistically significant relationship between payer status and cancer patient survival in retrospective studies. However, in retrospective studies, patient baseline characteristics between payer status are not comparable. Few studies have addressed payer status’s effect on the overall survival of patients using propensity score matching (PSM).
**Method:** About 66,493 stage II/III colon cancer patients obtained from the de-identified National Cancer Database, aged 40-64 years old, diagnosed between 2004 and 2014, were analyzed. All patients received surgery and patients who received radiation therapy, hormone therapy, immunotherapy, palliative care, or other therapies other than chemotherapy were excluded. Only private or Medicaid payer status was included. Propensity score was calculated by computing probability of patients being in the Medicaid group using logistic regression. The PSMatch procedure from SAS was used to perform propensity score matching on patients with Medicaid and private insurance. Greedy nearest neighbor matching method was used to match one Medicaid to one privately insured patient with a caliper of 0.2. At the same time, exact match was done for gender, age group, race, and stage at diagnosis. Multivariate Cox regression was used to estimate the effect payer state effect on survival before and after PSM.

**Results:** Among the 66,493 patients, 90.3% were privately insured and 9.7% had Medicaid. In univariate analysis payer status was a significant predictor of overall survival. Before PSM, the median overall survival for patients with private insurance was 12.75 years while Medicaid had an MOS of 9.02 years. After PSM, 6,166 patients with private insurance had a MOS of >12.82 years and 6,167 Medicaid patients had an MOS of 8.88 years. After PSM, patients with Medicaid had a hazard ratio of 1.5, a 50% increased risk of death. With the PSM, payer status proved to be statistically significant predictor of overall survival of colon cancer.

**Conclusion:** This study has indicated that, by using PSM method, payer status can be shown as a significant predictor of survival for colon cancer patients. In addition, chemotherapy, race, age, and other socioeconomic factors were also significant predictors of the overall survival. Other covariates not studied or mediation effect of payer on survival were also significant predictors of the overall survival. Other chemotherapy, race, age, and other socioeconomic factors were also significant predictors of the overall survival. Other chemotherapy, race, age, and other socioeconomic factors were also significant predictors of the overall survival. Other chemotherapy, race, age, and other socioeconomic factors were also significant predictors of the overall survival.
CONCLUSION: In our high-volume academic radiotherapy practice, RT noncompliance correlates significantly with uninsured or Medicaid coverage status, African American race, and low predicted income. Noncompliance disproportionately impacts rural patients and inner-urban patients with low predicted income. Further studies are needed to understand causative mechanisms requiring intervention to help close gaps in radiotherapy quality.

A099 Benefit finding and depressive symptoms: The role of socioeconomic status and positive affect among immigrant cancer survivors. Carol Wang, Qian Lu. University of Texas MD Anderson Cancer Center, Houston, TX.

PURPOSE: Benefit finding, or finding benefits within adversity, has been shown to be linked to better psychological well-being among those who have undergone trauma such as cancer patients and survivors of natural disasters. According to the National Cancer Institute, up to 25% of cancer survivors experience symptoms of depression. Positive emotions have been shown to promote positive meaning and buffer against depressive symptoms among individuals who have undergone through challenging life circumstances (Tugade & Frederickson, 2004; Frederickson et al., 2003) and resilient individuals report using greater positive emotions following a challenging task which predicted faster cardiovascular recovery (Tugade & Frederickson, 2004). Furthermore, literature has documented ethnic and racial disparities in cancer survival and care. However, socioeconomic disparities in psychosocial adjustment to breast cancer have garnered little attention. This study addresses this gap by examining the association between benefit finding and depressive symptoms, state positive affect as an underlying mechanism, and the potential moderating role of socioeconomic indicators (i.e., personal income, household income, and education) among Chinese American breast cancer survivors (CABCS).

METHODS: Ninety-six CABCS completed a questionnaire packet assessing these variables.

RESULTS: Benefit finding was positively associated with positive affect and negatively associated with depressive symptoms. Educational attainment but neither personal nor household income was negatively associated with depressive symptoms. Positive affect explained the relationship between benefit finding and depressive symptoms. Only educational attainment moderated the relation between benefit finding and depressive symptoms such that benefit finding was most beneficial for those with high educational attainment.

Conclusion: This study suggests that benefit finding is linked to lower depressive symptoms among CABCS through the mechanism of positive emotions. That is, positive emotions may broaden an individual's personal resources (e.g., social and psychological) that enhance health and well-being and help regulate negative emotions, thereby promoting resiliency. Furthermore, socioeconomic indicators such as education and income may be differentially related to depressive symptoms among CABCS. These findings underscore the importance of implementing psychosocial interventions targeted at increasing benefit finding and positive affectivity to address socioeconomic disparities among immigrant cancer survivors.

A100 Disparities in work status after treatment for breast cancer: A controlled, longitudinal study. Victoria S. Blinder1, Sujata Patil1, Carolyn Eberle1, Gabriel Jung2, Lewis J. Kampel1, Caroline Hwang3, Ting Bao1, Mark E. Robson1, Manmeet Malik4, Francesca Gany1. 1Memorial Sloan Kettering Cancer Center, New York, NY, 2Queens Medical Associates, Fresh Meadows, NY, 3Lincoln Medical Center, Bronx, NY, 4New York Presbyterian Queens, Flushing, NY.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR03) of the Conference Proceedings.

A101 Hair cortisol measurement in chronic hepatitis B patients. Hie-Won Hann1, Hushan Yang2, Jerrold Meyer1, Hee-Soon Juon1. 1Thomas Jefferson University, Philadelphia, PA, 2University of Massachusetts, Amherst, MA.

OBJECTIVES: It is known that chronic hepatitis B (CHB) infection exerts suppressive effects on the host innate and adaptive immune responses. Although there is information about liver disease progression of CHB patients and the adverse effects of stress on the immune system, few studies focus on the effects of chronic stress in CHB patients. To our best knowledge, this is the first study to measure hair cortisol (CORT) in CHB patients. To address the prolonged exposure to stress associated with CHB diagnosis, we explored the measure of the stress hormone cortisol (CORT) in the hair as a biomarker of chronic stress in CHB patients.

METHODS: Eligible CHB patients identified from an existing patient cohort were enrolled in this prospective study. Data collection were done using medical chart reviews, face-to-face interview in Korean or English, and hair and blood samples. Hair samples were cut from the posterior vertex of
A102 Factors associated with psychological distress among chronic hepatitis B patients. Hee-Soon Juon1, Grace Park1, Klassen Ann2, Hie-Won Hann1, Thomas Jefferson University, Philadelphia, PA, Drexel University, Philadelphia, PA.

Background: Psychosocial stress is a common comorbidity in chronic hepatitis B (CHB) patients. A diagnosis of CHB, the primary risk factor for liver cancer among Asian Americans, can be a significant source of psychological and emotional stress. Although the disease can be life-changing, there is a paucity of research on psychosocial stress in CHB patients. The purpose of this study is to examine the prevalence of serious psychological distress (SPD) and factors associated with SPD in Asian CHB patients.

Method: It is a prospective study design with subjects identified from an existing patient cohort that were enrolled and then subsequently followed up. Information was gathered from the CHB patients using face-to-face interviews in Korean or English. Serious psychological distress was measured by the Kessler Scale (K6). Measures of stressful life events and Hepatitis B Quality of Life (HBQOL) (e.g., psychological well-being, anticipation anxiety, stigma) were used. A multivariate logistic regression model (including gender, age, level of education) was conducted for analysis. Results: Of 50 CHB patients 18 years and older, the 12-month prevalence of SPD was estimated at 20% using the optimal cut-off (>=13). In adjusted regression analysis, stressful life events and HBQOL-stigma were related to serious psychological distress: Those who had stressful life events (aOR=3.10, 95% CI 1.26-7.64) and those who had high scores of stigma (aOR=1.19, 95% CI 0.97-1.44, p=.08) had higher psychological distress. Those with more than a college education had decreased psychological distress (aOR=0.09, 95% CI 0.01-0.82).

Conclusion: The finding indicates CHB patients had a higher prevalence of serious psychological distress than the general Asian population (2.6% from California Health Interview Survey). Stigma connected to hepatitis B diagnosis and stressful life events were important factors associated with mental health. This suggests that disease burden caused by hepatitis B infection may lead to poor mental health. Future studies will identify those who are at a high likelihood of developing a mental disorder and develop effective interventions for early detection of mental illness.


Introduction: Compared to their white counterparts, Latina breast cancer survivors suffer from greater distress and poorer health-related quality of life. Yet little is known about the determinants of such distress.

Purpose: Examine the independent associations of coping self-efficacy, social support, neighborhood cohesion, engagement with physicians, and financial hardship with depressive symptoms and perceived stress using baseline data from a randomized controlled trial of a stress management intervention among Spanish-speaking rural Latina breast cancer survivors.

Methods: All data were self-reported and collected via in-person interviews in Spanish, except for medical information, which was obtained from medical records review. Bivariate linear models regressed either depressive symptoms (Patient Health Questionnaire-8) or stress (Perceived Stress Scale) on coping self-efficacy, social support, neighborhood cohesion, difficulty engaging with physicians, and financial hardship,
controlling for demographic, medical factors, and study site. Hypothesized predictors that were statistically significant at p <0.20 in bivariate analyses were included in multivariate linear models. Higher scores on all measures signify more of the construct.

**Results:** In bivariate analyses, coping confidence (b = -2.50; p <0.0001) and social support (b = -1.14; p <0.01) were negatively associated with depressive symptoms; difficulty engaging with physicians (b = 1.51; p <0.01) and financial hardship (b = 2.30; p <0.01) were positively associated with depressive symptoms. In multivariate analyses, only coping confidence (b = -2.35; p <0.0001) was negatively and independently associated with depressive symptoms, controlling for covariates. In bivariate analyses, coping confidence (b = -4.10; p <0.0001), social support (b = -2.66; p <0.0001), and neighborhood cohesion (b = -1.83; p <0.01) were negatively associated with stress; difficulty engaging with physicians (b=1.51; p =0.05) and financial hardship (b=4.58; p <0.0001) were positively associated with stress. In multivariate analyses, coping confidence (b = -3.65; p <0.0001) and neighborhood cohesion (b = -1.03; p <0.05) were negatively and independently associated with stress; financial hardship was positively and independently associated with stress (b = 3.44; p<0.01).

**Conclusions:** Interventions that focus on increasing women’s coping confidence and sense of neighborhood cohesion, and services to reduce their financial hardship, could help alleviate psychosocial health disparities among rural Latina cancer survivors.

**A104 Racial disparities in receipt of cancer surgery contribute to worse outcomes for patients with gastrointestinal cancers.** John Bliton, Michael Parides, John McAuliffe, Peter Muscarella, Haejin In. Montefiore Medical Center, Bronx, NY.

**Introduction:** Mortality disparities exist in gastrointestinal (GI) cancers among racial/ethnic groups. One potential contributor to this disparity is a gap in who receives surgery. We aim to examine how much of the mortality disparity among racial/ethnic groups for GI cancers is explained by differences in operative rates.

**Methods:** The National Cancer Database was used to obtain data from patients diagnosed with gastric, pancreatic, and colorectal cancer in 2004-2015. Descriptive statistics were used to compare raw differences for variables among races. Variables included demographics, receipt of surgery, tumor stage and characteristics, and hospital factors. The racial disparity in survival was measured as the hazard ratio (HR) for each minority compared to White patients, controlling for age and year in Cox regression. The contributions of the variables, including surgical resection, to the racial disparities were estimated by measuring how inclusion of each of these variables affected the HRs of minorities compared to White patients. The magnitudes of the contributions to the HRs were estimated using two methods: (1) the addition of each variable to the age- and year-controlled model, and (2) the serial removal of each variable from a multivariate model that included all variables. The main analysis was performed excluding patients with unknown stage or disseminated cancer.

**Results:** 1.47 million patients with GI cancer were included in the study: 52% colon, 11% gastric, 21% pancreatic, and 16% rectal. Black patients were more likely to be from lower-income areas, from urban areas, and had lower operative rates in all cancers except gastric cancer. On Cox regression of stage 1-3 disease controlling for age and year of diagnosis, the HRs for Black patients compared to White patients were 1.01 (95% CI 0.97- 1.03), 1.11 (1.09-1.13), 1.22 (1.19-1.24), and 1.28 (1.24-1.32) for stomach, pancreas, colon, and rectum tumors, respectively. Based on the multivariate regression, the factors with the greatest influence on the survival disparity were zip income quartile and receipt of surgery. Receipt of surgery independently accounted for 29%, 11%, and 19% of the survival disadvantage observed in Black compared to White patients for pancreas, colon, and rectum cancer. Zip income quartile accounted for 16%, 18%, and 17%, excluding interactions. In contrast, no gap in operative rates or overall survival was observed for stomach cancer. The significance of surgery to outcomes was most pronounced for pancreatic cancer, where adding receipt of surgery to the age- and year-controlled model reduced the HR from 1.11 to 0.99; for colon and rectal cancer the HR changed from 1.22 to 1.15 and from 1.28 to 1.17.

**Conclusion:** Part of the observed cancer disparities for Black patients may be due to fewer surgeries being performed for Black patients. Correcting the disparities on the receipt of surgery for stage I through III GI cancer would likely have a large impact on mortality disparities.

**A105 Racial disparities in reasons for not receiving surgery for gastrointestinal cancer.** John Bliton, Michael Parides, John McAuliffe, Peter Muscarella, Haejin In. Montefiore Medical Center, Bronx, NY.
POSTER SESSION A

**Introduction:** Differences in rates of surgery performed for gastrointestinal (GI) cancers contribute to racial disparities in cancer mortality. The National Cancer Database (NCDB) contains data obtained from Commission on Cancer-accredited hospital cancer registries and collects reasons for nonreceipt of surgery as a registry item. This study aims to examine whether racial disparities exist in this provided reason for not receiving surgery.

**Methods:** The NCDB was used to obtain data for patients diagnosed with gastric, pancreatic, and colorectal cancer in years 2004-2015. Analysis was limited to patients who were Black or White, and cancers stages 1-3. Unadjusted and adjusted differences between Black and White patients were examined for all variables in the model. Variables included demographics, receipt of surgery, reason for not having surgery, tumor stage and characteristics, and hospital factors. Reasons for patients’ not receiving surgery were evaluated with Generalized Linear Modeling regression to see if certain responses, such as “contraindicated due to patient risk factors,” “not part of the planned first course treatment,” and “refused by the patient” were more frequently assigned to Black compared to White patients.

**Results:** 540,205 patients with stage 1-3 gastrointestinal cancer were included in the study. 43% of the cohort had colon cancer, 24% rectal cancer, 11% gastric cancer, and 22% pancreatic cancer. For stage 1-3 disease, the raw operative rate for Black patients was 0.3%, 6.6%, 2.0%, and 6.7% lower than in White patients for stomach, pancreas, colon, and rectum cancers, respectively. These gaps widened when adjusted for age, comorbidities, and stage. On multivariate regression, Black patients were more likely to be recorded as being denied surgery due to patient risk factors even after controlling for age, stage, comorbidities, tumor characteristics, demographics, and hospital factors: OR 1.03 (95% CI 0.91-1.16), 1.25 (1.18-1.33), 1.43 (1.22-1.66), 1.63 (1.41-1.88) for stomach, pancreas, colon, and rectum cancer, respectively. Similarly, Black patients were more likely to reportedly not receive surgery due to surgery “not being the first course of treatment”: OR 0.99 (0.93-1.05), 1.14 (1.09-1.19), 1.30 (1.21-1.39), 1.33 (1.26-1.41). These two factors explain more than 80% of the difference in operative rates. Lastly, Black patients were disproportionately more likely to be recorded as having refused surgery: OR 1.84 (1.61-2.12), 1.07 (0.96-1.19), 1.59 (1.45-1.75), 1.81 (1.61-2.02).

**Conclusion:** Compared to White patients, Black patients are more likely to be described as not receiving surgery due to patient risk factors, surgery not being part of their first course of treatment, and their having refused surgery. Further studies are needed to evaluate whether the differences in operative rates are attributable to factors not captured in cancer registries, such as frailty and lack of social support.

**A106 Key differences in muscular index and tumor burden reveal unique biology in ethnically diverse patients with pancreatic cancer.** Miles E. Cameron¹, Patrick W. Underwood², Michael H. Gerber³, Steven J. Hughes⁴, Andrew R. Judge⁵, Jennifer B. Permuth⁶, Jose G. Trevino⁷. ¹Department of Surgery, University of Florida College of Medicine, Gainesville, FL, ²Department of Physical Therapy, University of Florida College of Medicine, Gainesville, FL, ³Gastrointestinal Oncology, Moffitt Cancer Center and Research Institute; Department of Cancer Epidemiology, Moffitt Cancer Center and Research Institute, Tampa, FL.

**Introduction:** The racial disparities in pancreatic cancer (PC), while not fully appreciated, are recognized amongst PC experts. African Americans are diagnosed more frequently, present with more advanced disease, and suffer from higher mortality rates than White patients. Overall, cancer cachexia, or cancer-associated muscle wasting, greatly contributes to both morbidity and mortality. While cachexia is experienced by more than 80% of patients with PC, PC-induced cachexia and how it contributes to a disparity amongst African Americans is under investigation. African Americans with PC present with increased muscle wasting (~29%) than their White counterparts with PC (~14%). Therefore, we hypothesize that an established radiographically obtained muscular index (a psoas index) uniquely corresponds to increased disease burden in African Americans with early-stage disease.

**Methods:** African American and White patients with pancreatic ductal adenocarcinoma who underwent surgery at our institution between 2010 and 2017 were included in this retrospective study. A muscular index for each patient was measured from preoperative CT scans by dividing the average area of the psoas muscles at L3 by the L3 vertebral body area to normalize the measurement for patient size. Supplementary relevant clinical, pathologic, and laboratory values were used for comparison.

**Results:** 15 African American and 15 White surgical patients with PC were matched by gender and history of neoadjuvant therapy; age was similar in both groups (65.7 vs. 64.3, p=0.6566). Gross tumor size was similar in African Americans and Whites (2.553 vs. 3.093, p=0.3097). Tumor size, however, inversely correlated to psoas index in African Americans (r=0.4330, p=0.0077), but not in Whites (r=0.002525, p=0.8588). African Americans with lower psoas...
indices generally had larger tumors. Similar to tumor size, the positive lymph node ratio (LNR) inversely correlated to psoas index in African Americans ($r=0.3930$, $p=0.0124$), but not in Whites ($r=0.08673$, $p=0.2867$). LNR was significantly greater in Whites than African Americans ($0.0627$ vs. $0.2253$, $p=0.0020$). Overall survival was, however, similar in both groups ($15.8$ vs. $14.3$, $p=0.7117$).

**Conclusion:** A decreased psoas index in African American patients is associated with greater tumor size and an increased positive LNR. Notably, the most powerful outcome variable (LNR) did not correlate with psoas index in White patients even in the presence of increased nodal metastases. Most surprisingly, overall survival was similar in both patient groups. This suggests that a limited tumor burden does not provide a survival benefit for African Americans. We conclude that recognizing biologic variance among patients with ethnic diversity will allow better strategies to characterize metabolism, tumor microenvironment, and muscle architecture in PC. Together this will lead to improved overall survival.

**A107 Molecular subtyping of gastroesophageal junction and gastric adenocarcinomas from American Hispanic/Latino patients.** Sam C. Wang, Yunku You, Sunntrea T.G. Hammer, Min Zhu, Ibrahim Nassour, Jeanne Shen, Deepak Agarwal, Scott I. Reznick, John C. Mansour, Adam C. Yopp, Hao Zhu, Tae Hyun Hwang, Matthew R. Porembka, UT Southwestern Medical Center, Dallas, TX, Cleveland Clinic, Cleveland, OH, Stanford University, Stanford, CA.

Hispanics/Latinos in the U.S. have higher incidence and mortality from gastric cancer as compared to non-Hispanic Whites. However, few Hispanic/Latino patients have been included in basic science or clinical studies in gastric cancer. We analyzed information from the National Cancer Database and found that compared to Asian and White patients, Hispanics/Latino patients with gastroesophageal junction (GEJ) or gastric adenocarcinomas had a higher proportion of Stage 3 or 4 disease ($64\%$ of Hispanic/Latino patients, $58\%$ of White patients and $54\%$ of Asians ($P < 0.001$)) and were younger at the time of diagnosis (median age in years (interquartile range): Hispanic/Latino 62 (50-73), Asian: 66 (56-76), and White: 68 (59-77), $P < 0.001$). To determine if there were genomic factors associated with these clinical outcomes, we performed whole-exome and RNA sequencing on GEJ and GC samples from 36 Hispanic/Latino patients treated in North Texas. Using the Locating Ancestry from SEquence Reads algorithm, we analyzed the sequencing data from our cohort and the publicly available information of White and Asian patients sequenced by The Cancer Genome Atlas (TCGA) to determine ancestry. We found that each group bundled within distinct clusters. Next, we classified the tumors based on the molecular categorization scheme established by the TCGA, which defines four groups using a step-wise algorithm. Tumors are first categorized by Epstein-Barr virus (EBV) infection status and then by microsatellite instability (MSI). The remaining samples undergo somatic copy number alteration (SCNA) analysis, with high rates defining the chromosomal instability (CIN) group and low rates designating the genomically stable (GS) tumors. In our cohort of Hispanic/Latino patients, we found no EBV, two MSI (6%), ten CIN (28%), and 24 GS (66%) subtype tumors. This is a much higher proportion of GS subtype tumors as compared to White and Asian patients sequenced by the TCGA ($P < 0.001$). In addition, we found a relatively high rate of germline $CDH1$ mutations, which are known to cause diffuse-type gastric cancer, that may explain the younger presentation age of Hispanic/Latino patients. Finally, we identified a molecular signature related to activated immune response that was prognostic for overall survival in a subset of patients. Our findings have significant clinical implications in terms of screening, genetic counseling, and treatment for Hispanic/Latino patients.


**Introduction:** Concerns for overdetection and overtreatment of clinically insignificant PCa have led to changes in PSA screening recommendations. In 2008, the US Preventive Services Task Force (USPSTF) gave PSA screening a “Grade D” recommendation for older men (≥ 75 years), and in 2012 this was extended to men of all ages. In 2017, a draft of revised guidelines was released, elevating the letter Grade to C for men aged 55-69 years. Yet three compelling studies have revealed increases in the diagnosis of metastatic PCa (mPCa) in US men. The primary aim of this study was to examine time trends in mPCa at time of diagnosis, over a 25+ year study period, in a racially diverse longitudinal cohort with equal access to health care.

**Methodology:** The Center for Prostate Disease Research (CPDR) Multi-Center National Database was the source of patients for this study. Men under suspicion for PCa who
underwent TRUS-guided biopsy for PCa detection were eligible for enrolment into this database. This study focused on those with biopsy-confirmed PCa between January 1, 1990-December 31, 2017. Trends in mPCa at the time of diagnosis were examined for the overall cohort, as well as stratified by race (AA and CA) and patient age at CaP diagnosis (<75 years versus ≥75 years). Poisson regression with a log link function was used to estimate annual percent change (APC) in mPCa at diagnosis, as a proportion of all newly diagnosed PCa per annum. Multivariable logistic regression was used to model predictors of mPCa at diagnosis as a function of PSA screening intensity prior to CaP detection and patient race.

**Results:** A total of 15,660 subjects met the study criteria, of whom 560 (2.8%) presented with mPCa. The decline in APC over time for the overall cohort was statistically significant (APC = -7.7%, p < 0.0001). When APCs were computed for across race, both AA and CA patients were observed to have statistically significant declines over time in APCs (-10.2%, p<0.0001 and -7.1 %, p < 0.0001, respectively). However, these declines were comparable across race (p=0.07). When stratified by age group, patients ≥75 years had a smaller magnitude of decline in APC compared to those <75 years (-2.7%, p>0.0001 and -9.2%, p>0.0001, respectively). These declines did not differ significantly by age group (p=0.56). In multivariable analysis, both the number of prior PSA screenings (OR=4 vs. None = 0.42, CI=0.29, 0.61, p <0.0001) but not self-reported race (ORAA vs. CA=1.1, CI=0.83, 1.36, p=0.65) predicted mPCa.

**Conclusions:** In this longitudinal, racially diverse cohort with equal health care access, significant declines in mPCa at diagnosis were observed over a 25+ year study period. This is contrast to other recent studies that have demonstrated increases in mPCa following changes in USPSTF guidelines. There was, however, a difference in the magnitude of decrease in oldest patients (≥75 years) compared to younger men (<75 years) that may have been influenced by changes in PSA screening recommendations. Continued attention to shifts in mPCa at diagnosis is needed.


Prostate cancer (PCa) incidence and mortality are highest in African American men (AAM) and the molecular mechanisms underlying the racial disparities in PCa are unclear. Interleukin-24 (IL-24), a tumor suppressor whose expression is lost in most human cancers, correlates with cancer progression. Also, microRNAs (miRs) are dysregulated in cancers. microRNA target prediction algorithm tools identified miRs, miR-4719 and miR-6556-5p, as putative regulators of IL-24. This study elucidates the expression profile and role of miR-4719 and miR-6756-5p as regulators of IL-24 in PCa biology of AAM. Our work compares five different PCa cell lines: E006AA (AAM, indolent), E006AA-hT (AAM, aggressive), DU-145 (CM, aggressive), PC-3 (CM, aggressive) to a non-tumorogenic prostate epithelial cell line, RWPE1 (CM). qRT-PCR analysis shows that miR-4719 and miR-6756-5p are significantly overexpressed in all PCa cell lines (by >2-fold) compared to RWPE-1. Both miR-4719 (>2 fold) and miR-6756-5p (>50%) are higher in aggressive PCa compared to the indolent PCa, indicating their gain could be an early event in PCa progression. Moreover, miR-4719 and miR-6756-5p are significantly overexpressed in the aggressive PCa of AAM (E006AA-hT) compared to aggressive PCas for CM (PC-3 and DU-145). Interestingly, both miR-4719 and miR-6756-5p expression were higher by (>3-fold) in the aggressive AAM cell line E006AA-hT compared to indolent AAM cell line- E006AA. Thus, miR-4719 and miR-6756-5p may play a role in racial disparity. Using oligonucleotide mimics and inhibitors, we evaluated the functional role of these miRs in the AAM cell lines, E006AA and E006AA-hT. MTT assays revealed that inhibition of miR-4719 and miR-6756-5p significantly decreases proliferation (~40%), while overexpression of both miRs increases proliferation (~20%). Inhibition of miR-4719 and miR-6756-5p further decreased the proliferation of the aggressive E006AA-hT by an extra 20%, compared to indolent E006AA. In contrast, overexpression of both miRs further increased the proliferation of E006AA-hT also by an extra 20%, compared to E006AA. Wound healing assays reveal that inhibition of miR-4719 and miR-6756-5p reduced migration by ~50% compared to the negative control (NC). Strikingly, overexpression of both miRs increased migration by at least 2- and 4-fold, respectively. We observed that IL-24 was downregulated in all PCa cells compared to RWPE-1, suggesting a possible role of these miRs in suppressing IL-24. qRT-PCR analysis showed that inhibition of miR-4719 and miR-6756-5p significantly decreases the expression of IL-24 (by ~2-fold) in PCa cells compared to the NC. In contrast, overexpression of both miRs reduces the expression of IL-24. Our findings indicate that miR-4719 and miR-6756-5p may regulate IL-24 expression and may be biomarkers that can differentiate between indolent and aggressive PCa in AAM. Strategies to inhibit miR-4719 and miR-6756-5p expression to increase IL-24 in PCa could have therapeutic efficacy in AAM.
A110 Racial disparities in transitional cell carcinoma of the bladder: A population-based study. Mohamed M. Gad,1 Anas M. Saad,2 Mariam A. Obaid,2 Muneer J. Hussein.2 Cleveland Clinic Foundation, Cleveland, OH. 1Ain Shams University Faculty of Medicine, Cairo, Egypt. 2Cleveland Clinic Foundation, Cleveland, OH.

Introduction: Bladder cancer is among the most common cancers in the U.S. with an estimated 81,190 new cases diagnosed in 2018 as well as 17,240 estimated deaths. The vast majority, around 90%, of bladder cancer cases are transitional cell carcinoma. Due to the significant burden of the disease, and disparities in access to medical care, we aim to study the survival of patients diagnosed with transitional cell carcinoma based on ethnicity.

Methods: Data of White and Black patients with transitional cell carcinoma of the bladder diagnosed between 1973 and 2014 were obtained using the SEER database. We compared the overall and cancer-specific survival of patients using Kaplan-Meier test and Cox models.

Results: We reviewed a total of 199,535 patients with transitional cell carcinoma of the bladder, of whom 10,263 were blacks, while the others were whites. The median overall survival of white patients was 103 months (95%CI, 102.0-103.96), which was significantly better than the overall survival of black patients, which was 64 months (95%CI, 60.37-67.62). Bladder cancer-specific survival was also better for whites when compared to blacks. When we adjusted age, sex, grade and stage of cancer, and undergoing surgery for bladder cancer, being black was associated with worse overall survival outcomes and cancer-specific survival outcomes (HR=1.263, 95%CI [1.227-1.300], P<.001) and (HR=1.396, 95%CI [1.342-1.451]) respectively.

Conclusions: Our results show that significant differences in cancer-specific survival between ethnicities with the majority of diagnosed patients being Whites, while Blacks are suffering from worse overall survival outcomes. More research can shine a light on the underlying reasons why ethnicity is a significant factor affecting the survival of patients with bladder cancer.

A111 Urine-based gene expression panels with focus on prostate cancer in African Americans. Indu Kohaar,1 Sreedatta Banerjee,1 Yongmei Chen,1 Amina Ali,1 Jacob Kagan,1 Sudhir Srivastava,1 Jennifer Cullen,1 Inger Rosner,1 Shiv Srivastava,1 Gyorgy Petrovics,1 1Center for Prostate Disease Research, Department of Surgery, Uniformed Services University of the Health Sciences and Walter Reed National Military Medical Center, Bethesda, MD. 2Cancer Biomarkers Research Group, Division of Cancer Prevention, National Cancer Institute, Bethesda, MD.

Introduction: Prostate cancer (CaP) affects 1 in 7 men in their lifetime. African American (AA) men have significantly higher incidence and mortality from CaP compared to Caucasian American (CA) men. We and others have also noted that the genes commonly overexpressed in CaP (e.g., ERG) and currently used as diagnostic markers exhibit much lower frequency and more heterogeneity in AA patients. The goals of this study are to develop CaP diagnostic/prognostic marker panels that takes into account race-associated differences in molecular alterations. Here we evaluated a panel of CaP associated genes using regular (non-DRE) urine from AA and CA CaP for discriminating between high-grade (Gleason score [GS], 7-10) and low-grade disease (GS, 6) and cancer negative biopsy.

Methods: The quantitative expression assay protocols have been developed for noninvasive detection of candidate genes in exosomal RNAs from regular urine. The selected genes were reverse transcribed in a single reaction using gene-specific primer pool (GSP) followed by preamplification and PCR-based assay of all target genes.

Results: Regular urine exosomal RNA-based assays were developed and optimized for PSGR, DLX1, HOXC4, NNX2-3, COL10A1, HOXC6, PCA3, PCGEMI, PCAT1, CTBP1, SChLAP1, ERG and SPDEF. All markers have been evaluated in a pilot study of 72 subjects undergoing diagnostic biopsies. For AA patients, a sensitivity of 88.2%, specificity of 83.3%, and AUC of 0.81 were achieved for the panel (PCA3, PCGEMI, HOXC6 and SChLAP1). Consistent with numerous studies, ERG and PCA3 panel was optimal for CA patients. Preliminary analysis showed that 3 markers were found to be associated with improved discrimination between GS7 or greater and GS6 (AUC 0.78 for ERG; AUC 0.72 for PSGR and AUC 0.72 for SChLaP1) in AA CaP. In CA patients, PCA3 gave an AUC of 0.76 for predicting high-grade from low-grade disease. Analysis of an additional 100 patients is in progress.

Conclusions: Given the genomic difference of prostate cancer among different race/ethnicity, this study highlights the potential for developing CaP biomarker panels in the context of race for enhancing precision medicine through improved CaP diagnosis/prognosis.
A112 Integrative epigenomic and transcriptomic analyses of kidney cancers from African Americans and European Americans. Heinric Williams, Khadijah A. Mitchell. Geisinger Medical Center, Danville, PA, Lafayette College, Easton, PA.

Background: Kidney cancer ranks as a top ten leading site of new cancer cases (~64,000) in the United States each year. Renal cell carcinoma (RCC) is the most common type of kidney cancer (90% cases), with clear cell RCC (ccRCC) being the most prevalent histology (70% RCC cases). RCC risk factors include nonmodifiable, modifiable, environmental, and occupational causes. RCC subtypes each have a different histology, clinical course, and response to therapy, in addition to distinctive genetic and molecular alterations. African Americans (AA) have higher incidence rates of ccRCC than European Americans (EA) for reasons that are unclear. Biologic determinants of this cancer health disparity have been largely understudied. Recent work has identified population-specific genomic drivers in ccRCC tumors from AA compared with EA. To date, no study has explored epigenomic or transcriptomic determinants of kidney cancer health disparities in AA.

Hypothesis: We hypothesized population-specific changes in DNA methylation, between AA and EA, drive differences in ccRCC biology through regulation of the transcriptome.

Methods: Comparative integrative genomic and transcriptomic analyses were performed using clinical demographic and ccRCC data (Illumina 450K methylation array and mRNA-seq) from TCGA (n=50 AA, 266 EA) and Partek Genomics Suite.

Results: Differential methylation analysis discovered 2,048 genes varied significantly by race (P value + FDR ≤ 0.01). Gene Ontology Enrichment Score (ES) analysis revealed these genes were involved with various molecular functions (nucleic acid binding ES 38.52, protein binding ES 38.03), biologic processes (cellular metabolic process ES 78.60), and cellular component localization (intracellular organelles ES 87.24). Differential gene expression analysis revealed 3,296 genes were altered in AA compared with EA race (P value + FDR ≤ 0.01). GSEA analysis revealed distinct biologic pathways were enriched.

Conclusion and Future Directions: Collectively, our data suggest that DNA methylation and mRNA expression drive differences in tumor biology amongst AA and EA kidney cancer patients. Future studies include integrating miRNA expression data, validating these findings in a separate cohort, profiling other RCC histologies for population-specific signatures, and using kidney cancer cell lines from AA and EA to explore novel biologic mechanisms for therapeutic purposes.


Prostate cancer (PCa) is a heterogeneous disease and the diverse clinical outcomes may be associated with hitherto unidentified tumor molecular heterogeneity. In the era of precision medicine, new approaches to identify distinct molecular subsets of tumors may lead to the development of targeted treatment options. Given the disparity in the disease progression between African American (AA) and Caucasian American (CA) patients, understanding the existence of distinct molecular subtypes between the two racial groups may facilitate effective cancer management. Therefore, we carried out a comprehensive molecular analysis using prostate cancer-specific molecular markers, including ERG, ETV1, ETV4, ETV5 and SPINK1, to study tumor molecular heterogeneity in a large cohort of AA and CA PCa patients. A total of 1,117 PCa cases comprising 575 (52%) CA and 453 (41%) AA patients were included in this study. Dual IHC for ERG/SPINK1 and RNA ISH for ETV1, ETV4 and ETV5 were carried out on whole mount prostatectomy specimens. Incidence of markers in each tumor foci, difference between the two racial groups, and the association of the markers with the clinical and pathologic findings in each racial group were analyzed. Independent clonal origin of tumor foci in patients with multifocal disease were observed with the presence of dual and triple marker positivity in dominant and/or secondary tumor foci. ERG was more frequently overexpressed among CA patients (P=0.0000) while SPINK1 was more prevalent among AA patients (P=0.0000). The incidence of dual marker positive cases for ERG+/SPINK1+ and SPINK1+/ETV1+ were more prevalent among AA patients than CA patients (P=0.0124 and P=0.0417, respectively). In both CA and AA patients, ERG overexpression is associated with young men age lower than 50 and a positive perineural invasion (CA; P=0.0037 and P=0.0199, respectively; AA; P= 0.0338 and P=0.0309, respectively). Among CA patients, ERG overexpression also associated with a lower Gleason grade group (group 1 and 2, P=0.0483). SPINK1 overexpression associated with grade group lower than 5 and a negative family history among AA patients (P=0.0003 and P=0.0063). In CA patients, SPINK1 overexpression associated with grade group higher than 1.
pT3 stage and tumor volume larger than 10% (P= 0.0036, P=0.0426 and P=0.0377, respectively). ETV1 overexpression is associated with positive family history (P=0.0043) and ETV4 overexpression associated with a tumor volume of 1-10% (P=0.0385) in CA patients. In AA patients, ETV4 expression associated with an age higher than 70 (P=0.0212). ERG/SPINK1 overexpression associated with grade group 2, tumor volume of 10-20%, and an age lower than 70 among CA patients (P=0.0013, P=0.0316, and P=0.0191, respectively). AA patients, on the other hand, showed an association between ERG/SPINK1 and age group lower than 40 (P=0.0092). We will discuss the details on the identification of new molecular subsets of PCa with clonal molecular heterogeneity in racial disparity perspective.

**A114 Characterization of a metastatic prostate cancer xenograft derived from a patient of African ancestry.**

Brendon M. Patierno, Wayne Glover, Wen-Chi Foo, Jason A. Somarelli, Kathryn E. Ware, Lingfan Xu, Yanjing Li, Xufeng Chen, Daniel J. George, Rick A. Kittles, Andrew J. Armstrong, Shannon J. McCall, Jiaoti Huang, Jennifer A. Freedman, Steven R. Patierno, David S. Hsu. Duke Cancer Institute, Durham, NC, 'City of Hope, Duarte, CA.

**Background:** Prostate cancer (PCa) is a clinically and molecularly heterogeneous disease, with differences in incidence and mortality among and between racial groups, which grade and stage only partially predict. Prostate cancer patient-derived xenografts (PCPDXs) are essential for studying PCa biology and testing new therapeutics in models that we expect to be reflective of the clinical setting. To date, PCPDXs have been difficult to establish due to lack of solid tumor content and poor uptake rates in mice. In the present study, we established and characterized the first PCPDX from a highly aggressive and metastatic tumor sample from a patient of African ancestry.

**Methods:** We collected the PCa sample from the patient at the time of surgery after initiating stage-specific standard-of-care treatment. Tissue was minced and implanted into the kidney capsule of 8- to 10-week-old SCID mice. Once the explant was established, tissue was collected and formalin-fixed, paraffin-embedded for histologic evaluation. An initial section was stained using hematoxylin and eosin and another section was stained by PIN4 (p63, CKBE12, racemase) for immunohistochemical (IHC) analysis to confirm diagnosis of PCa. To obtain genetically estimated indicators of race, we performed ancestral genotyping. We evaluated response to chemical castration with 10mg/kg enzalutamide administered 5 days per week by oral gavage. Tumor growth was measured with calipers every day.

**Results:** We established a PCPDX from a core prostate sample taken from a patient diagnosed with adenocarcinoma of the prostate (Gleason 10), metastatic to lymph nodes and penis undergoing a pelvic exenteration. Ancestral genotyping estimated 90% African ancestry. IHC staining showed this model to be highly tumorigenic and PSA negative. Passaged tumors took in 15 out of 15 SCID mice and reached 10mm within 3 weeks. This model does not show a significant decrease in growth in response to treatment with the androgen receptor inhibitor, enzalutamide. Further characterization using IHC, RNA and whole-exome sequencing, castration, drug treatment, and assays for metastatic potential are currently under way.

**Conclusions:** Establishing this PCPDX provides a unique model of metastatic, androgen-independent PCa in a patient of African ancestry. Prior to this study, there had yet to be a PCPDX model derived from a patient of African ancestry. We established this PCPDX from a Gleason 10 PCa, supporting previous data of success in grafting this type of aggressive PCa into a mouse. It has a very high take rate and growth rate relative to other PCa models. Such a model will enable interrogation of PCa from a patient of African ancestry. Once a larger panel of PCPDXs from racially diverse patients is established, we will be able to achieve a more complete characterization of this disease and use such models to develop new biomarkers and therapeutic agents. Ultimately, these tools will improve outcomes for all men with aggressive PCa and reduce PCa disparities for patients of African ancestry.

**A115 Socioeconomic disparities associated with 90-day mortality among patients with head and neck cancer in the United States.**

Matthew E. Gaubatz, Aleksandr R. Bukatko, Matthew C. Simpson, Katherine M. Polednik, Eric A. Boakye, Mark A. Varvares, Nosayaba Osazuwa-Peters. 1Saint Louis University School of Medicine, St. Louis, MO. 2Harvard Medical School, Boston, MA.

**Background:** There are previous studies on the impact of socioeconomic status on head and neck cancer outcomes, but it is not clear whether these factors are associated with short-term mortality as most studies on risk factors for mortality have focused on long-term mortality and clinical factors. This study aimed to quantify 90-day mortality rates and identify socioeconomic factors associated with 90-day mortality among patients with head and neck cancer.

**Methods:** This retrospective cohort study included 260,011 patients from the National Cancer Database (2004 to 2014) a 18 years with a diagnosis of head and neck cancer and
treated with curative intent with a combination of either surgery, radiation, and/or chemotherapy. Our outcome of interest was any-cause mortality within 90 days of first treatment. The effects of socioeconomic factors on 90-day mortality were estimated using the Cox proportional hazards model with the following adjustments: Heaviside function for time-varying effects and Šidák correction for familywise error (multiple comparisons). A multinomial cumulative logit model estimated the likelihood of higher comorbidity scores in variables of interest.

**Results:** There were 9,771 deaths within 90 days of treatment, yielding a 90-day mortality rate of 3.8%. Several socioeconomic factors were associated with 90-day mortality. Blacks (aHR = 1.10, 95% CI 1.00, 1.21) and males (aHR = 1.07; 95% CI 1.00, 1.15) were marginally more likely to die within 90 days of treatment. Hazard of 90-day mortality was significantly greater among patients who were uninsured (aHR = 1.71; 95% CI 1.48, 1.99) or insured by Medicaid (aHR = 1.72; 95% CI 1.53, 1.93) or Medicare (aHR = 1.40; 95% CI 1.27, 1.53), compared to those with private insurance. Residence in a zip-code with lower median income was associated with higher hazard of 90-day mortality [(aHR <$30,000 = 1.30; 95% CI 1.18, 1.44); (aHR $30,000 - $34,999 = 1.24; 95% CI 1.13, 1.36); (aHR $35,000 - $45,999 = 1.18; 95% CI 1.08, 1.27)]. Furthermore, farther travel distance for treatment was associated with decreased hazard of 90-day mortality [(aHR 50 - 249.9 miles = 0.86; 95% CI 0.77, 0.97); (aHR >250 miles = 0.70; 95% CI 0.50, 0.93)]. In addition, farther travel distance for treatment was associated with lower comorbidity scores [(aOR 50 - 249.9 miles = 0.91; 99% CI 0.86, 0.97); (aOR >250 miles = 0.78; 99% CI 0.67, 0.92)].

**Conclusions:** While the 90-day mortality rate was low among this national cohort of patients with head and neck cancer, there were significant sociodemographic disparities observed. Males, blacks, those uninsured, those with Medicaid or Medicare, and those living in poorer zip codes were more likely to die within 90 days of treatment, highlighting issues associated with access to care. To improve short-term head and neck cancer outcomes, these socioeconomic disparities associated with differing mortality rates among this cancer patient population need to be addressed.

**Areca (betel) nut chewing is the 4th most used psychoactive substance in the world and is chewed by approximately 600 million people in the world. In Monograph 85 (2004), the International Agency for Research on Cancer deemed betel nut chewing with and without tobacco an oral carcinogen. In 2006, the NCI-sponsored University of Guam/University of Hawaii Cancer Center Partnership to Advance Cancer Health Equity began to identify areas in the monograph where research efforts were needed, and thus initiated betel nut research in the Western Pacific. Some countries in this region have reported rates of oral cancer mortality as high as 80% compared to the average worldwide 5-year cumulative of less than 50%. Over the past 12 years, a research framework to study betel nut exposure and oral cancer outcomes has evolved within the partnership. To date, 11 betel nut studies have been funded by this partnership: three molecular studies, three population measures studies, three mechanistic studies, and two prevention studies, including an intervention trial. Of the 11 studies, the majority of the research is focused on the measurement of betel nut exposure and carcinogenicity (55%), followed by the measurement of pathological changes (27%) and the prevention of oral cancer (18%). The partnership’s investment has resulted in numerous community collaborations, 18 peer-reviewed publications (13 in population sciences and 5 in basic sciences), and contributions to policy prohibiting the sale of betel nut to minors. Betel nut research faculty are also involved in other federally funded research studies with a betel nut component in the Western Pacific region. The partnership’s Betel Nut Research Group will continue to strengthen its research infrastructure, contribute to the scientific literature related to betel nut chewing, expand the research to other health outcomes, and translate the findings into appropriate practices, programs, and policies to control and prevent betel nut-associated cancer and other health outcomes in Pacific Island communities.
A117 Thyroid cancer incidence trends among pediatrics, adolescents, and young adults in the United States 2001-2015. Katherine M. Polednik1, Matthew C. Simpson1, Aleksandr R. Bukatko1, Matthew E. Gaubatz1, Eric Adjei Boakye1, Mark A. Vavaras2, Nosayaba Osazuwa-Peters1. 1Saint Louis University School of Medicine, St. Louis, MO, 2Harvard Medical School, Cambridge, MA.

Background: The United States and other industrialized nations are experiencing what is known as the thyroid cancer epidemic. While there are studies of incidence trends among adult thyroid cancer patients in the United States, there is a paucity of data examining the relative contributions of different races/ethnicities and age groups, especially among the pediatric, adolescent, and young adult (AYA) population. This study aimed to identify which racial/ethnic groups may be driving the incidence trends of thyroid cancer among the pediatric and AYA population in the United States.

Methods: We used data from the joint National Program of Cancer Registries/Surveillance, Epidemiology, and End Results databases from 2001 - 2015 (n = 149,578), which covered the entire United States (50 states and the District of Columbia). We calculated age-adjusted incidence rates of thyroid cancer for patients from 0 - 39 years, and rates were stratified by age, race/ethnicity, and sex and presented per 100,000 person-years (PY). Overall rates for the entire study period, rate ratios (RR) with 95% confidence intervals (CI), and annual percent changes (APC) comparing the 2001 rate and 2015 rate were calculated for each group. Joinpoint regression estimated increases/decreases in age-adjusted incidence over time for each group through average annual percent changes (AAPC).

Results: The majority of thyroid cancer patients in this study were females (83%), white (60%), and between 15 - 39 years (98%). The overall incidence was 6.17 per 100,000 PY with an AAPC of 4.22 (p < 0.01). From 2001 to 2015, there was a 79% increase in age-adjusted incidence rate of thyroid cancer pediatric and AYAs in the United States (4.29 per 100,000 PY in 2001 vs. 7.69 per 100,000 PY in 2015). Both pediatric (0-14 years) and AYA (15 - 39 years) groups experienced significant increase in incidence of thyroid cancer in this time period (AAPC for 0 - 14 years = 4.38; AAPC for 15 - 39 years = 4.22; p < 0.01). The AYA population was 34 times as likely to develop thyroid cancer than the pediatric population (RR = 34.55, 95% CI 33.23, 35.94). Also, both males and females experienced significant rate increases from 2001-2015, but females were almost five times (RR = 4.81, 95% CI 4.74, 4.87) as likely to develop thyroid cancer than males (2.13 per 100,000 PY for males vs. 10.26 per 100,000 PY for females). Whites had the highest overall incidence rate (6.87 per 100,000 PY), while blacks had the lowest overall rate (2.89 per 100,000). Compared to whites, all other race/ethnicity groups were significantly less likely to develop thyroid cancer (RR range 0.42 - 0.90). All race/ethnicity groups had significant rate increases from 2001-2015 (AAPC range = 3.69 - 5.70).

Conclusion: Incidence of thyroid cancer increased in both the pediatric and AYA population over the last 15 years, and white females aged 15 - 39 years accounted for most of this increase. These findings can inform future directed screening and reveal unaddressed health disparities.

A118 Optimization of end point PCR for the determination of ESR1, PGR, and ERBB2 expression level in resource-limited settings: Ethiopian context. Zelealem Desalegn Woldesenbet1, Martina Vetter2, Meron Yohannes Nigussie1, Tamrat Abebe Zeleke1, Yonas Bekuretsion2, Mahlet Areyaselassie1, Mathewos Assefa2, Abebe Bekele1, Endale Anberber1, Claudia Wickenhauser2, Eva J Kantelhardt3, Jürgen Bukur2, Seliger Barbara2, 1Addis Ababa University, Addis Ababa, Ethiopia, 2Martin-Luther-University, Halle (Salle), Germany.

Background: Breast cancer is becoming a major public health problem in developing countries. Accumulated evidence noted that the majority of breast cancer patients are in a younger age group. Moreover, most breast cancer patients appear in health institutions at late stages of the disease, which compromises the clinical outcome and disease management. With regard breast cancer, it solely depends on pathologic and clinical diagnoses. The characterization of hormone receptors and HER-2 status using immunohistochemistry (IHC) has been introduced in Ethiopia; however, there is critical problem with the provision of requirements for the test. As a result, the development and establishment of a rapid, reproducible, and alternative diagnostic method in resource limited setting is essential. The current research work aims to optimize endpoint PCR as a tool for determination of ESR1, PGR, and ERBB2 expression level using breast cancer specimen in Ethiopian patients. Furthermore, the project work will be extended to implement the method into clinical practice in the Ethiopian settings.

Methods: The experiments were started with known ESR1, PGR, and ERBB2 RNA expression in different breast cancer cell lines such as MCF-7, MDA-MB-231, BT-20, and SKBR-3. cDNA from the breast cancer cell lines and FFPE derived-RNAof BC lesions was synthesized using BiozymcDNA synthesis kit. Variable concentrations (25ng, 50ng, and 100ng) of breast cancer cell lines and FFPE-derived total RNA were used for ESR1, PGR, and ERBB2 mRNA transcript detection using the
POSTER SESSION A


Methods: Residential addresses from baseline, 1993-1996, through 2013 for over 112,000 California MEC participants were geocoded to latitude and longitude coordinates and used to estimate air pollutant exposures of NO2, NOX, PM10, CO, and O3 based on Bayesian kriging interpolation of state and national government air monitoring data. A total of 2,994 incident lung cancer cases (1,415 African Americans, 732 Latinos, 516 Whites, and 327 Japanese Americans) were identified by linkage to the California Cancer Registry. Cox proportional hazard regression was conducted to examine the long-term effects of NO2, NOX, PM10, CO, and O3 adjusting for age, race/ethnicity, sex, education, health behaviors, smoking, and other established lung cancer risk factors. Stratified analyses were conducted by sex, race/ethnicity, and smoking status.

Results: Lung cancer risk increased per 20 ppb NO2 among women (HR=1.29; 95% CI: 1.02-1.64) with consistent patterns of associations observed among African American, Japanese American, and White women. A slightly larger increased risk was observed among ever-smoking women (HR=1.33; 95% CI: 1.02-1.74), particularly ever-smoking African American women (HR=1.54; 95% CI: 1.06, 2.24). In addition, a statistically significant increased lung cancer risk was observed per 10ug/m3 increase in PM10 among ever-smoking women (HR=1.16; 95% CI: 1.01-1.34) and per 100 ppb increase in CO among women (HR=1.05; 95% CI: 1.01-1.09). No significant associations with lung cancer were detected among men.

Conclusion: These preliminary findings suggest that women of diverse racial/ethnic groups may be particularly vulnerable to the effects of long-term exposures of NO2, PM10, and CO on lung cancer risk. These findings among women in contrast to men may relate to differences in residential exposures with higher sensitivity or more time spent in residential neighborhoods for women in comparison to men. Future analyses will examine associations with other pollutants using different exposure assessment approaches and examine differences in associations by neighborhood- and individual-level factors.

Introduction: California has one of the highest levels of air pollution in the nation. Vehicle exhaust contains a mixture of gases and particulate matter that are known to have mutagenic and carcinogenic effects. Our objective was to examine the association between specific traffic-related air pollutants and lung cancer risk by race/ethnicity and sex among participants of the Multiethnic Cohort Study (MEC), residing predominately in Los Angeles County.
A120 Sex differences in tolerability and response to immune checkpoint inhibitors in non-small cell lung cancer patients.
Narjist Duma, Abdel-Ghani Azzoqua, Siddhartha Yadav, Kahterine Hoversten, Clay Reed, Andrea Sitek, Elizabeth Enninga, Jonas Paludo, Lisa Kottschade, Aaron Mansfield, Rami Manochakian, Roxana Dronca, Alex Adjei. Mayo Clinic, Rochester, MN.

Background: Sex differences in non-small cell lung cancer (NSCLC) outcomes have been described. Immune-related adverse events (IRAEs) have emerged as a serious clinical problem in the use of immune checkpoint inhibitors (ICI). Risk factors for IRAEs and their association with response to therapy remain controversial. Sex differences in innate and adaptive immune responses have been observed but the association of these differences with IRAEs remains unclear. Therefore, we studied sex differences in IRAEs and their association with response to therapy.

Methods: All patients with metastatic NSCLC treated with anti-PD1 and anti-PDL1 therapy at Mayo Clinic Rochester and Florida from 2015 to 2018 were reviewed. Patients receiving treatment at an outside facility with history autoimmune disorders or radiation-induced pneumonitis were excluded. Chi-square test was used to estimate differences in categorical data. Kaplan-Meier method was used for time-to-event analysis.

Results: A total of 231 patients were identified; 120 (52%) were women and 111 (48%) were men. Baseline characteristics and ICI distribution were similar among groups. Women were more likely to experience IRAEs compared to men (48% vs. 31%, p<0.008). Among patients with IRAEs, women were more likely to be prescribed systemic steroids (63% vs. 41%, p<0.02). On the other hand, no significant differences were observed in the administration of intravenous steroids. Women were more likely to develop pneumonitis (23% vs. 12%, p<0.03) and arthralgias (17% vs. 3%, p<0.04). However, dermatologic toxicities (35% vs. 9%, p<0.002) were more commonly seen in men. In 17% of women the ICI was discontinued due to toxicity (men 7%). Besides sex, no other clinical characteristic was associated with increased IRAEs. Women with IRAEs were more likely to have a radiographic response compared with women without IRAEs (78% vs. 23%, p<0.0001), although this was not observed in men (37% vs. 26%, p=0.22). Better PFS was observed in women with IRAEs (10 months vs. 3.3 months, p<0.0006) compared to women without IRAEs.

Conclusions: Women with metastatic NSCLC are more likely to experience IRAEs compared to men. We also observed sex differences in the frequency of certain IRAEs. In addition, an association between IRAEs and response to therapy was observed in women. Larger studies are needed to investigate the mechanisms underlying these associations.

A121 Uncovering research gaps and strategizing future efforts: NCI Think Tank on multiple myeloma and disparities.
Amy E. Kennedy, L. Michelle Bennett. National Cancer Institute, Bethesda, MD.

One of the National Cancer Institute’s (NCI) priority research areas is understanding the underlying causes of cancer health disparities. In recent years, there have been multiple efforts focusing on the disparities that exist within various cancer types, for example, the higher risk of triple-negative breast cancer in black women and prostate cancer in black men. One disease in which disparities are seen prominently is multiple myeloma (MM), the second most common hematologic malignancy, with an estimated 31,000 new cases to be diagnosed in 2018. Despite new treatments significantly improving survival rates, MM remains incurable and incidence rates continue to increase. Furthermore, the burden from MM and its premalignant conditions, monoclonal gammopathy of undetermined significance (MGUS) and smoldering multiple myeloma (SMM), is not shared equally across racial/ethnic groups in the US. Blacks have the highest incidence of MGUS and MM, with a rate 2-3 times higher than non-Hispanic whites. Blacks and Hispanic/Latinos are more likely to experience an earlier age of onset, and blacks are twice as likely to die compared to other racial/ethnic groups, even when matched for socioeconomic and other factors, suggesting that biologic differences may play an important role in the observed disparity. To understand the current state of MM research in the context of disparities, a trans-NCI group organized a one-and-a-half-day Think Tank and Provocative Question (PQ) Session on March 5-6, 2018. Over 35 MM researchers and more than 20 NCI staff from disciplines spanning the cancer continuum attended. The meeting began with the PQ session, which was designed to challenge participants to think creatively about MM and disparities and discuss understudied research questions that, if answered, could move the field forward. The Think Tank uncovered gaps and identified challenges that hinder progress in understanding progression from normal to premalignant conditions to MM in different racial/ethnic populations. The final portion of the day was dedicated to discussing strategies for accelerating the field. The subject matter experts identified several scientific and resource gaps that are barriers to making progress in this area. These included the need for hematologic malignancy models (cell lines and PDX models) from diverse populations, serial
biospecimen collection from MGUS, SMM and MM patients of various racial/ethnic groups, and increased clinical trial accrual of minorities. Areas of research that were considered priorities to understand the underlying causes of increased incidence among different populations included biomarker discovery to identify high-risk patients, increased use of multiple ‘omics analysis, and understanding the role of the immune system. Another priority discussed was the need for innovative sensing technology for accurate detection of the premalignant MGUS. The NCI is pursuing several areas that are ripe for further investment to help eliminate the disparities in multiple myeloma.

**A122 Comparison of mutational profiles in primary prostate cancers between men with African and European ancestry.**

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**Background:** African American men have more than twice the age-adjusted mortality rate from prostate cancer than European American men. Lower rate of PSA screening, less aggressive treatment, and other socioeconomic factors have been raised as possible reasons for this disparity, but genetic differences between prostate cancers from African and European ancestry have not been fully investigated as most sequencing studies so far have studied the latter group. The goal of this study is to perform a meta-analysis across various publicly available sequencing datasets and identify mutational profiles associated with African American ancestry in prostate cancer.

**Methods:** Whole exome sequencing data from 499 treatment-naive prostate cancers were analyzed from The Cancer Genome Atlas (TCGA). The ethnicity of each patient was inferred using previously published method (1). Our analysis included whole-exome sequencing data from 404 European and 159 African prostate cancers. African American samples were aggregate of TCGA and recently published African American prostate cancer data (2). We looked at previously shown 97 significantly mutated genes in prostate cancer (3). Using coding mutations, a Fisher’s exact test was performed for each gene to compare the frequencies between populations. In a separate analysis, these two exome datasets were combined with two other targeted sequencing datasets from Huang et al. (2) (n = 86) and Abida et al. (4) (n = 424) using only genes common to all platforms.

**Results:** Among 97 genes, only KDM6A was significantly enriched in African American samples (p = 0.039). NCOR1, ERF, and AR tended to be more mutated in African American samples. TP53, SPEN, and PIK3CA were more mutated in prostate cancer of European ancestry (p < 0.05). PTEN and CTNNB1 tended to be more mutated in European tumors even though they did not meet statistical significance. For the meta-analysis across both exome and targeted sequencing datasets, we observed that ZFHX3 was significantly more frequent in tumors from African American versus other populations (8% versus 2%, FDR = 0.0001). ZFHX3 was also strongly enriched for loss-of-function mutations (p = 1.2e-9), further supporting its role as a tumor suppressor.

**Discussion:** The contribution of tumor genetics to outcome disparities in African American prostate cancer is under active investigation. Our analysis shows that African American prostate cancers tend to harbor fewer mutations in previously identified prostate cancer genes such as PIK3CA, TP53, PTEN, and CTNNB1 and potentially more mutations in KDM6A and ZFHX3. As prostate cancers have a lower mutation rate, the number of tumors needed to detect low frequency mutations is high. More sequencing of African American prostate cancers may elucidate additional genetic contributions to higher mortality.
POSTER SESSION B

I will be presenting Puerto Rico statistics on multiple myeloma and the data on the growth of cancer. The programs and possible new program opportunities in Puerto Rico.

B002 Improving knowledge and identifying barriers to screening for hepatitis B and hepatocellular carcinoma in trainees. Patricia D. Jones¹, Mahmoud Mahfouz², Harry Nguyen³, Jonathan Tu, Carlos R. Diaz, Shweta Anjan¹, Stefanie Brown¹, Kassandra Bosire¹, Paul M. Martin¹, Olveen Carrasquillo¹. ¹University of Miami, Miami, FL, ²Mount Sinai Medical Center, Miami, FL, ³Palmetto General Hospital, Hialeah, FL.

Background: Hepatitis B (HBV), a leading cause of hepatocellular carcinoma (HCC) worldwide, disproportionately affects minorities in the United States. Undiagnosed HBV infection precludes HCC screening and contributes to late-stage presentation and decreased survival. Previously, we reported low HBV screening rates in persons from endemic countries. Barriers to screening include lack of insurance, limited diffusion of guidelines, and provider uncertainty. We aimed to assess knowledge about HBV and HCC screening and to explore barriers to HCC screening among trainees from three unique institutions.

Methods: We administered a survey to trainees from the University of Miami/Jackson Memorial Hospitals, Palmetto General Hospital, and Mount Sinai Medical Center. We used univariate, bivariate, and Pearson’s chi-squared analyses to assess knowledge and barriers using clinical vignettes.

Results: There were 183 respondents born in 36 countries. Median age was 31 years. The sample was 35% Hispanic, 29% White, 18% Asian, 9% Black, 7% other, 2% multiracial and 52% male. Training department was Internal Medicine, 71%, Family Medicine, 11%, Infectious Diseases (ID), 6%, or Gastroenterology (GI), 7%. The perceived burden of HBV was low; 2/3 stated HBV affects <5% of the patient population, 59% correctly estimated national HBV prevalence and 25% correctly estimated global prevalence. In vignettes with behavioral risk factors (e.g., intravenous drug use), trainees correctly advised screening, 63-96%. However, when birthplace was the only risk factor, correct responses ranged from 33-53%. Overall, 48% chose an incorrect combination of HBV screening tests. Respondents from HBV-endemic countries were no more likely to screen for HBV. Knowledge of HBV treatment indications was poor. More fellows (ID/GI) correctly recommended treatment than residents, p <0.01. Barriers to HBV screening were lack of education among health care workers, limited expertise in screening of immigrants, and limited patient education. Barriers to treatment were cost, knowledge about HBV regimens, and provider comfort. Respondents were more likely to recommend HCC screening in cirrhotic patients vs. noncirrhotic HBV patients, even when indicated. Only 43% of participants recognized that HCC screening is unnecessary in patients with acute HBV and 53% either recommended HCC screening or indicated uncertainty in noncirrhotic patients with resolved HBV infection. Respondents indicated they would screen for HCC if strong evidence suggested a mortality benefit or if recommended by a national organization. Key barriers to screening were uncertainty or lack of awareness about HCC guidelines and patient financial barriers.

Conclusions: In a diverse sample of trainees, knowledge of HBV and HCC screening recommendations is suboptimal. Efforts to broadly disseminate guidelines through targeted educational interventions are needed as responses confirm that HCC screening indications, especially in HBV, are not universally known.

An examination of health disparities among Hispanic women in South Texas.

B006 Development of a novel therapeutic splice-switching oligonucleotide targeting race-related androgen receptor signaling and aggressive prostate cancer. Bonnie L. LaCroix, Brendon M. Patierno, Bruce A. Sullenger, Daniel J. George, Steven R. Patierno, Jennifer A. Freedman. Duke Cancer Institute, Durham, NC.

Background: Age-adjusted incidence and mortality rates for prostate cancer (PCa) among African American (AA) men are 1.6- and 2.4-fold greater, respectively, than among white men. The more aggressive characteristics of AA PCa account for a significant component of the PCa disparity, in addition to social determinants of health. Differences in androgenic activities in AA versus white populations and PCa patients have been observed and, clinically, AAs have a less complete response to androgen deprivation than whites do. One of the critical androgen receptor signaling targets

126  THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED
POSTER SESSION B

in PCa is AR-V7, an androgen receptor variant that lacks the ligand-binding domain, is constitutively active, and associates with castration-resistant PCa, poorer clinical outcomes, and resistance to androgen ablation/androgen receptor inhibition therapies. This work addresses the urgent need to develop a novel therapeutic strategy capable of inhibiting AR-V7.

Methods: We have designed and synthesized a novel chemically modified splice switching oligonucleotide (SSO) to correct aberrant splicing leading to production of AR-V7 as well as a control scrambled SSO. After transfection of PCa cell lines derived from AA and white patients with these SSOS, we have examined AR-V7 as well as androgen receptor RNA and protein levels using qPCR and Western blot analysis, respectively. Resulting alterations in proliferation have been assessed by monitoring cell growth using an Incucyte Live-Cell Imaging System and associated software.

Results: Transfection of a panel of PCa cell lines derived from AA and white patients with AR-V7 SSO decreases AR-V7 RNA and protein in a dose-dependent manner while maintaining expression levels of full-length androgen receptor. Preliminary data suggest this biochemical response correlates with a biologically significant phenotype. AR-V7 SSO decreases proliferation in PCa cells, including proliferation in the presence of the androgen receptor inhibitor, enzalutamide, over and above the reduction seen in response to enzalutamide alone in both enzalutamide-sensitive and -resistant PCa cell lines. Additionally, transfection of PCa cells with SSOs designed to target nearby splicing enhancer sequences partially reduces AR-V7 RNA expression. Further studies to examine the effects of this SSO on transactivation activity, signaling and PCa cell biology, and the therapeutic efficacy of this SSO in AA and white PCa patient-derived primary cell lines and xenografts are under way.

Conclusions: These studies suggest that a SSO can be developed to modulate androgen receptor signaling, inhibiting constitutive signaling and restoring ligand dependency, with interference of nearby splicing enhancer sequences contributing to its function. Such an SSO could represent a novel therapeutic strategy with the potential to reduce PCa disparities for AA men and improve outcomes for men of all races with aggressive disease driven by this mechanism.

B007 Racial differences in survival among veterans and nonveteran populations with stage I non-small cell lung cancer. Naomi D. Alpert1, Christina D. Williams2, Thomas Redding3, A. Jasmine Bullard3, Raja Flores1, Emanuela Taioli1, 1Icahn School of Medicine at Mount Sinai, New York, NY, 2Durham Veteran Administration Medical Center; Duke University, Durham, NC, 3Durham Veteran Administration Medical Center, Durham, NC.

Purpose: Racial disparities in survival persist in patients with early-stage non-small cell lung cancer (NSCLC). Possible contributors to these disparities are stage at diagnosis, comorbidities, and socioeconomic factors. The goal of this study is to compare differences in survival between black and white patients from veteran and non-veteran populations, while accounting for treatment.

Methods: Black and white men aged ≥65 years diagnosed with stage I NSCLC from 2001-2009 were identified in the Surveillance, Epidemiology, and End Results (SEER)-Medicare database and Veterans Affairs (VA) cancer registry. Multivariable Cox proportional hazards models were used to estimate hazard ratios (HR) and 95% confidence intervals (CI) for differences between black and white patients in postoperative mortality among surgery patients, 5-year overall survival (OS), and lung cancer specific survival (LCSS).

Results: There were 8,744 and 7,895 patients in the SEER and VA cohorts, respectively. Overall, black patients were less likely to be treated than white patients (74% vs 85% in SEER, p<0.0001; 69% vs 77% in VA, p<0.0001), and among treated patients, to receive surgery only (47% vs 62% in SEER, p<0.0001; 55% vs 62%, p=0.0007 in VA). OS was worse for black compared to white patients after adjustment for demographic and clinical factors (HR: 1.17, 95% CI: 1.06-1.30 in SEER; HR: 1.08, 95% CI: 1.00-1.16 in VA). However, there was no difference in OS when also adjusting for treatment (HR: 0.99, 95% CI: 0.89-1.09 in SEER; HR: 0.97, 95% CI: 0.91-1.05 in VA). For LCSS, the HRs for black vs. white patients were 1.21 (95% CI 1.07-1.37) in SEER and 1.06 (95% CI 0.96-1.17) in VA, when adjusting for demographic and clinical factors. LCSS HRs were not statistically significant in either cohort when also adjusting for treatment (HR: 0.99, 95% CI: 0.87-1.12 in SEER; HR: 0.93, 95% CI: 0.85-1.02 in VA). Similar results were obtained when analyses were restricted to patients receiving treatment, accounting for treatment modality. Among patients receiving surgery only, adjusted OS was similar across races (HR: 1.11, 95% CI: 0.91-1.36 in SEER; HR: 1.08, 95% CI: 0.95-1.23 in VA). There was no significant difference in postoperative 30-day survival in black vs. white patients (HR: 1.57, 95% CI: 0.99-2.49 in SEER; HR: 1.10, 95% CI: 0.71-1.70 in VA), nor in postoperative 90 day survival (HR: 1.28, 95% CI: 0.87-1.89 in SEER; HR: 0.90, 95% CI: 0.63-1.29 in VA).
**Conclusion:** Among older stage I NSCLC patients, no significant racial differences in overall or lung cancer survival were detected in VA or SEER cohorts when accounting for treatment, despite observing racial differences in receipt of treatment in both populations. This suggests that survival disparities are significantly reduced when black and white patients receive similar treatment, even in populations covered by different health care systems. Effort to facilitate stage appropriate treatment in minority patients should be initiated.

**B008 South Carolina's National Breast and Cervical Cancer Early Detection Program narrows the gap in South Carolina breast cancer disparities.** Swan Arp Adams, Samantha C. Truman, Oluwole Babatunde, Tisha M. Felder, Jan M. Eberth, Sue P. Heiney, Christian R. Alvarado, James R. Hebert. University of South Carolina, Columbia, SC.

**Background:** The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) provides screening for breast cancer and, ultimately, navigation to treatment services for women who are economically disadvantaged and unable to afford such services. Consequently, SC’s NBCCEDP, the Best Chance Network (BCN), is crucial in helping to address the excess burden of breast cancer mortality experienced by black women as well as those with lower socio-economic status.

**Purpose:** The purpose of this investigation was to compare time to each treatment modality (surgery, chemotherapy, radiation therapy, and hormonal therapy) between BCN participants and participants in Medicaid or a private payor insurance plan.

**Methods:** SC Central Cancer Registry data (2002-2010) were linked to administrative data from Medicaid or another private payor insurance plan. Eligibility criteria included white or black race and continuous enrollment in their respective insurance plan for 3 years post diagnosis. Time from diagnosis to date of first surgery, chemotherapy, radiation therapy, and hormonal therapy were calculated from administrative data files. T-tests and chi-square tests were used to compare descriptive statistics as appropriate. Cox proportional hazards models were used to assess the relationship among BCN participation, treatment times, and survival.

**Results:** No significant differences were noted for time to surgery, chemotherapy, or hormonal therapy between BCN participants and the rest of the cohort. Interestingly, significant differences were noted between the two groups for time to radiation therapy (178 days for BCN vs. 150 days for the rest of the cohort, p=0.05). In multivariable Cox models, there were no breast cancer survival differences by BCN participation (p=0.94) after adjusting for age, stage, and insurance type. Among BCN participants, Cox models did not demonstrate any relationship between treatment time (for any treatment type) or race with survival after adjusting for age and stage.

**Conclusion:** This work provides evidence that emphasizes the important role that state programs such as the BCN play in navigating women into timely treatment and eliminating the disparity that is often seen for the receipt of breast cancer treatment among economically disadvantaged women. Furthermore, this work highlights the potential for these programs to decrease mortality disparities experienced by black women in SC.

**B009 A qualitative assessment of challenges to return to work for colorectal cancer survivors: Multistakeholder perspectives.** Inga Gruß1, Ginger C. Hanson2, Carmit McMullen1, Debra Ritzwoller1, Cathy Bradley4, Stephanie Hodge1, Alexandra Varga1, Matthew P. Banegas1, Kaiser Permanente, Center for Health Research, Portland, OR, 2Johns Hopkins School of Nursing, Baltimore, MD, 3Kaiser Permanente, Institute for Health Research, Denver, CO, 4University of Colorado Comprehensive Cancer Center, Denver, CO.

**Purpose:** Individuals diagnosed with colorectal cancer (CRC) may experience significant physical, psychological, and emotional effects that pose challenges to returning to work (RTW). Given the importance on employment as a source of income and health insurance, interruptions to work may impact both financial and health outcomes. Understanding the multistakeholder perspectives, CRC survivors and their employers, may offer insights into factors and shared concerns associated with RTW following cancer, and lead to interventions that improve employment outcomes among survivors. This study assessed the challenges and needs that CRC survivors experience in maintaining or RTW, from both the survivor and employer perspectives.

**Methods:** CRC survivors (n=10) who were ages 18-70 at diagnosis, English-speaking, believed to be employed at diagnosis, and members of Kaiser Permanente Northwest (KPNW) were recruited from the Patient Outcomes Research to Advance Learning (PORTAL) CRC cohort. Employers (n=4) were recruited from the twenty most common employer organizations of KPNW PORTAL CRC cohort.
participants. Using qualitative methodology, we conducted 14 semi-structured interviews with CRC survivors and employers. Interviews were transcribed and coded, then analyzed based on thematic analysis using NVivo 12 software.

Results: CRC survivors reported several challenges to RTW following diagnosis, including: Occupational/ institutional—lack of knowledge among employers about CRC and recovery, limited availability of (paid) leave, limited availability of workplace accommodations; and Individual—limited ability to take necessary leave, need to relearn control over bodily functions. Employers perceived challenges, including: Occupational/institutional—limited institutional flexibility to provide individualized accommodations, matching organizational structures and the needs of employees, communication with frontline managers to inform them about leave availability for employees, and communication with employees about legal possibilities and limitations; and Individual—limited willingness of employees to take leave.

Conclusions: Our findings highlight both shared concerns and unique challenges that CRC survivors and employers perceive to be important for the RTW process following cancer diagnosis. Multilevel interventions that focus on both survivors and employers have the potential to facilitate the RTW process by addressing factors unique to each stakeholder that foster improved employment outcomes and mitigate the financial and health impact of CRC survivors.


Cancer survivors may have unique medical care needs due to chronic/late-occurring effects of cancer or cancer treatment. “Shared care,” which involves delivery of components of survivorship care by both oncologists and primary care providers (PCPs), may lead to increased coordination of care and may better address survivors’ needs. However, little is known regarding potential disparities in receipt of shared care among cancer survivors. We examined associations between cancer survivors’ sociodemographic characteristics and their receipt of shared care. SEER-CAHPS data, linking NCI’s Surveillance, Epidemiology, and End Results (SEER) registry data, Medicare claims, and Medicare Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey responses, were used. Individuals age >65 years at diagnosis in 2000-2011 SEER-CAHPS with breast, cervical, colorectal, lung, renal, or prostate cancers or hematologic malignancies who responded to a Medicare CAHPS survey >18 months after diagnosis were included. Individuals were classified in four mutually exclusive survivorship care patterns: Shared Care, Oncologist-led, PCP-led, or Other survivorship care, based on the proportions of their oncologist, PCP, and other physician encounters in Medicare claims data. Differences in survivorship care pattern by sex, age, education, race/ethnicity, and dual Medicare-Medicaid status were examined. Among the 10,132 survivors included in the study, 15.1%, 10.0%, 32.7%, and 42.2% received Shared Care, Oncologist-led, PCP-led, and Other care patterns, respectively. Compared with survivors in Shared Care, significantly greater proportions of those in the PCP-led pattern were over age 85 (24% PCP-led vs. 16% Shared Care), female (55% PCP-led vs. 44% Shared Care), and had high school or less educational attainment (52% PCP-led vs. 46% Shared Care). A significantly smaller proportion of survivors in the Oncologist-led pattern were older than age 85 (12% Oncologist-led vs. 16% Shared Care). Significantly more of those in the Other survivorship care pattern compared with Shared Care were older than age 85 (21% Other vs. 16% Shared Care) and non-Hispanic White (87% Other vs. 81% Shared Care), and fewer survivors in the Other care pattern had high school or less educational attainment (42% Other vs. 46% Shared Care). Overall, we found few significant and consistent associations between sociodemographic characteristics and receipt of Shared Care among cancer survivors in the SEER-CAHPS data set. However, these characteristics may influence type of survivorship care pattern received. Further research is needed to examine the role of patient characteristics in receiving different survivorship care patterns.

B011 Changes in prescriptions for breast cancer medications after Medicaid expansion. Catherine Maclean1, Michael T. Halpern1, Steven C. Hill2, Michael Pesko3. 1Temple University, Philadelphia, PA, 2AHRQ, Rockville, MD, 3Georgia State University, Atlanta, GA.

As of summer 2018, 34 states have expanded Medicaid eligibility under the Affordable Care Act. While the Medicaid expansions decreased rates of being uninsured among women with breast cancer and increased early breast cancer detection, it is unknown whether expansions increased receipt of medications used to prevent and treat breast cancer. This study examines differences over time in receipt of two types of breast cancer hormonal therapies (tamoxifen
and aromatase inhibitors) and associated payments for these medications in states that did vs. did not expand Medicaid during the period 2011-2017. The study’s data source is the Medicaid State Drug Utilization Database (SDUD). This data set, compiled by the Centers for Medicaid and Medicare (CMS), is administrative data submitted by state Medicaid programs. The data comprise outpatient prescription medications that are covered under the Medicaid Drug Rebate Program for which Medicaid serves as a third-party payer; this includes aggregate numbers of prescriptions and associated payments for individuals enrolled in both fee for service and managed-care Medicaid programs. Both branded and generic prescriptions for three aromatase inhibitors (anastrozole, exemestane, and letrozole) were included in the study’s analyses. Analyses used differences-in-differences and event study models (controlling for state characteristics) to compare changes in Medicaid expansion states to changes in nonexpansion states before vs. after expansion. Initial regression analyses indicate that prescriptions for all hormonal therapy medications increased by 22% (p<0.05) and prescriptions for aromatase inhibitors (branded and generics combined) increased by 26% (p<0.05) in expansion states relative to nonexpansion states. While prescriptions for tamoxifen and for generic aromatase inhibitors alone also increased in expansion states, these changes were not statistically significant. Post-expansion, both total payments and Medicaid payments for all hormonal therapies increased by 13% (p<0.01) in expansion states relative to nonexpansion states. The similar increases for total and Medicaid payments suggest that state Medicaid programs, not patients, financed the increased hormonal therapy prescription payments. Our findings indicate that states that expanded Medicaid with the ACA experienced increased prescriptions for breast cancer hormonal therapies relative to states that did not expand Medicaid; this effect of Medicaid expansion increased over time. The increased prescriptions were financed by Medicaid, not by patients.

**B012 An investigation of travel distances for breast cancer treatment among a racially and socioeconomically diverse cohort.** Sue P. Heiney, Samantha C. Truman, Oluwole Babatunde, Christian R. Alvarado, Swann Arp Adams. University of South Carolina, Columbia, SC.

**Background:** In South Carolina, black women are less likely to be diagnosed with breast cancer, but yet are more likely to die with their disease. The disparity is estimated to be as great as 60% higher for black women compared to white women after accounting for the lower incidence. Distances that cancer patients travel to receive treatments are likely to influence treatment decisions and ultimately survival; however, this relationship is not well described.

**Purpose:** The purpose of this investigation was to compare average travel distances for each modality of breast cancer treatment including surgery, chemotherapy, radiation therapy, and hormonal therapy. We furthermore examined the impact of these distances on disease-free survival.

**Methods:** SC Central Cancer Registry data (2002-2010) were linked to administrative data from Medicaid or another private payor insurance plan. Eligibility criteria included white or black race and continuous enrollment in their respective insurance plan for 3 years post diagnosis. Network distances from the patient residence to the provider were calculated by Arc GIS. T-tests and chi-square tests were used to compare descriptive statistics as appropriate. Cox proportional hazards models were used to assess the relationship between treatment travel distances and survival.

**Results:** Patients in the cohort traveled an average distance of 20, 21, 19, and 7 miles for surgical, chemotherapy, radiation therapy, and hormone therapy (pharmacy). Travel distances were significantly higher for blacks for chemotherapy (23 vs 20 miles, p=0.03), but not for any other therapy modalities. As might be expected, patients residing in rural areas had significantly higher travel distances for all treatment modalities, including hormonal therapies. In comparison to urban-dwelling patients, rural residents traveled an average of 36 vs 17 miles for surgery (p<0.01), 37 vs. 17 miles for chemotherapy (p<0.01), 34 vs. 16 miles for radiation therapy (p<0.01), and 23 vs 6 miles for hormone therapy (p<0.01). In examining survival, no travel distance was significantly associated with increased morality.

**Conclusion:** Rural residents traveled significantly longer distances to receive their cancer care compared to urban-dwelling residents; however, this did not appear to impact survival in this cohort. Additional work is needed to fully understand the influence of travel distances on treatment decisions that may ultimately impact survival. These findings highlight the need for innovative solutions to improve access to care for rural residents.

**B013 Associations between psychosocial distress and physical inactivity and poor health in medically underserved cancer survivors in central Pennsylvania.** Scherezade K. Mama, Nishat Bhuiyan, Kathryn H. Schmitz, Eugene J. Lengerich. The Pennsylvania State University, University Park, PA, “Penn State Cancer Institute, Hershey, PA.
POSTER SESSION B

Purpose: Cancer survivors (CS) residing in nonmetro, medically underserved areas (MUA) are less likely to do physical activity (PA) and more likely to report poor health and psychosocial distress than those residing in urban areas with low need. The purpose of this study was to explore the association between psychosocial distress and PA and self-rated health in CS residing in MUA in central Pennsylvania.

Method: CS were recruited to the Partnering to Prevent and Control Cancer (PPCC) study, a cross-sectional study to explore factors related to PA in CS living in central Pennsylvania. PPCC participants completed mailed or Internet-based questionnaires assessing sociodemographics, psychosocial distress (perceived stress, depressive symptoms, and anxiety), Godin weekly leisure-time PA (WLPA), and self-rated health. Independent samples t-tests and analysis of variance were used to explore associations between psychosocial distress and PA and self-rated health.

Results: Nearly 600 (N=572) CS were contacted to participate; 262 were screened for eligibility. Eligible participants (96.9%, n=254) completed a brief demographic questionnaire, and 211 participants opted to complete a more in-depth questionnaire assessing psychosocial distress and PA. Nearly half of participants were prostate (22.5%) or breast (22.1%) CS, followed by gynecologic (15.7%), colorectal (8.8%), and lung (7.2%) CS, and 21.7% of participants reported multiple cancer diagnoses. Participants were mostly women (58.4%), in their mid-60s (M age=64.9±11.8 years), and overweight (M BMI=29.6±6.8 kg/m²). Only 28.3% of CS reported being active, and 16.0% of CS self-rated their health as poor or fair. Nearly 20% of participants reported an elevated number of depressive symptoms, 41.1% reported moderate-to-high perceived stress, and 4.3% reported moderate-to-high anxiety. MUA CS who reported fewer depressive symptoms engaged in more WLPA (M=26.9 vs. 16.1, t=2.023, p=.045) and self-reported better health (M=3.5 vs. 2.7, t=4.8, p<.001) than those who reported elevated depressive symptoms. Similarly, MUA CS who reported low perceived stress (F=15.6, p<.001) and very low anxiety (F=6.1, p=.003) self-reported their health as better than those who reported moderate-to-high perceived stress and anxiety.

Conclusions: CS in PPCC report higher psychosocial distress and engage in less PA than CS in urban, non-MUA areas in the U.S., contributing to cancer health disparities. Strong associations between high psychosocial distress and physical inactivity and poor self-rated health point to the urgent need for psychosocial interventions designed to meet the unique physical and psychological needs of this population in an effort to improve cancer survivorship outcomes, reduce health disparities, and promote health equity in CS residing in MUA in central Pennsylvania.

B014 Differences in the impact of marital status on risk of suicide among cancer survivors based on cancer sites. Nosayaba Osazuwa-Peters, Matthew C. Simpson, Eric Adjei Boakye. Saint Louis University, St. Louis, MO.

Introduction: Suicide is a threat to cancer survivorship, and a known non-cancer competing cause of death among cancer survivors. In fact, the risk of suicide among cancer survivors is more than double that of the general population, depending on the cancer site. While several factors like age, gender, race, and cancer site are associated with suicide, studies on the potential impact of marriage, a marker for social support, on the risk of suicide among cancer survivors have been inconclusive. This study aimed to examine the impact of marital status on the risk of suicide, and to determine whether there are differences in the effect of marital status on suicide risk based on cancer sites.

Methods: Patients with head and neck (n=162,701), pancreatic (n=127,831), stomach (n=80,839), and lung/bronchus cancer (n=605,274) from the Surveillance, Epidemiology, and End Results (SEER) 18 database diagnosed from 2007-2015 were included (total n=976,645). These cancer sites were selected as they have the highest suicide rates of all cancers. Competing risks proportional hazards models estimated the association between marital status and death from suicide for each of the four cancer sites while controlling for sociodemographic and clinical covariates. These models yielded adjusted hazard ratios (aHR) and 95% confidence intervals (CI).

Results: The patient cohort was mostly male (57%), non-Hispanic white (74%), married/partnered (51%), and had a mean age of 67 years. For stomach cancer, marital status was not associated with death from suicide. For pancreatic, lung, and HNC, divorced/separated patients were more likely to commit suicide than married/partnered patients (aHR range 1.59-2.92). For lung (aHR=1.47, 95% CI 1.14, 1.92) and HNC (aHR=1.31, 95% CI 1.01, 1.70), never-married patients were more likely to commit suicide than married/partnered patients.

Conclusions: Being married was protective against suicide among the cancer survivors in our study, except for stomach cancer survivors. However, the effect of marital status on suicide risk was greater among head and neck cancer survivors than lung, pancreatic, and stomach cancer survivors. It is critical that survivors receive as much support as possible to mitigate suicide risks.
POSTER SESSION B


There are currently over 15 million cancer survivors in the US, and this number is expected to exceed 20 million by 2026 due to population aging and growth. The majority of these patients are older; many are ethnically diverse and face unique health care challenges and comorbidities due to their cancer treatment. Despite this recognition, research clearly documents the persistence of unmet needs among cancer survivors, including less than optimal preventive and cancer surveillance screening rates. Several barriers have been identified in the effort to achieve optimal survivorship care: the current health care system is fragmented, difficult to navigate, and communication between oncologists and primary care providers is often minimal. While research has been devoted to developing integrated care models, systematic reviews conclude that no standard of care exists for survivorship models. Further, given the variability of cancer survivors in terms of health needs, socioeconomic circumstances, and health care environment, it is likely that such models will need to be adaptive. Building on prior formative research, our research team at the University of New Mexico Comprehensive Cancer Center (UNMCCC) is creating a survivorship care model for implementation. New Mexico, a large, rural, minority-majority state, with deep socioeconomic disparities that limit access to care, presents an ideal environment to address the current evidence gap in survivorship care transitions. Our developing research program features the following major components to this survivorship care model: 1) identifying risk-stratified patients at the UNMCCC and delivering a survivorship care plan; 2) using the Project ECHO telementoring platform, implement a survivorship care training curriculum with primary care providers; 3) an oncology nurse navigator based at the UNMCCC will actively navigate patients to the community-based providers; and 4) all components of the model will be assessed using implementation science research and evaluation strategies. We are in the early phases of developing and implementing this model and we will report on the content and process associated with each of the major components. Identified outcomes pertain to feasibility and acceptability of implementation, and we will categorize these using the RE-AIM and Consolidated Framework for Implementation Research frameworks.

B016 Predictors of nonadherence to adjuvant hormonal therapy among breast cancer patients. Samantha C. Truman, Oluwole Babatunde, Christian Alvarado, Sue P. Heiney, Joshua E. Sellner, Kelly E. Reiss, Swann Arp Adams. University of South Carolina, Columbia, SC.

Purpose: This study aimed to investigate the predictive factors associated with nonadherence to adjuvant hormonal therapy (AHT) by year among patients with receptor-positive breast cancer.

Background: AHT is used to treat and manage hormone receptor-positive breast cancers, which comprise 70% of all breast cancers. Low adherence to these medications has been shown to increase the risk of death by approximately 20%. Despite the known benefits for reducing mortality and recurrence, adherence to AHT medications has proven to be a major challenge for patients. Previous studies have linked several demographic and clinical characteristics as predictors of adherence.

Methods: Women diagnosed with receptor-positive breast cancer between the years 2002 to 2010 were identified through the South Carolina Central Cancer Registry, which was linked to administrative databases, the South Carolina Medicaid Program, and a private payor plan. We identified 1,095 patients with breast cancer who met our eligibility criteria and filled at least two AHT medications. The medication possession ratio (MPR), the ratio of number of pills for each AHT and the number of days between each AHT refill, was derived using automated pharmacy records to identify AHT prescriptions and the dates of each refill. The average MPR was calculated for each year over a 3-year period. Regression models and t-tests were used to assess factors associated with nonadherence of AHT for each of the 3 years.

Results: The average adherence rate for AHT was 0.93, 0.90, and 0.90 following year 1, year 2, and year 3, respectively. For each of the 3 years, African Americans had a significantly lower adherence to AHT compared to European Americans. In addition, women under the age of 50 years had a significantly lower MPR for each year compared to women 50 and older (p = <.01). Insurance type also had a significant impact on compliance over the 3-year period (p = <.01). Women were more likely to be adherent to aromatase Inhibitors (AIs) compared to selective estrogen receptor modulators (SERMs) across all 3 years. Interestingly, geographic location (urban versus rural) did not affect adherence until the third year of treatment (0.91 ± 0.17 vs. 0.87 ± 0.20, p = 0.02, respectively). Treatment factors such as radiation and chemotherapy did not appear to impact AHT adherence. However, upon further investigation,
POSTER SESSION B

following year 1 of treatment, women taking both AHT and chemotherapy simultaneously, as opposed to only taking AHT, had a significantly lower adherence rate (0.86 ± 0.19 vs. 0.92 ± 0.14, p = <.01, respectively).

Conclusion: Demographic characteristics such as age, race, and insurance type appeared to impact AHT adherence across the initial three years of AHT. However, there are other factors that should be considered at different timepoints during treatment, such as geographic location and treatment regimen. This study provides important insight into probable factors and characteristics that can be used to provide targeted interventions for improving AHT adherence.

B017 Role of CYP3A5 in modulating androgen receptor signaling and its relevance in African American prostate cancer patients. Priyatham Gorjala1, Oscar B. Goodman Jr2, Ranjana Mitra1. 1Roseman University of Health Sciences, Las Vegas, NV, 2Comprehensive Cancer Centers of Nevada, Las Vegas, NV.

Introduction: African-American men (AA) often present with aggressive castration-resistant prostate cancer (CRPC), due to highly active androgen receptor (AR). AR is a ligand-activated transcription factor that promotes expression of genes responsible for cell proliferation and growth. Previously, we have shown that CYP3A5 promotes AR nuclear translocation and activation leading to increased prostate cancer (PC) growth. 73% of AAs carrying wild-type CYP3A5 (*1/*1) express full-length functional CYP3A5, whereas 95% of Caucasians carry mutant (*3/*3) variant producing truncated nonfunctional protein. Difference in CYP3A5 expression leads to highly active AR and aggressive disease in AAs. Additionally, most of the PC patients are prescribed concomitant medications to manage age-related comorbidities. Many of these drugs are known modulators of CYP3A5; modulation of CYP3A5 may alter efficacy of ADT in these patients. Our work is focused on characterizing the effect of CYP3A5 modulating drugs on AR signaling in AAs.

Methods: q-RT-PCR based profiler assay was used to study effect of CYP3A5 modulation on AR-regulated prostate cancer genes using cDNA from nontarget (NT) and CYP3A5 siRNA treated cells. Confocal microscopy and cell fractionation assays were performed to evaluate and confirm the effect of CYP3A5 modulating drugs on AR nuclear translocation. Genes shortlisted from q-PCR based profiler assays were analyzed for change of expression in response to CYP3A5 modulating drugs. MDAPCA2b (AA origin, *1/*3) and LNCaP (Caucasian, *3/*3) cell lines were used for above experiments.

Results: CYP3A5 siRNA pool treatment downregulates AR regulated genes identified using q-PCR based profiler assay, performed with cDNA from CYP3A5 siRNA pool and NT treated MDAPCA2b cells. These downregulated genes include SCL45A3, FKBP5, NCAPD3, MYC, MME, ELL2, PIK3R3, HPRT1 and SPDEF with p-value of ≤ 0.005. These genes are known to regulate AR nuclear translocation, cell cycle progression, and cell growth. CYP3A5 siRNA treated MDACPA2b/ LNCaP cells showed decreased AR nuclear translocation and PSA production. Commonly prescribed drugs that are either CYP inhibitors (amiodarone, ritonavir) or inducers (phenytoin, rifampicin) were tested for their ability to alter AR signaling. The results show that the CYP inducers promoted AR nuclear migration and downstream signaling whereas CYP3A5 inhibitors blocked it. Further, CYP3A5 siRNA treated MDAPCa2b cells do not show any increase in AR nuclear migration with phenytoin treatment (CYP3A inducing), confirming that the activation of AR activity is specific to changes in CYP3A5 activity.

Conclusions: Concomitantly prescribed CYP3A5 modulating drugs can alter downstream AR signaling, cell growth, and ADT efficacy in men, more so in AAs expressing wild-type CYP3A5. We propose to further characterize drug-induced CYP3A5 modulation of AR signaling to develop a guideline for physicians coprescribing CYP3A5 modulating drugs to treat comorbidities in elderly patients undergoing ADT.

B018 Exploring racial disparities in breast reconstruction after mastectomy at an NCI-Designated Cancer Center. Shahnjayla K. Connors1, Melody G. Goodman2, Terence Myckatyn3, Julie Margenthaler4, Sarah Gehlert5. 1University of Houston-Downtown, Houston, TX, 2New York University, New York, NY, 3Washington University in St. Louis, St. Louis, MO, 4University of South Carolina, Columbia, SC.

Introduction: Breast reconstruction after mastectomy is an important component of comprehensive breast cancer care due to its positive effects on quality of life for breast cancer survivors. Yet, African American women are significantly less likely to receive breast reconstruction compared to Caucasian women. Due to the positive impact breast reconstruction has on quality of life in breast cancer patients, these disparities have implications for survivorship in African American women who already bear the excess burden of breast cancer mortality. We previously reported the presence of breast reconstruction disparities at Siteman Cancer Center, a large, urban National Cancer Institute-designated Comprehensive Cancer Center located in St. Louis, Missouri. The purpose of this study was to further understand these disparities.
by assessing breast reconstruction rates, patterns, and predictors by race.

**Methods:** Sociodemographic, clinical, and treatment data were obtained for women who received mastectomy for definitive surgical treatment for breast cancer from 2000 to 2012. Statistical tests were used to compare the data between African American and Caucasian women. Logistic regression was used to identify significant predictors of breast reconstruction stratified by race.

**Results:** African American women had significantly higher proportions of public insurance, more aggressive tumors, unilateral mastectomies, and modified radical mastectomies. These are characteristics that reduce the odds of receiving breast reconstruction. African American women had a significantly lower breast reconstruction rate and higher proportion of autologous-based breast reconstruction, which has higher complication rates than implant-based breast reconstruction. Adjuvant radiation was a significant predictor in Caucasian, but not in African American women.

**Conclusion:** African American and Caucasian women varied in rate and type of breast reconstruction. These disparities may be due to racial differences in sociodemographic, clinical, and treatment factors. Additionally, since the predictors of breast reconstruction varied by race, the underlying mechanisms for the receipt of breast reconstruction may vary in African American women. Future research should focus on further examining the determinants of the breast reconstruction, by modality, and the role breast reconstruction disparities play in clinical outcomes and quality of life in African American women.

**B019 Using Big Data to investigate disparities in cervix cancer survival: Racial and ethnic minorities and those with income and insurance disparities have worse overall survival from cervix cancer.** Christine M. Fisher, Tyler Robin. University of Colorado, Aurora, CO.

**Background:** The burden of cervix cancer diagnosis is most profound on the medically underserved, who do not have access to prevention and early detection methods for cervical cancer. Using Big Data, the impact of race, ethnicity, insurance status, and socioeconomic status is investigated in those diagnosed with this disease. Our hypothesis is that the burden in diagnosed cancer continues this pattern of afflicting those without ready or optimal access to care.

**Methods:** Using data from the National Cancer Database (NCDB), which captures about 75% of all cancer care across the United States, patterns of care in cervix cancer patients were investigated. Multivariate Cox regression analysis and Kaplan Meier survival analysis were employed to assess the association between patient characteristics and disease outcomes.

**Results:** Cervical cancer patients from 2004-2012 were identified, and 15,194 were identified for analysis. The standard of care was used in less than half of the patients (44.3%) and those patients treated per standard of care had improved overall survival of 93 versus 33 months (p<0.001). Patients with lower median household incomes (p<0.001), uninsured patients (p<0.001), Black patients (p=0.026), and Hispanic patients (p<0.001) all had poorer overall survival.

**Conclusions:** The disparities in those diagnosed with cervical cancer continue to survive from this disease, with the underinsured, Black and Hispanic patients, and those with lower income households all having poorer survival from this disease. Improved access to care will both lower the diagnosis through vaccination and early detection, as well as improve outcomes in those who carry the diagnosis.

**B020 Antiproliferative efficacy of different targeted drugs on breast cancer cell lines of distinct subtypes.** Meron Yohannes Nigussie1, Jürgen Bukur2, Zelalem Desalegn Woldeonbo1, Tamrat Abebe Zeleke1, Yonas Bekuretsion1, Mahlet Arayaselassie1, Mathewos Assefa1, Abebe Bekele1, Endale Anberber1, Martina Vetter2, Claudia Wickenhauser2, Eva J Kantelhardt2, Barbara Seliger1. ‘Addis Ababa University, Addis Ababa, Ethiopia, 1Martin-Luther-University Halle-Wittenberg, Halle (Salle), Germany.

**Background:** Breast cancer is the most common cancer overall, with an estimated 2.4 million incident cases in 2015. Current treatment of breast cancer is mainly surgery, chemotherapy, radiotherapy, and hormonal therapy. Although these approaches appear to be effective, they have failed to result in long-term cure, especially for aggressive HER2-positive and triple-negative breast cancer. This particularly holds for sub-Saharan Africa with a dominance of aggressive breast cancer subtypes with very limited treatment options and almost no research activities in place. As a result, continuous exploration of alternative treatment strategies is urgently required. Consequently, a collaborative research program has been established between Addis Ababa University, Ethiopia, and Martin-Luther-University, Germany, to enhance breast cancer research in Ethiopia. As a pilot study in Germany, we have assessed the in vitro potency of the three inhibitors romidepsin, trametinib, and lapatinib.
**POSTER SESSION B**

targeting HDAC, MEK and HER2/EGFR, respectively, in different breast cancer cell lines.

**Methods:** Seven distinct breast cancer cell lines (MCF7, SKBR3, T47D, BT474, BT20, HCC1806 and HCC1937) of known HER-2 and hormone status were used to evaluate the antiproliferative effect of romidepsin, lapatinib, and trametinib. Cells cultivated in complete RPMI media were seeded in to 96 well plates (3,000 cells/well) and incubated at 370C and 5% CO2 for 24hrs. The cells were then treated for 24, 48, and 72 hours with different concentrations of the drugs. Cells exposed to solvent alone served as controls. XTT cell viability assay was used to determine proliferation of cells following manufacturers’ instruction. ICS0 value was calculated (Compusyn software) for each drug against the different cell lines to determine the antiproliferative effect.

**Results:** Romidepsin exhibited a strong antiproliferative effect against all breast cancer cell lines tested, resulting in a marked decrease in cell viability with increasing concentrations, which highly varied between the breast cancer cell lines analyzed. The calculated ICS0 values 48 hrs after the onset of treatment ranged between 2.2 and 52 nM; T47D was the most sensitive. Lapatinib treatment of the EGFR/HER-2 expressing BT20, SKBR3 and BT474 caused dose-dependent suppression of cell viability against SKBR3 and BT474 with an ICS0 value of 450 and 77 nM, respectively. In contrast, BT20 cells were resistant to this treatment and were the only breast cancer cell line with an enhanced sensitivity to increasing concentrations of trametinib (ICS0 = 2.79 µM).

**Conclusion:** In sum, romidepsin might improve the treatment efficacy of breast cancer though it needs to be further explored in vitro as well as in vivo alone and in combination with other therapies. Although trametinib has been suggested to be insufficient for monotherapy of breast cancer in general, it might be still a candidate for the treatment of basal-like breast cancers due to the sensitivity of BT20 cells.

**B021 Canine CAR T-cells therapy for mammary carcinoma in dogs.** Xavier E. Ramos-Cardona, Sulma I. Mohammed, Yong Gu Lee, Phillip Low. Purdue University, West Lafayette, IN.

In women, ductal carcinoma in situ (DCIS) is an often-diagnosed breast disease that is widely considered to be a nonobligate precursor of invasive carcinoma. TNBC is the most aggressive and lethal form of breast cancer and predominantly occurs in women at high genetic risk including those with mutated BRCA1 genes. We provide for the first time an immunocompetent animal model for triple-negative DCIS (TN-DCIS) that will facilitate molecular analysis of preinvasive TNBC and will provide an invaluable resource for identifying and selecting targets for TNBC vaccine immunoprevention or immunotherapeutic intervention. Unlike most studied rodent models, dogs develop TN-DCIS spontaneously without genetic or chemical manipulation. We have shown that canine DCIS resembles human DCIS with shared histopathologic and molecular features and with similar imaging and behavioral characteristics. Dogs are much more outbred than laboratory rodents, yet certain breeds are at increased risk for developing mammary tumors. Indeed, we have found that 50% of randomly screened asymptomatic hound dogs have premalignant mammary lesions and that mammary TN-DCIS often progresses to invasive carcinoma within one year. Given the many common features of canine breast cancer and the high homology between the canine and human genome, the dog model offers an outstanding opportunity for exploiting TNBC immunoprevention and immunotherapeutic strategies. Moreover, the prevalence and rapid progression of canine TN-DCIS provides a much more rapid and cost-effective alternative to human trials for evaluation of the clinical effectiveness of cancer vaccine strategies. One immunotherapeutic strategy we are testing using our canine TN-DCIS model is chimeric antigen receptor (CAR) T-cells. CAR T-cells have shown promise in treating many malignancies, but in solid tumors have been hindered by many limitations. To overcome these limitations, we designed genetically engineered universal canine CAR T-cells that must be activated and targeted by a small-molecule adaptor before it can kill cancer cells. Our results showed that universal CAR T cells are functional and killed canine mammary tumor cell lines in vitro.

**B022 Diversity of enrollment in prostate cancer clinical trials: Current status and future directions.** Emily Rencsok1, Latifa Bazzi2, Rana McKay1, Franklin Huang1, Adam Friedant1, Jake Vinson3, Jelani Zarif4, Stacey Simmons7, Paul Villanti8, Philip Kantoff9, Elisabeth Heath10, Daniel George11, Lorelei Mucci12. 1Harvard Medical School, Boston, MA, 2University of Michigan School of Public Health, Ann Arbor, MI, 3University of California San Diego Moores Cancer Center, La Jolla, CA, 4Dana-Farber Cancer Institute, Boston, MA, 5Prostate Cancer Clinical Trials Consortium, New York, NY, 6Johns Hopkins University School of Medicine, Baltimore, MD, 7Bayer Oncology, Whippany, NJ, 8Movember Foundation, East Melbourne, VIC, Australia, 9Memorial Sloan Kettering Cancer Center, New York, NY, 10Wayne State University Karmanos
Cancer Institute, Detroit, MI, 2Duke Cancer Institute, Durham, NC, 3Harvard T.H. Chan School of Public Health, Boston, MA.

Background: Prostate cancer incidence and mortality rates differ substantially by race and ethnicity globally and within the United States. Despite these disparities, many cancer clinical trials have a lack of representation of U.S. minority groups, and race is often overlooked when reporting trial results. The purpose of this study is to assess diversity of participants in prostate cancer clinical trials.

Methods: Available trials were identified through a systematic review of clinical trials using the U.S. National Library of Medicine's Clinical Trials Database and PubMed. Completed global phase III and phase IV clinical trials evaluating treatment, primary prevention, or screening of prostate cancer with published results were included in the analysis. Trials were analyzed for availability of race and ethnicity data and categories represented. Temporal and geographic trends were analyzed.

Results: Of the 61 treatment-based clinical trials analyzed, 39 (63.9%) reported race data. Twenty-one race categories were represented across the trials, with the largest categories being White (83.2% of participants), Black or African American (7.5%), other/not reported (4.4%), and Asian (2.7%). All other race categories represented less than 2% of participants each. Six trials (9.8%) additionally reported ethnicity data: 81.1% of participants with data were not Hispanic or Latino, 7.6% of participants were Hispanic or Latino, and 11.3% of participants did not indicate their ethnicity. Of four prevention-based trials, all had data available on race, but only one additionally reported ethnicity. The majority of participants in prevention trials were White (84.6%), with similar representation across race and ethnicity categories compared to the treatment clinical trials. Only one of the five screening trials had available race data, again showing majority White participants (85.0%). Categories unique to prevention and screening trials include Hispanic (non-African American), Hispanic (African American), non-Hispanic White, and non-Hispanic Black. The Swedish branch of the European Randomized Study for Screening for Prostate Cancer (ERSPC) reported country of origin rather than race data: 15% of participants were non-European. Additionally, diversity of participants has not changed over time, and representation of countries in trials is unequal.

Conclusions: More than one-third of prostate cancer clinical trials do not report race/ethnicity data. Moreover, there is significant variability in the race categories reported in trials, with 26 categories represented across the analyzed trials. Of the trials reporting race data, over 80% of participants were White. Current initiatives, such as the International Registry of Men with Advanced Prostate Cancer (iRONMAN), are aiming to recruit representative populations to decrease racial and ethnic disparities and ensure that men at risk for or diagnosed with prostate cancer are better represented in research and receive the best possible care.

B023 Racial-ethnic disparities in the receipt of initial, cure-intended treatment for localized prostate cancer, SEER Medicare, 2004-2013

Thomas B. Richards, David G. Stinchcomb, Timothy S. McNeel, Wilhelmina Ross, Diane Ng, CDC, Atlanta, GA, Westat, Rockville, MD, Information Management Services, Inc., Calverton, MD.

Purpose: We sought to determine if there were racial/ethnic disparities in the receipt of initial, cure-intended treatment for localized prostate cancer.

Methods: We analyzed prostate cancer cases reported in 2004-2013 to Surveillance, Epidemiology and End Results (SEER) cancer registries, linked with Medicare claims from 2003-2014. We focused on cases that were fee-for-service with continuous Part A and B Medicare from 12 months before first diagnosis to 6 months after diagnosis, and that had American Joint Committee on Cancer 6th Edition tumor extent T1 or T2 without metastatic disease. We used SEER race/ethnicity to categorize cases as non-Hispanic whites; non-Hispanic blacks; non-Hispanic Asian or Pacific Islanders; Hispanics of any race; and Other/Unknown. We defined initial treatment to include 1 month before to 6 months after first diagnosis; cure-intended radical prostatectomy to include radical prostatectomy with or without radiation therapy; cure-intended radiation therapy to include radiation therapy without a radical prostatectomy; and noncurative treatment to include other initial treatment or no treatment. We used multivariable logistic regression to calculate adjusted odds ratios (OR) and 95% confidence intervals (CI) for receipt of each category of initial treatment, compared with the remaining cases, and adjusting for race/ethnicity; life expectancy from the man's age at diagnosis; pretreatment prostate cancer disease recurrence risk category; Charlson comorbidity score; year of diagnosis; SEER registry region, census tract poverty; and metropolitan or nonmetropolitan county location.

Results: Our final study cohort included a total of 125,072 men, with 95,763 non-Hispanic white, 13,616 non-Hispanic black, 4,658 non-Hispanic Asian or Pacific Islanders, 7,933 Hispanic any race, and 3,102 in the Other/Unknown category. After adjustment for multiple variables, non-Hispanic blacks
POSTER SESSION B

were less likely than non-Hispanic whites to receive initial radical prostatectomy (with or without radiation therapy) (OR, 0.57; 95% CI, 0.53-0.61) or initial radiation therapy without radical prostatectomy (OR, 0.85; 95% CI, 0.82-0.88), and more likely to receive noncurative treatment (OR, 1.51; 95% CI, 1.45-1.57). Non-Hispanic Asian or Pacific Islanders were more likely than non-Hispanic whites to receive initial radiation therapy without radical prostatectomy (OR, 1.23; 95% CI, 1.16-1.31), and less likely to receive noncurative treatment (OR, 0.84; 95% CI, 0.78-0.89). The adjusted odds ratios for curative and noncurative initial treatment received by Hispanics of any race were similar to those for non-Hispanic whites.

Conclusion: Compared with non-Hispanic whites, non-Hispanic black men were less likely to receive curative and more likely to receive noncurative initial treatment for localized prostate cancer during 2004-2013.

B025 Examining the role of perceived respect on racial disparities in cancer-related pain. Cleo A. Samuel1, Jennifer Schaal2, Olive Mbah1, Michelle L. Manning3, Donald L. Rosenstein4, Katherine E. Reeder-Hayes2, Jean B. Sellers1, Stephanie B. Wheeler1, 1UNC Gillings School of Global Public Health, Chapel Hill, NC, 2UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR07) of the Conference Proceedings.

B026 Racial and educational differences in symptom burden and supportive care among breast cancer patients undergoing chemotherapy. Cleo A. Samuel1, Jennifer Schaal2, Olive M. Mbah1, Wendi Elkins1, Eugenia Eng1, Linda Robertson3, Stephanie Baker4, Kristin Z. Black1, Crystal Dixon5, Katrina Ellis1, Fatima Guerra8, Lauren Jordan1, Alexandra F. Lightfoot1, Samuel Cykert4, 1UNC Gillings School of Global Public Health, Chapel Hill, NC, 2The Partnership Project, Greensboro, NC, 3University of North Carolina at Chapel Hill, Chapel Hill, NC, 4University of Pittsburgh Medical Center, Pittsburgh, PA, 5Elon University, Elon, NC, 4University of North Carolina Greensboro, Greensboro, NC, 7North Carolina Central University, Durham, NC, 8NC Area Health Education Centers Program, Chapel Hill, NC.

Background: Black cancer patients consistently report worse pain management than White patients. Effective pain management requires communication, and provider respect is linked to positive provider-patient communication. Racial differences in patient perceptions of respect during clinical encounters are well documented and linked to disparities in care, yet little is known about whether racial differences in perceived respect contribute to disparities in cancer pain. As part of the NCI-funded study, Accountability for Cancer Care through Undoing Racism and Equity, we examined whether perceived respect was associated with racial disparities in pain.

Methods: We obtained prospective survey data from Black and White breast and lung cancer patients in active treatment at two cancer centers from 2013-2017. The primary outcome was a binary measure of moderate-to-severe pain based on patient responses to PROMIS items 90 days post-diagnosis. A binary measure of “high” vs “low” respect was computed based on patient responses to a survey item assessing perceived respect from doctors at the last clinic visit. We estimated logistic regressions assessing associations between race and pain 90 days post-diagnosis and the mediating effect of respect, adjusting for patient demographics, baseline pain, clinical characteristics, and site of care.

Results: Compared with Whites (N = 200), Blacks (N = 119) were more likely to report moderate-to-severe pain (26.9% vs. 49.1%; p < .001), but less likely to report “high” respect during their most recent clinic visit (88.9% vs. 82.3%; p = .073), though the racial gap in respect was marginally significant. In adjusted analyses, Black race remained a statistically significantly predictor of moderate-to-severe pain (adjusted odds ratio [AOR] = 2.62; 95%CI:1.35-5.14). “High” respect was associated with less moderate-to-severe pain (AOR = 0.3; 95%CI:0.13-0.72), but racial disparities in pain were not attributable to racial gaps in perceived respect.

Conclusions: Black-White racial disparities in pain exist among cancer patients. While patient perceptions of respect were linked to pain severity and to some extent, race, perceived respect did not explain racial disparities in pain severity.

B024 Racial differences in financial toxicity among metastatic breast cancer patients. Cleo A. Samuel1, Jennifer C. Spencer1, Michelle L. Manning2, Donald L. Rosenstein3, Katherine E. Reeder-Hayes2, Jean B. Sellers1, Stephanie B. Wheeler1, 1UNC Gillings School of Global Public Health, Chapel Hill, NC, 2UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC.

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Examining the role of perceived respect on racial disparities in cancer-related pain. Cleo A. Samuel1, Jennifer Schaal2, Olive Mbah1, Michelle L. Manning3, Donald L. Rosenstein4, Katherine E. Reeder-Hayes2, Jean B. Sellers1, Stephanie B. Wheeler1, 1UNC Gillings School of Global Public Health, Chapel Hill, NC, 2UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC.

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POSTER SESSION B

Elon, NC, 1University of North Carolina Greensboro, Greensboro, NC, 1North Carolina Central University, Durham, NC, 1University of North Carolina at Chapel Hill, Chapel Hill, NC, 1UNC Lineberger Comprehensive Cancer Center, Chapel Hill, NC, 1NC Area Health Education Centers Program, Chapel Hill, NC.

Background: Treatment-related side effects (e.g., pain, fatigue, nausea/vomiting) are commonly reported among cancer patients and impact patients’ health-related quality of life (HRQOL) and treatment adherence. While there is extensive literature documenting disparities in cancer treatment and outcomes, less is known about racial and educational differences in symptom burden and access to supportive care services during treatment. As part of a National Cancer Institute-funded research study, Cancer Health Accountability for Managing Pain and Symptoms (CHAMPS), we examined racial and educational variations in symptom reports and supportive care referrals among breast cancer patients undergoing chemotherapy at two cancer centers.

Methods: We surveyed 61 Black and White stages I-III breast cancer patients undergoing chemotherapy at one academic and one community-based cancer center during 2016-2018. Survey items assessed patient sociodemographics, HRQOL and symptoms, supportive care, and care satisfaction. Using a community-based participatory research approach, our community/academic/medical partnership administered patient surveys and evaluated symptom burden and supportive care referrals stratified by race (Black vs. White) and education (less than a college degree vs. college degree or higher).

Results: Overall, the most commonly reported HRQOL/symptom concerns included employment interference (44.3%), social life interference (39.3%), financial difficulties (34.4%), worry (29.5%), skin toxicities (26.2%), and pain (26.2%). Compared with White patients, Black patients were more likely to report moderate-to-severe anxiety (41.2% vs. 20.5%, p=0.05) and vomiting (17.6% vs. 2.3%, p=0.03). Patients with less than a college degree were more likely to report moderate-to-severe constipation than patients with a college degree or higher (20.0% vs. 0.0%, p=0.028). In terms of supportive care services, patients were most often referred to cancer support groups (83.9%), nutrition/dietary consultations (54.1%), and financial counseling (54.1%). Black patients were less likely to be referred to supportive services for cancer-specific communication with their families than their White counterparts (16.7% vs. 38.6%, p=0.04). No statistically significant educational differences in supportive care referrals were observed.

Conclusions: Breast cancer patients experience a range of HRQOL/symptom concerns and supportive care needs during treatment; however, racial and educational differences exist in these cancer care outcomes. Given longstanding disparities in cancer care outcomes, and the survival and HRQOL benefits of supportive care services, future research should examine barriers to equitable supportive care and opportunities for improvement.


Methods: Los Angeles Cancer Surveillance Data was queried for patients with rectal and rectosigmoid cancer (ICD-O-3 199187, 189, and 209) diagnosed between May 2004-August 2017. Only patients with clinical stage were included in this analysis. We assessed patterns of care for early-stage disease and survival in this population. Unadjusted Cox-proportional hazards regression models were used to assess associations between patient characteristics and survival and between race/ethnicity and survival by presenting stage. A nearest neighbor propensity score matching algorithm that accounted for presenting stage and age at diagnosis using a 1:2 matching ratio was used to select a balanced subset of parents for a Cox proportional hazards regression model to assess the association between neoadjuvant radiation and survival by race/ethnicity.

Results: A total of 2452 patients were included in this analysis. The median age of the population was 57.8, 22% of patients. Compared to non-Hispanic White (NHWs), there is weak evidence that Blacks and Hispanics had poorer survival, HR 1.26 (95% CI: 0.99, 1.61) and 1.14 (95% CI: 0.98, 1.33), respectively. The stage-specific survival was similar for stage I, II, and III, and stage IV patients had poorer survival. Use of neoadjuvant radiation (NAR) was assessed in this population. Nineteen percent of patients received NAR and 60% of those had presented at stage II and or III. Receipt of NAR was associated with better survival in the population: HR 0.59 (95% CI: [0.5, -0.7]) p-value < 0.001. The receipt of NAR was significantly higher in NHWs and lower in all other racial/ethnic groups. The interaction between race/ethnicity and benefit from NAR was assessed in a matched cohort by stage and age; Hispanics appeared to draw the most benefit...
from neoadjuvant radiation (NAR); however, many of the estimates are imprecise due to low sample size. Gender was also not available in the database and was not included in our final analysis.

**Conclusion:** We show that there is a disparity in the patterns of care by race and ethnicity. Despite the observation that Hispanics achieve the most benefit from NAR, they receive lower rates of radiation compared to NHWs.

**B028 Examining cost variation across palliative care delivery models for cancer patients: A systematic review.**

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**Background:** With the escalating number of elderly patients diagnosed with advanced cancer, palliative care will soon play an important role in the health care system. Currently, several delivery models of palliative care are available: hospital-based, outpatient-based, home-based, nursing home-based, and hospice-based. Weighing the differences in costs and health care outcomes of these delivery models helps to advise on the future direction of expanding palliative care services. Our objective was to evaluate these differences for patients diagnosed with advanced cancer. Since racial and ethnic disparities in palliative care access are well documented, we also examined the influence of race/ethnicity on the cost and health care outcomes of palliative care across the types of palliative care models.

**Methods:** The systematic review was carried out of literature from 2000 to 2018, searching PubMed, Medline, the Cochrane library, CINAHL, EconLit, the Social Science Citation Index, Embase, and Science Citation Index. Papers were included if they contained the following terms: palliat*, cancer, carcinoma, cost, reimbursement, and conducted in the United States.

**Results:** We found 748 articles, of which 23 met the inclusion criteria. Seventeen studies (74%) were hospital-based, 3 (13%) were outpatient-based, and 3 (13%) were home-based. There was high strength evidence for the positive effect of palliative care in saving of hospitalization costs ($1,312-$20,719), outpatient costs ($3,874-$4,172), and emergency department costs ($848,556/annual). Use of palliative care was also associated with improvement of the quality of life, extended survival, reduction in length of hospital stay, smaller number of inpatient admissions, emergency department visits, and physician office visits. No studies compared the costs and health care outcome differences across different palliative care delivery models. Fifteen studies (65%) have reported the race/ethnicity of patients, among which no differences in the costs and health care outcomes have been observed.

**Conclusion:** Although receiving palliative care after cancer diagnosis was associated with lower costs for cancer patients, remarkable differences exist in cost saving in hospital-based and outpatient-based models. The costs of the other palliative care delivery modes are still unknown. Most of the clinical studies have enrolled non-Hispanic Black patients and other minorities, and no racial/ethnic differences in costs have been reported. Additional clinical studies are needed to compare further both costs and health care outcomes considering racial and ethnic factors at patient level across these models in cancer care.

**B029 Chinese American Pain Experience (CAPE) project: A mixed-methods study to understand cancer-related pain management in Chinese American patients in New York City.**

Simona Kwon, Jazmine Wong, Andrew Rosenberg, Joan Kelly, Virginia Tong, Daniel Chong, Germaine Cuff, Qian Chen, Chau Trinh-Shevrin. NYU School of Medicine, New York, NY.

**Background:** Chinese Americans make up the largest subgroup of the Asian American population in the US and are the largest Asian subset in New York City, where the population of Chinese Americans is 547,886; 72% are foreign-born, 34% lack a high school diploma, 61% have limited English proficiency (LEP), and 21% are living in poverty. Cancer is the leading cause of death among Chinese New Yorkers who suffer a disproportionately high burden for specific cancers, including nasopharyngeal, liver, and stomach cancer. Despite this cancer burden, Chinese Americans are at high risk for poorly controlled and managed pain in clinic and hospital settings and under-represented in pain related research. The goal of the CAPE project is to understand the concepts of pain and pain experience and identify potential facilitators and barriers to pain treatment and satisfaction among limited-English-proficient Chinese American inpatients treated at a New York City-based hospital.

**Methods:** Kleinman’s Patient’s Explanatory Model of Illness and principles of social marketing served as guiding frameworks. In addition, a scoping review was conducted of electronic databases including PubMed, Google Scholar, and the gray literature on the pain management literature for Chinese American patients to further inform the interview
topic guide and survey instrument. Key search terms included combinations of “Asian American,” “Chinese,” “Chinese American,” “cancer,” “pain,” “pain management,” and “pain experience.” Chinese American patients who requested services in Chinese language (e.g., Cantonese, Mandarin) will participate in a one-time qualitative interview and survey data collection. A sample of 25 participants will be recruited or until data saturation is achieved. All data collection will be conducted in the patients’ preferred language. Analysis of the qualitative data will utilize the techniques of narrative analysis and constant comparison analytic approach.

Results: The scoping review identified significant gaps in the extant literature. Findings highlighted the lack of intervention or clinical trial studies to address pain and cancer-related pain management for Chinese American patients despite data confirming high rates of dissatisfaction with pain management in clinic and hospital settings. Qualitative data will be assessed to identify themes related to factors to inform the development of strategies and programs on optimal and cultural relevant pain management.

Conclusions: To improve quality of cancer care for Chinese American patients, study findings will inform the cultural adaption of hospital-based pain management programs and services and practice recommendations to facilitate culturally relevant pain treatment for this vulnerable patient population.

B030 Comparative analysis of cell viability of two triple-negative breast cancer cell lines using 2,3-dichloro-5,8-dimethoxy-1,4-naphthoquinone and 4 hydroxy-tamoxifen. Anastasia G.J. Robinson, Ridge Wells, Samantha J. Wilkinson, Robert L. Copeland, Howard University, Washington, DC, Bethune-Cookman, Daytona Beach, FL.

Triple-negative breast cancer (TNBC) is classified as a form of breast cancer in which cells do not express estrogen receptor α (ERα), progesterone receptor, and human epidermal growth factor receptor 2 (HER2). This type of cancer affects African American women disproportionately to Caucasian women. The absence of these receptors make treatment of TNBC difficult because hormonal therapy, i.e., estrogen antagonist, progesterone antagonist and anti-HER2, is ineffective. TNBC frequently presents with elevated growth factor receptor expression and/or signaling with a resultant increase in mitogen activated kinase (MAPK) signaling, thus causing repression of ERα expression in a reversible manner. Based on these observations, the hypothesis is that the attenuation of the MAPK pathway by direct inhibition of hyperactivated MAPK will result in re-expression and functionality of ERα using 2,3-dichloro-5,8-dimethoxy-1,4-naphthoquinone (Z285), making cells susceptible to conventional antiestrogen therapy. Experiments were performed using TNBC cell lines (MDA MB 231 and HCC1806) derived from Caucasian and African American women, respectively, in concentration- and time-dependent assays. Cells were treated with Z285 alone and in combination with 4 hydroxy tamoxifen (4OH-Tam) and showed an increase in cell death using cell viability assay. Results show a stark difference in the effect of the two drugs on the two cell lines when given alone. From 24-120 hours the Z285 had minimal effect on both MDA-MB 231 and HCC 1806 cell lines with IC-50 above the highest concentrations given; however, the 4-OH Tam caused significant cell death, particularly at 72 to 120 hours with IC50 values of 6 µM. The combination study of pretreating the cells with 2 µM and 5 µM Z285 followed by 4 OH-Tam showed a significant decrease in the cell viability in the HCC 1806 cells with IC50s of 7 µM at 24 hours where the MDA-MB 231 cells were more resistant at 24 hours. The 72-120 hours showed significant concentration- and time-dependent decreases in cell viability for both cell types. Particularly, the HCC 1806 were more sensitive to the effects of 4-OH Tam with IC50 at 1 µM compared to MDA-MB 231 IC50 of 5 µM at 120 hours at both 2 µM and 5 µM pretreatment. Taken together, these drugs may work synergistically to promote cell death, thus providing a new potential avenue for therapy. Therefore, patients suffering from TNBC could benefit from combinational treatment with Z285 or its analogs and conventional chemo/hormonal therapy.

B031 Mediating factors for perceived impact of prostate cancer survivors. Kimberly E. Davis, Antoine Richards, Reginald Gooden, 1 Clark Atlanta University, Atlanta, GA, 2 Prevention Research Centers Program, Atlanta, GA.

Purpose: An estimated 29,530 new cases of prostate cancer (PCa) are expected in 2018. It is estimated that 1 in 5 African-American men will be diagnosed with PCa in their lifetime. The overall 5-year relative survival rate for PCa among African Americans is 96%, compared to nearly 100% among whites. PCa patients are living longer and are confronted with increasingly complex therapeutic decisions. Frequently, patients are not fully prepared to appraise their PCa diagnosis and treatment consequences for perceived impact.

Design Methods: The Center for Cancer Research and Therapeutic Development (CCRTD) at Clark Atlanta University (CAU) registered over 468 survivors to the Prostate Cancer Registry (www.pcregistry.cau.edu), an online registry designed to capture the epidemiologic profile, clinical disease

Background: Financial hardship (FH) is common among cancer survivors and prevalence is often higher in non-white survivors. It is not known whether specific forms of FH are stronger predictors of financial distress than others, or if predictors of distress differ by race.

Methods: We utilized data from 500 (196 white, 304 African American) participants in the Detroit Research on Cancer Survivors pilot cohort. Adults ages 20-79 were eligible if they were diagnosed with a first primary breast, colorectal, lung, or prostate cancer since January 1, 2013; identified through the Metropolitan Detroit Cancer Surveillance System; and diagnosed/treated at the Karmanos Cancer Institute. Measures of financial hardship included decreased income, cancer-related debt, utilizing assets or borrowing money to pay for cancer care, refusing treatment or not seeing a doctor when needed due to cost, and skipping doses of prescribed medication to save money. Financial distress was measured using the validated Comprehensive Score for Financial Toxicity (COST), coded so that lower scores indicate higher distress (lower financial quality of life). We used backward selection models including demographic and socioeconomic factors to identify predictors of financial distress overall and separately for white and African American survivors.

Results: COST scores were 27.3 on average (SD: 10.9; 95% CI: 26.2, 28.3; range: 0-44), and were lower (more financial distress) in African American (24.5, 95% CI: 23.1, 25.8) than white survivors (28.1, 95% CI: 27.1, 29.1; p<0.001). Younger age, being unmarried, lower income, not being employed, and having Medicaid coverage were all associated with higher financial distress. Debt, decreased income, utilizing assets, skipping doses of prescribed medication, and needing a doctor but not going were each independently associated with more financial distress overall (all p<0.013). Debt was more strongly associated with distress among both white and African American survivors in race-specific models (p=0.005) and decreased income was associated with distress in white (p=0.013) and marginally associated (p=0.06) in African American survivors. Not going to the doctor when needed and utilizing assets (both p=0.001) predicted distress among white survivors, while refusing treatment due to cost (p=0.007) and skipping doses of prescribed medication to save money (p=0.007) predicted distress in African American survivors. Not going to a doctor when needed was more common in African American survivors, but not more strongly associated with distress in white survivors (p-interaction=0.024). A similar pattern was observed for utilizing assets but was only marginally significant (p=0.08).

Conclusions: Several forms of financial hardship were strongly associated with financial distress after cancer, but their association with distress differed by race. Some forms of financial hardship that are more common in African American survivors are more strongly associated with financial distress among white survivors.

B033 Breast cancer and other cause of death among adult women in rural Ethiopia: Presentation and duration of suffering using the direct sisterhood method. Wondimu Ayele Manamo1, Adamu Addissie Nuramo2, Wienke Andreas3, Fikre Enqueselassi Gash2, Eva J. Kantelhardt4. 1School of Public Health Addis Ababa University, Addis Ababa, Ethiopia; Institute of Medical Epidemiology, Biostatistics and Informatics Martin-Luther University, Halle (Saale), Germany, 2School of Public Health Addis Ababa University, Addis Ababa, Yeka, Ethiopia, 3Institute of Medical Epidemiology, Biostatistics and Informatics Martin-Luther University, Halle (Saale), Halle (Saale), Germany.
**Background:** In Ethiopia, breast cancer is the leading cause of cancer morbidity and mortality among women. Studies on breast cancer death are very scarce in Ethiopia. Moreover, little is known about breast cancer compared to other causes of death in Ethiopia, particularly in a rural setting, where there is no registration about the cause of death. Hence, the present study assessed breast cancer and other deaths with a special focus on the duration of suffering in a rural setting using the direct sisterhood method.

**Methods:** We determined the pattern of causes of death among randomly selected adult women in rural Ethiopia. A modified standard verbal autopsy (VA) questionnaire was filled and reviewed by two independent local physicians to assign causes of death; contradicting diagnoses were reviewed by a third physician. Descriptive statistics with relative frequencies and their 95% confidence intervals (CI) on the basis of the binomial distribution were used. Duration of suffering was taken from the standard verbal autopsy questionnaire.

**Result:** The median age of breast cancer death was 37 years, younger than the other cause of death. Breast cancer deaths were the second leading neoplasm responsible for 2.7% of all deaths (95% CI 1.5%-3.7%) and among top five noncommunicable diseases death. The median duration of illness for breast cancer deaths, which accounted for only 2.7% of the total cause of death, was above one year. Reproductive neoplasms, breast cancer, and epilepsy were those three causes of deaths with the largest proportion of women (more than 70%) suffering for more than six months compared to all other causes of death.

**Conclusion and Recommendation:** Breast cancer deaths occurred in younger age groups than other causes of death. This age is considered a young age group as compared to the country overall lifespan. The very long duration of illness for a considerable number of women has practical implications to introduce palliative care for a cancer patient. Substantial efforts need to be made to improve the prevention and control of breast cancer in order to reduce premature death of women.

**B034 Assessment of the prevalence and diagnosis of breast abnormalities among adult women in rural Ethiopia.**
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**Background:** Breast cancer (BC) is the most frequently diagnosed cancer and the leading cause of cancer death among females in Ethiopia. BC screening programs are lacking and above 80% breast cancer are diagnosed at advanced stages. Ultrasound-guided fine needle aspiration (FNA) is a simple and effective approach to evaluate breast mass in resource limited countries. The aim of this study was to assess the prevalence and diagnosis of breast abnormalities among adult women in rural Ethiopia.

**Methods:** Community based cross-sectional study was conducted among 7,573 adult women, age 15 years and older from March to April 2018 in Butajira Health and Demographic Surveillance Site, South Central Ethiopia. A two stage-stratified cluster sampling method was used to select the population-based study participants. Data were collected using a pretested interviewer-administered questionnaire to inquire about breast abnormalities from eligible respondents. Further clinical assessment with history and physical examination of those reporting breast abnormalities (e.g., lump or breast pain) were assessed by experienced surgeons. If indicated, surgeons ordered the ultrasound-guided FNA performed by pathologist and cytologic analysis was done by an experienced pathologist. Women with BC were referred to Butajira Hospital for oncologic care. Data were analyzed using EPI- Info and SPSS V20. Descriptive statistics were used to summarize clinical and pathology result.

**Result:** Out of 7,573 women surveyed, 258 (3.4%) women with breast abnormality were identified and referred to the Butajira Health Center. Only two women had visited a health facility to seek medical care before the survey was administered. Of those who reported breast abnormalities, 246 (95.3%) women had physical examinations. Forty-nine women had findings requiring ultrasound-guided FNAs. The median age of women was 30 years old with interquartile range of 25-40 years. Of the FNAs performed, 13 (26.5%) were benign lesions, 8 (16.3%) were fibroadenomas, 9 (18.4%) were reactive lymphoid hyperplasia, and 14 (28.6%) were other noncarcinoma cases. One (2%) was suspicious of BC and required excisional biopsy for diagnosis, and 4 (8.2%) ascertained non-special type carcinoma of the breast. Of BC patients, 2 patients presented with ulcerated and fungating lesion with tumor size greater than 5cm, one patient presented with ulcerating tumor measuring 3 cm, and two patients presented with a breast mass measuring 4 cm.
Conclusions: A few women with self-reported breast abnormalities in a rural region of Ethiopia sought medical attention for their problem prior to our survey. We found the prevalence of women with breast abnormalities in our population-based study was similar to reports from Liberia and Rwanda. Raising awareness of health care services available to women in rural regions of Ethiopia could increase earlier detection of breast cancer and improve quality of life.


Background: Lung cancer continues to cause more deaths than other cancers, with mortality among African Americans higher than among whites. Despite this, research on the psychosocial aspects of lung cancer patients' quality of life lags behind that of other cancer types, such as breast or prostate. The Detroit Research on Cancer Survivors (ROCS) studies follow the experience of cancer survivors, including lung cancer patients, in Detroit, MI. The Detroit ROCS studies include the pilot study of whites and African Americans, and the ongoing study of African Americans only.

Methods: Participants in the Detroit ROCS studies complete the Functional Assessment in Cancer Therapy (FACT) instrument to evaluate their health-related quality of life (QOL). FACT scores are derived from subscores evaluating physical, emotional, social, and functional well-being. Higher scores indicate better QOL. In addition, participants are asked to provide basic demographic information, health history, family history of cancer, and exposure history. Data related to their cancer diagnosis and census tract are gathered via the Metropolitan Detroit Cancer Surveillance System. We examined preliminary data collected from 227 (131 African American and 96 white) lung cancer survivors to assess racial differences in self-reported aspects of well-being. We compared descriptive characteristics using Pearson's Chi-square and Wilcoxon rank sum tests. We modeled adjusted mean well-being subscores using a general linear model.

Results: The mean age of African American participants was 61.9 (SD=7.6) and the mean age of whites was 62.9 (SD=8.9). Among African American participants, 40.5% were male; of white participants, 45.8% were male. The distributions of age and sex did not differ significantly between groups. African American participants were less likely to have any college education (p=0.0480), and more likely to live in a census tract with at least 20% poverty (p<0.0001). In a general linear model adjusted for age, sex, cancer stage, and time from diagnosis to interview, race did not predict differences in mean physical and functional well-being subscores. Race significantly predicted differences in adjusted mean emotional and social well-being scores (p=0.0379 and p=0.0466, respectively). The estimated adjusted mean emotional well-being subscore was higher among African Americans than among whites, while the estimated adjusted mean social well-being score was higher among whites.

Conclusions: While functional and physical well-being outcomes are similar for African American and white patients after a lung cancer diagnosis, emotional and social well-being outcomes diverge by race. These measures reflect disparities in QOL among lung cancer patients, whose QOL is minimally studied compared to survivors of cancers with lower mortality rates. Future analyses will identify factors influencing this disparity in emotional and social well-being, and describe additional determinants contributing to the QOL of lung cancer survivors.

B036 Self-perceived health status, poor physical and mental health days among cancer survivors with different socioeconomic status. Sarah N. O’Connor, L. Joseph Su, Fay W. Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR, Winthrop P. Rockefeller Cancer Institute, University of Arkansas for Medical Sciences, Little Rock, AR.

Background: Health-related quality of life (HRQOL) is multidimensional and is composed of, at a minimum, self-perceived health status, physical functioning and psychological well-being. HRQOL measures reflect the extent of disability and dysfunction associated with a chronic disease such as cancer. Self-perceived health status is a good proxy for disease burden among cancer patients.

Purpose: This study used a nationally representative population survey to examine socioeconomic status disparities in HRQOL among survivors of thyroid, colon, lung, cervical, breast, prostate or ovarian cancer.

Methods: Data from the 2009 Behavioral Risk Factor Surveillance System (BRFSS) survey conducted by the CDC were used to examine factors associated with HRQOL among participants reported ever having been diagnosed with cancer. Typically, the cancer survivorship module is an optional component of the survey. However, the 2009 survey considered the cancer survivorship questions to be a core or
POSTER SESSION B

required component of the survey. The BRFSS is a cross-sectional survey that assessed overall HRQOL, self-perceived health status, number of bad physical health and bad mental health days per month. Least square regression and logistic regression models, adjusting for confounding variables (e.g., age, gender, race/ethnicity, education level, and number of comorbidities), were used for ordinal and dichotomous (5 (bad) vs 1-4 (excellent, very good, good, fair)) scale of HRQOL, respectively.

Results: Among 432,607 surveyed, 59,173 reported ever been diagnosed with cancer. The seven most reported cancers were the focus of this study. Mean score for self-perceived health status (5-point scale) among survivors of thyroid, colon, lung, cervical, breast, prostate, and ovary was 2.83 (1.10), 3.15 (1.12), 3.68 (1.12), 2.98 (1.17), 2.93 (1.09), 2.94 (1.10), and 3.16 (1.18), respectively. After adjusting for confounders, a positive dose-response effect was observed between income level and all three HRQOL measures across all seven cancer sites. Income was consistently and inversely associated with a higher chance for reporting poorer HRQOL [OR: 0.64, 95% CI: 0.57-0.71], [OR: 0.63, 95% CI: 0.48-0.82], [OR: 0.67, 95% CI: 0.56-0.80], [OR: 0.69, 95% CI: 0.56-0.86], [OR: 0.55, 95% CI: 0.49-0.62], [OR: 0.55, 95% CI: 0.44-0.69], (OR: 0.75, 95% CI: 0.62-0.91) among those with breast, thyroid, colon, lung, cervical, prostate, breast, and ovarian cancer, respectively. Race or ethnicity was not associated with in HRQOL among cancer survivors in the adjusted models.

Conclusion: This study found income, but not race or ethnicity, is associated with HRQOL among cancer survivors, after adjusting for confounders in this nationally representative survey population. Household income appears to be a strong predictor of HRQOL among cancer survivors. Despite potential survival bias in this cross-sectional survey, it is possible that financial resources may lessen the overall burden of cancer survivors.

B037 The role of HIV status in health-related quality of life in gay and bisexual prostate cancer survivors: Findings from the Restore study. Elizabeth J. Polter1, Christopher W. Wheldon2, Nidhi Kohli3, B. R. S. Rosser1. 1University of Minnesota, Minneapolis, MN, 2National Cancer Institutes, Bethesda, MD.

Objective: Prostate cancer is the most common invasive cancer in gay and bisexual men. Despite the unique sexual and urinary concerns of this group, nearly all studies of prostate cancer rehabilitation post-treatment have focused on heterosexual men. Older gay and bisexual men, the generation most likely to experience prostate cancer, also have high prevalence of human immunodeficiency virus (HIV), which is associated with lower quality of life. Research has indicated that people with HIV may experience health disparities in cancer treatment, but to our knowledge, this is the first quantitative study of the association between HIV status and health-related quality of life (HRQOL) in gay and bisexual men with prostate cancer.

Methods: Data from the Restore study, a cross-sectional online survey of gay and bisexual men treated for prostate cancer and residing in the United States or Canada, were used to examine this association. The Expanded Prostate Cancer Index Composite (EPIC) was used to assess function and bother in four domains: urinary, sexual, bowel, and hormone. Overall physical and mental HRQOL was assessed utilizing the SF-12 Health Survey. Multivariate analysis of variance (MANOVA) was used to evaluate the association between HIV status and HRQOL scores. Models were adjusted for age, race, treatment (prostatectomy, radiation, or advanced treatment), relationship status (partnered/married versus single/dating/widowed/divorced), preferred role in sex, and number of comorbidities.

Results: Of 193 participants, 24 (12.4%) reported an HIV diagnosis, including 3 diagnosed after their prostate cancer treatment. The cohort was 89 percent white, with mean age 63.4 years. After adjustment for demographic and treatment characteristics, HIV-positive status was associated with lower scores on the EPIC urinary (RD: -15.8, 95% CI: -19.5 to -2.2) and sexual (RD: -10.3, 95% CI: -20.2 to -0.4) domains. Although there were no statistically significant associations found in the other domains, HIV-positive participants reported lower outcomes in all domains except the SF-12 mental domain (RD: 0.3, 95% CI: 0.5 to 5.6).

Conclusion: Our findings, though imprecise, provide evidence that HIV status may be associated with poorer HRQOL in gay and bisexual prostate cancer survivors.

B038 The effects of coaching and action planning on patient activation and quality of life in vulnerable cancer patients. Shelby S. Roberts1, Dawn Wiatrek2, Nicole Erb2, Katherine Sharpe2, SSR Advisors, Atlanta, GA, 2American Cancer Society, Austin, TX.

Introduction: The American Cancer Society Patient Navigator Program assists high-need, vulnerable patients in overcoming nonmedical barriers to cancer care with the goal of improving treatment adherence, completion, and patient quality of life.
**Methods:** In the last year, the American Cancer Society has been implementing a pilot program aimed at increasing the activation and quality of life of patients at 6 navigation program sites nationwide. The sites were selected based on patient need, geographic location, and cancer center type. Navigators completed a 7-part training series focusing on coaching and communication skills and slight modifications were made to the current lay navigation protocol, including addition of the Insignia Health Patient Activation Measure® (PAM®) Survey, a patient satisfaction survey, formal action planning with the patient, and follow-up on the action plan over a period of at least 3 visits. Results are measured by ability of the patient to achieve the set actions in the plan, ability of the patient to overcome or successfully manage nonmedical barriers to care, and change in the patient’s activation score. The following results are from the 3 sites in phase 2 of implementation.

**Results:** After 6 months of implementation, 419 patients have been enrolled in phase 2 of the program. Patients represent 6 different races with African American/Black (40%) and Hispanic/Latino (36%) being most common. Medicaid is the most common form of insurance (42%) and 79% of patients are either insured by Medicaid, Medicare + Medicaid (10%), or uninsured (27%). Patient diagnoses span 32 different cancer types. Early results show positive uptake of the program among navigators and patients with all navigators reporting utilization of new coaching-based training skills, and 95% of patients reporting creating an action plan with their navigator. After their first meeting with the navigator, patients rated their confidence the action plan would work at an average of 8.7/10. Initial patient reactions also indicate a high level of satisfaction with a 4.4/5 average score when asked how much they agreed with the statement: “The navigator made me feel better about my ability to manage my diagnosis and treatment.” 182 patients have completed at least one follow-up visit with the navigator in the first 6 months. These patients set 634 actions with navigators and progress has been made or achieved on 76% of these actions by the first formal follow-up visit. 29 patients have completed the full program with 78% of barriers overcome or successfully managed. 100% of patients completing the program also completed treatment, and the average PAM® score increased by +4.15 points. The project is still ongoing. Final results of the pilot are expected in late 2019.

**Conclusion:** Navigation with coaching and action planning tailored to the patient’s activation level is a successful method to assist vulnerable populations with overcoming nonmedical barriers to cancer care and increasing patient activation.

**B039 The impact of social and built environments on quality of life among cancer survivors.** Salma Shariff-Marco*, Alison J. Canchola1, Theresa H.M. Keegan1, Alyssa Nickell4, Ingrid Oakley-Girvan1, Ann S. Hamilton3, Scarlett L. Gomez2. 1University of California, San Francisco, San Francisco, CA, 2Cancer Prevention Institute of California, Fremont, CA, 3University of California, Davis, Sacramento, CA, 4Shanti, San Francisco, CA, 5University of Southern California, Los Angeles, CA.

**Background:** With over 16 million cancer survivors in the U.S., understanding factors that improve health-related quality of life (HRQOL) after cancer diagnosis is critical. Previous studies have identified demographic, clinical and behavioral factors that shape HRQOL among cancer patients and have observed poorer HRQOL among racial/ethnic minorities, individuals of low socioeconomic status (SES), or those with comorbidities. Few studies have considered the influence of neighborhood factors (census block group SES (nSES), census tract poverty, county segregation) on HRQOL. Thus, we proposed to assess racial/ethnic disparities in HRQOL and evaluate the extent to which these disparities are explained by neighborhood factors.

**Methods:** We pooled data on 2,500 diverse (i.e., multiethnic, varied SES, multiple cancer sites) cancer survivors from three population-based cancer survivorship studies in California and linked them to the California Neighborhoods Data System. Separately for the two continuous HRQOL outcomes (physical and mental composite scores, PCS and MCS, from SF36), using a 3-level model with participants nested within block groups, which are nested within study/region, we calculated least squares means and parameter estimates for each racial/ethnic group, with and without adjustment for covariates. Predisposing factors included age, gender, education, employment, income, health insurance status, marital status and significant clinical and tumor characteristics. Health behaviors included physical activity and body mass index.

**Results:** Among 2,477 cancer survivors, we observed racial/ethnic disparities in HRQOL, with African Americans reporting the lowest (worst) PCS (42.7), Latinos reporting the lowest MCS (48.4) and Asians/Pacific Islanders reporting the highest scores (PCS: 45.4; MCS: 51.1) in unadjusted models. In models adjusted for age and cancer recurrence (and stage for PCS), both PCS and MCS increased with higher nSES. Assessed separately, the following neighborhood factors were associated with decreased MCS after adjusting for nSES: higher population density; street connectivity (gamma), % renting, % non-single-family units, more parks, and restaurant index (more unhealthy). No other neighborhood factor was associated with PCS after adjusting for nSES. Compared to
non-Hispanic (NH) Whites. Similar results were observed for nSES, a finding that is consistent with previous research. For PCS, the association was attenuated after adjusting for nSES. However, for MCS, the association was found to be fully attenuated after adjusting for nSES. This finding suggests that factors other than nSES may be influencing the relationship between racial/ethnic discrimination and QoL.

**Conclusions:** Our findings highlight the importance of considering the impact of racial/ethnic discrimination on cancer survivorship outcomes. Further research is needed to understand the mechanisms through which these social factors impact survivorship outcomes.}

**B040 The impact of racial/ethnic discrimination and residential segregation on cancer survivorship**


**Background:** Racial/ethnic disparities in access to care, receipt of treatment, and cancer outcomes are well documented. Racial/ethnic discrimination has been proposed as an important explanatory factor, with interpersonal and institutional discrimination shown to be associated with adverse outcomes. However, the impact of racial/ethnic discrimination on cancer survivorship outcomes is unclear. Thus, we proposed to: (1) assess self-reported experiences of racial/ethnic discrimination in the Pathways Study and (2) examine associations with self-reported racial/ethnic discrimination and quality of life (QoL), and whether these associations are moderated by residential segregation.

**Methods:** The Pathways Study is a prospective cohort of 4,505 women with incident breast cancer in the Kaiser Permanente Northern California (KPNC) integrated health care system, recruited between 2006 and 2013. Data collection included interviewer- and self-administered questionnaires with items on demographics, reproductive and family histories, lifestyle and other factors (e.g., discrimination, QoL), and updated vital status and clinical data from KPNC electronic data sources. Discrimination experiences were measured across a range of contexts—at school, getting a job, at work, getting housing, getting medical care, getting credit, from police/in court. Patient addresses were geocoded and neighborhood data including residential segregation were appended to get a multilevel dataset. The associations between discrimination, segregation and QoL were examined using linear and logistic regression models.

**Results:** Overall, 31% of the sample reported experiencing racial/ethnic discrimination; this varied across racial/ethnic groups from 82% of NH Blacks to 19% of NH Whites reporting discrimination. While a similar proportion of U.S.-born and foreign-born Hispanics reported discrimination (41% and 40%, respectively), there were much greater differences by nativity among Asian Americans, with 79% of U.S.-born and 49% of foreign-born reporting discrimination. Experiencing racial/ethnic discrimination was associated with lower QoL. This association persisted in fully adjusted models, and when examining the frequency of discrimination experiences. Further, in stratified analyses by residential segregation, an inverse association was observed among NH Blacks residing in low/moderately segregated neighborhoods; no associations were found among those in high segregation. An inverse association was also observed among foreign-born Hispanics in low enclave neighborhoods; no association was observed among those in high enclaves.

**Conclusions:** These findings of an association between racial/ethnic discrimination and QoL are consistent with the literature on the adverse health effects of self-reported racial/ethnic discrimination. Further research is needed to understand potential pathways through which these social factors impact survivorship outcomes.

**B041 [Advocate Abstract] Identifying the roles of patient advocates and potential barriers to participation**

*Tambre Leighn, Independent Advocate, Portland, OR.*

The demand for the involvement of patient advocates in grant reviews, clinical study design, policy, and more continues to grow at a rapid rate. It is important to generate awareness of both the value of the patient advocate voice and potential barriers that could impact inclusive and diverse patient experiences. Awareness of barriers is a critical step to identifying potential solutions so we can expand the patient advocate population in a way that is representative of all cancer survivors.
B042 Loss of nuclear alpha catenin contributes to chemoresistance and aggressive disease in African American triple-negative breast cancer patients. Rania Bassiouni1, Victoria Dirgo2, Krystine Mansfield2, Ritin Sharma3, Lee D. Gibbs1, Patrick Pirrotte1, Nasreen Vohra1, Kevin Gardner4, John D. Carpten4. 1University of Southern California, Los Angeles, CA, 2Translational Genomics Research Institute, Phoenix, AZ, 3East Carolina University, Greenville, NC, 4Columbia University Medical Center, New York, NY.

Triple-negative breast cancer (TNBC) is a particularly aggressive, difficult-to-treat subtype of the disease. A well-documented health disparity exists within TNBC: African American (AA) women are more likely to be diagnosed with and die from the disease. Our group reported homozygous deletions in the CTNNA1 gene, which encodes the protein alpha catenin, in AA TNBC. We have undertaken a basic and translational research study to understand the mechanistic role and clinical impact of alpha catenin loss in TNBC, particularly in AA patients. To validate our findings of alpha catenin loss in TNBC, we analyzed over 600 breast cancer patient samples by immunohistochemistry. We found that alpha catenin protein loss was inversely correlated with survival in TNBC. Moreover, loss was observed more frequently in tumors from AA patients. Interestingly, both nuclear and cytosolic alpha catenin adhered to this pattern. While its cytosolic role has been well studied, little is known about nuclear alpha catenin and its role in disease. To understand the nuclear function of alpha catenin, we developed several isogenic cell line pairs. Using CRISPR/Cas9-mediated gene editing, we generated CTNNA1 knockout (KO) BT-549 and MDA-MB-468 cell lines. We also reintroduced CTNNA1 into MDA-MB-468 cells—a line derived from an AA woman with an endogenous deletion in CTNNA1. Using these models, we found that alpha catenin KO cells demonstrated greater capacity for anchorage-independent growth. Loss of alpha catenin also resulted in decreased sensitivity to DNA-damaging chemotherapies including platinum salts (cisplatin, carboplatin), topoisomerase poisons (doxorubicin, etoposide), and the PARP inhibitor olaparib. This is clinically relevant as doxorubicin, carboplatin, and olaparib are approved for treatment of TNBC patients.

To identify binding partners, we performed co-immunoprecipitation of alpha catenin from nuclear lysates, followed by mass spectrometry. We found that nuclear alpha catenin can interact directly with ATR, a kinase critical to the DNA damage response (DDR). ATR mediates both the repair of DNA lesions and the G2/M cell cycle checkpoint, which ensures that only cells with undamaged DNA may enter mitosis. We further found that alpha catenin KO cells were more sensitive to inhibitors of ATR, as well as to inhibitors of the G2/M checkpoint proteins Chk1 and Wee1. Tellingly, the KO cells were less sensitive to inhibitors of ATM or DNA-PK, two regulators of alternate DDR pathways. This suggests that nuclear alpha catenin likely plays a specific role in ATR-directed processes. In our study, we have identified nuclear alpha catenin as a tumor suppressor that affects TNBC’s susceptibility to chemotherapy by playing a role in the DDR and the G2/M checkpoint. Our data suggest that loss of alpha catenin is more common in AA patients, and is associated with poor prognosis. Therefore, CTNNA1 status may be important in determining appropriate therapeutic strategies in a subset of patients.

B043 Racial and sex variability in pediatric ALL survival is explained by immunogenic subtypes. Larry Holmes, Jr1, Kijai Herring2, Kirk Dabney1, Phatsimo Masiire3. 1Nemours Children’s Health System, Wilmington, DE, 2Nemours/University of Delaware, Newark, DE, 3Nemours/Thomas Jefferson University, Philadelphia, PA.

Purpose: Acute lymphocytic leukemia (ALL) is the most commonly diagnosed childhood malignancy. ALL survival has dramatically increased with an estimated 80% relative survival. Despite these advances, black children continue to present with survival disadvantages. We aimed to assess survival of ALL by race and sex, and to determine whether or not the survival disadvantage of black children was due in part to the immunogenic subtypes.

Methods: A retrospective cohort design was used to assess the Surveillance and Epidemiology End Result Data (SEER), 1973-2015 of children (0-19 years) with ALL. The variables assessed were ALL immunogenic types and social determinants of health as exposure function of survival. To assess the temporal trends, we used a generalized linear model. To assess survival, Kaplan Meir, Nelsen Aalen, log-rank test were utilized to test the equality of survival by race and sex. The Cox proportional hazard model was used to assess predictors of survival, while the global test of Shoenefeld was used to examine the cox proportional model assumption.

Results: There were 18,720 cases of ALL; 11,669 were B-ALL, 1,614 were T-ALL and 5,437 were unspecified. There was an increased temporal trend in ALL incidence percent change (52.9%), which was higher among blacks (106%) relative to whites (62.7%) and among female (75%) relative to male (38.5%). The odds of dying for whites was 0.24, 95% Confidence Interval (CI)=0.23-0.25, while the odds of dying for blacks was 0.35, 95%CI=0.31-0.40. Compared to whites, blacks with ALL were 42.1% more likely to die, hazard ratio
POSTER SESSION B


Prostate cancer (PCa) is the second most common cause of cancer-specific deaths in the United States, accounting for approximately 13% of cancer-related deaths. PCa is also the leading cancer in terms of incidence and mortality in men from Africa and the Caribbean. PCa is a multifactorial, complex disease, with the exact mechanisms for its development and progression unclear. Understanding the molecular mechanisms underlying the development and progression of PCa is necessary. This will aid in the discovery of novel and efficacious biomarkers with applications in early PCa detection and molecular therapeutic targeting. The non-protein coding gene locus Plasmacytoma Variant Translocation (PVT1) is located at 8q24 and is overexpressed in PCa. PVT1 has at least 12 exons that make separate transcripts having different functions. We have recently shown that PVT1 exons 4A and 4B are significantly overexpressed in prostate cancer tissues of Black males and are potential clinical biomarkers for prostate cancer in Black males. In this study, the role of PVT1 exons 4A and 4B in the migration and proliferation of prostate epithelial cells was examined. PVT1 exons 4A and 4B gene fragments were cloned into plasmid expression vectors and transfected into the RWPE1 prostate epithelial cell line to examine their effect on prostate epithelial cell proliferation and migration. We observed that overexpression of either PVT1 exon 4A, or PVT1 exon 4B significantly increased prostate epithelial cell migration and proliferation. This indicates that PVT1 exons 4A and 4B are functional biomarkers for prostate cancer. Better understanding of the roles of PVT1 exons 4A and 4B in PCa may lead to the future possibility of exploiting them for diagnosis, therapy, and other clinical applications in PCa.

B045 Exosomal microRNAs are associated with prostate cancer aggressiveness in African American patients. Hamdy E.A. Ali1, Rofaida Gaballa2, Andrew S. Sholl1, Mohamed Gaballa3, Juan J. Bustamante1, Preeti Zanwar1, Hamed I. Ali1, Zakaria Y. Abd Elmageed1. 1Department of Pharmaceutical Sciences, Rangel College of Pharmacy, Texas A&M Health Sciences Center, College Station, TX, 2Department of Pathology, Tulane University School of Medicine, New Orleans, LA, 3Department of Epidemiology & Biostatistics, School of Public Health, Texas A&M University, College Station, TX.

Background: The morbidity and mortality rates of prostate cancer (PCa) in African American (AA) are 2-3 times higher than European American (EuA) men. The molecular mechanisms underlying the aggressiveness of PCa have not fully identified. Thus, our aim was to evaluate the diagnostic/prognostic utility of exosomal microRNAs (miRs) to classify PCa patients according to their race and aggressive phenotype in AA patients. Their functional role in tumor aggressiveness was also determined.

Methods: Exosomes were isolated from the conditioned media of AA and EuA PCa cell lines. The expression of miRs was validated in exosomes, free-circulating plasma, and FFPE tissue specimens of forty AA and EuA patients using quantitative real-time PCR analysis. The sensitivity and specificity of exosomal miRs to classify prostate cancer patients according to their race and aggressiveness were assessed using receiver operating characteristic (ROC) curve analysis. To study the functional significance of exosomal miRs, cell proliferation, clonogenic, cell cycle and migration assays were performed in PCa cells transfected with miR-3128.
**Results:** Differential expression of exosomal miR-3613-3p, miR-3218, miR-3679, and miR-3680 was demonstrated in the plasma of AA versus EuA of PCa patients. While exosomal miR-3613 and miR-3679 (p<0.05) were upregulated, free-circulating miRs downregulated (p<0.05) in the plasma of AA versus EuA patients. The accuracy of miR-3679 to discriminate AA from EuA was improved when combined with the other three miRs (AUC jumped from 0.717 to 0.897). Intriguingly, miR-3128 showed a dual role in AA versus EuA cells. Overexpression of miR-3128 increased the cell growth in AA cells while it did the opposite in EuA cells. These data were recapitulated by migration, cell cycle and clonogenic assays.

**Conclusion:** Our findings underline the role of exosomal miRs in health disparity of PCa. The differential expression of miRs in AA men demonstrates their reliability as biomarkers and their potential role in promoting tumor aggressiveness in AA men.

**B046 SAHA and EGCG reduce breast cancer migration, possibly through modulation of cIAP2. Kayla A. Lewis, Trygve O. Tollefsbol. University of Alabama at Birmingham, Birmingham, AL.**

Pathways of proliferation, apoptosis, and migration are interconnected. This crosstalk has implications in embryonic development and differentiation, as well as cancer. cIAP2 is an inhibitor of apoptosis that has the ability to indirectly activate genes involved in the epithelial-to-mesenchymal transition (EMT) through controlling ERK/MAPK, TGF-beta, and NF-kappa beta pathways. In this study we used two epigenome-modifying compounds: SAHA, which is a histone deacetylase (HDAC) inhibitor, and EGCG, which is a DNA methyltransferase (DNMT) inhibiting green tea polyphenol. We found that SAHA and EGCG were capable of reducing the migration of four breast cancer cell lines across a fibronectin (FN) matrix. Since cIAP2 can upregulate the expression of FN through TGF-beta, we also investigated the expression of cIAP2 in breast cancer cells with the treatment of SAHA and EGCG and found reduced levels of cIAP2. We conducted apoptosis assays to determine if the decrease in cIAP2 resulted in an increase in breast cancer cell apoptosis. Finally, we evaluated the effects of SAHA and EGCG on mammosphere formation. Mammospheres result when EMT is induced in immortalized or cancerous breast cells. We found that mammosphere formation decreased with the administration of SAHA and EGCG. These findings demonstrate the ability of SAHA and EGCG to reduce breast cancer cell migration while increasing apoptosis through interconnected pathways. Future studies will explore the specific epigenetic modifications associated with the decrease in cIAP2 expression.

**B047 Advanced glycation end products promote prostate tumor growth and are a potential biologic consequence of lifestyle factors contributing to cancer disparity. Pamela Woods, Bradley A. Krisanits, Dion Foster, Lourdes M. Nogueira, Laura Spruill, Marvela E. Ford, Michael B. Lilly, Victoria J. Findlay, David P. Turner. MUSC, Charleston, SC.**

Advanced glycation end-products (AGEs), are reactive metabolites produced endogenously as a consequence of glucose uptake during glycolysis. AGEs accumulate in tissues and organs as we grow older to promote multiple chronic disease phenotypes. AGE pathogenic effects are mediated through modification of protein function, genetic fidelity, stress responses and cellular signaling pathways. Critically, cancer disparity factors such as a sedentary lifestyle, obesity and an unhealthy diet are external influences that also contribute to the AGE accumulation pool in the body. This research group examined circulating and tumor AGE levels in clinical specimens of prostate cancer and identified a race specific, tumor-dependent pattern of accumulation. AGE levels were highest in aggressive tumors, especially those from men with African ancestry. Increased AGE levels correlated with an upregulation in the receptor for advanced glycation end products (RAGE) and activated NFkB. In a syngeneic subcutaneous prostate cancer mouse model, chronic consumption of AGE resulted in a 3-fold increase in tumor growth. Strikingly, dietary-AGE mediated increases in tumor growth were accompanied by a cytoplasmic accumulation of AR, elevation in MYC, RAGE, and AGE as well as increased cell proliferation. Cytoplasmic accumulation of AR is elevated in CRPC tissue and is an independent predictor of biochemical recurrence. Our data show that treatment of prostate cancer cells with AGES induces a neuroendocrine differentiated phenotype by promoting a more mesenchymal morphology and increasing the expression of associated marker genes including ENO2, MYC, SYP and the prostate cancer stem cell marker CD44 as well as the downregulation of AR. The aberrant activation and recruitment of immune cells is a major pathogenic consequence of AGE accumulation, and a series of studies have highlighted the tumor-associated immune response as a critical pathway contributing to cancer disparity. Using patient-derived primary tumor cells, the investigators found that AGES released into the extracellular matrix may recapitulate the tumor-associated immune response observed in ancestry-specific prostate tumor tissues. Further
preliminary studies indicate that AGE treatment of prostate cancer cells can alter how cancer cells metabolize glucose to promote an aggressive phenotype. The investigators’ studies support the concept that AGE metabolites represent a biologic consequence of the socioeconomic and environmental factors that promote cancer health disparity. As our understanding of tumor biology advances, it is becoming increasingly clear that these inter-related lifestyle factors have distinct molecular consequences on the biologic makeup of tumors, altering cell signaling events and gene expression profiles to contribute to cancer disparity outcomes such as its earlier development or its progression to more aggressive disease.

**B048 Understanding the molecular basis of ER (+) breast cancer among racial groups: Metabolic and proteomic profiling.** Ashlie M. Suntaliz-Casiano, Zeynep Madak-Erdogan. University of Illinois, Urbana-Champaign, IL.

Breast cancer (BC) mortality for African-American (AA) women in the U.S. is 40% higher than that for non-Hispanic white (Caucasian) women, even though these racial groups have the same incidence rate. The racial disparities might be attributed to socioeconomic status differences; however, they might as well be due to genetic and other nongenetic factors. In our preliminary studies, we found that several angiogenic factors were differentially increased in serum from African-American women with breast cancer risk. We hypothesize that these factors are drivers of inherent biologic differences of increased angiogenesis and tumor aggressiveness and that the serum composition will affect the production of angiogenic factors from breast cancer cells. We expect that we will identify a common and different set of molecules that might impact angiogenic pathways in cell lines derived from African-American and Caucasian women through metabolic and proteomic profiling. These findings will enable us to understand the molecular mechanism behind breast cancer disparities, indicating that serum composition and particular metabolites or proteins specific to African American are affecting breast cancer, therefore giving us a better understanding in order to bridge the racial disparities gap between breast cancer patients and their outcomes.

**B049 Higher expression of SATB2 gene in hepatocellular carcinoma of African American patients determines aggressiveness phenotypes than those in Caucasian Americans.** S.K. Roy1, Y. Ma2, D.M. Danos3, S. Shankar4, L. Miele5, R.A. Scribner3, R.K. Srivastava1, 1Stanley S. Scott Cancer Center, Louisiana State University Health-New Orleans, School of Medicine, New Orleans, New Orleans, LA, 2Kansas City VA Medical Center, Kansas City, MO, 3Louisiana State University Health Sciences Center, New Orleans, LA, 4Louisiana State University Health, New Orleans, LA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR08) of the Conference Proceedings.

**B050 Identification of differentially expressed and spliced genes between breast, colon, lung, and prostate cancer from African American and white patients.** Muthana Al Abo, Daniel J. George, Jennifer A. Freedman, Steven R. Patierno. Duke Cancer Institute, Durham, NC.

Racial/ethnic disparity in cancer refers to the disproportionate incidence of and/or mortality from various cancers among population groups. In addition to differences in social, lifestyle and structural determinants of health, there is accumulating evidence for a biologic contribution to racial/ethnic disparity in cancer. To understand further the biologic mechanisms underlying racial/ethnic disparity in cancer, the analysis of differential aggregate gene expression and mutation among cancer patients of different population groups is important. Our recently published work reported differential RNA splicing as a critical mechanism underlying prostate cancer aggressiveness and drug response in African American (AA) patients. Here, we use R to analyze the Genomic Data Commons for differential aggregate gene expression (2-fold mean change, p < 0.001; Wilcoxon rank sum test) and TCGASpliceSeq to analyze TCGA for differential RNA splicing (20% median change, percent spliced in) between breast (BRCA, 183 AA and 761 white), colon (COAD, 56 AA and 194 white), squamous and adenocarcinoma lung (LUSC and LUAD, 34 and 57 AA and 392 and 444 white, respectively), and prostate (PRAD, 49 AA and 307 white) cancer specimens from AA and white patients. Our analysis identified 698 differentially expressed genes (DEGs) and 114 alternative RNA splicing events (ARSs) in BRCA, 107 DEGs and 57 ARSs in COAD, 25 and 117 DEGs and 115 and 53 ARSs in LUSC and LUAD, respectively, and 25 DEGs and 71 ARSs in PRAD from AA and white patients. Notably, comparing the lists of DEGs or ARSs from each cancer type with each of the other cancer types yields a minority of overlapping DEGs or ARSs among cancer types, indicating that race-related DEGs and ARSs are largely specific to cancer type. Pathway analysis of DEGs and ARSs reveals that the majority of these genes function in pathways relevant to cancer development and progression, such as programmed cell death, DNA repair,
B051 IFNL4-deltaG allele is associated with an interferon signature in tumors and survival of African-American men with prostate cancer. Wei Tang1, Tiffany Wallace2, Ming Yi3, Cristina Magi-Galluzzi4, Tiffany Dorsey1, Olusegun Onabajo4, Adeola Obajemu4, Symone Jordan2, Christopher Loffredo1, Robert Stephens4, Robert Silverman4, George Stark4, Eric Klein4, Ludmila Prokunina-Olsson4, Stefan Amb5, 1Center for Cancer Research (CCR)/National Cancer Institute (NCI)/NIH, Bethesda, MD, 2CCR/NCI/NIG, Bethesda, MD, 3Leidos Biomedical Research, Frederick, MD, 4Cleveland Clinic, Cleveland, OH, 5Division of Cancer Epidemiology (DCEG)/NCI/NIH, Bethesda, MD, 6DCEG/NCI/NIG, Bethesda, MD, 7Georgetown University Medical Center, Washington, DC.

Purpose: Men of African ancestry experience an excessive prostate cancer mortality that could be related to an aggressive tumor biology. We previously described an immune-inflammation signature in prostate tumors of African-American patients. Here, we further deconstructed this signature and investigated its relationships with tumor biology, survival, and a common germline variant in the interferon λ4 (IFNL4) gene.

Experimental Design: We analyzed gene expression in prostate tissue datasets and performed IFNL4 genotype and survival analyses. We also overexpressed IFNL4 in human prostate cancer cells.

Results: We found that a distinct interferon signature that is analogous to the previously described “Interferon-related DNA Damage Resistance Signature” (IRDS) occurs in prostate tumors. Evaluation of two independent patient cohorts revealed that IRDS is detected about twice as often in prostate tumors of African-American than European-American men. Furthermore, analysis in The Cancer Genome Atlas (TCGA) showed an association of increased IRDS in prostate tumors with decreased disease-free survival. To explain these observations, we assessed whether IRDS is associated with an IFNL4 germline variant (rs368234815-∆G) that controls production of IFN-λ4 protein, a type-III interferon, and is most common in individuals of African ancestry. We show that the IFNL4 rs368234815-∆G allele was significantly associated with IRDS in prostate tumors and overall survival of African-American patients. Moreover, IFNL4 overexpression induced IRDS-like signatures in three human prostate cancer cell lines.

Conclusions: Tumor interferon signaling has recently been shown to modulate response and resistance to immune checkpoint blockade. Here, we describe a distinct and biologically relevant interferon signature, IRDS, in prostate tumors that has a high prevalence in African-American patients. Our observations indicate that IRDS and IFNL4 rs368234815-∆G may have a function in the tumor biology and survival of African-American patients, and influence immune therapy outcomes, which should be examined in future studies.

B052 Identification of differentially expressed micro-RNAs in African American women with Quadruple Negative Breast Cancer. Anusha Angajala1, Raymond Hughley1, Shweta Tripathi1, Windy Dean Columbi2, Ming Tan1, Clayton Yates1, 1Tuskegee University, Tuskegee, AL, 2Lafayette General Health, Lafayette, LA, 3Mitchell Cancer Institute, Mobile, AL.

Purpose: Recently, we have demonstrated that triple-negative breast tumors (TNBC) that lack the expression of androgen receptor are quadruple-negative tumors (QNBC) and have increased aggressiveness. Additionally, we determined that this is due to a unique gene signature in the QNBC subtype. However, whether this gene signature is associated with a unique miRNA expression and differential in African American (AA) women compared to Caucasian (CA) women has not been determined. Therefore, the purpose of this study is to determine the miRNA expression in presence or absence of androgen receptor in both African American and Caucasian QNBC patients.

Methods: miRNA level 3 sequencing files were originally downloaded on June 1, 2016 from TCGA for 925 breast cancer patients. The miRNA sequence files (RPKM) and gene expression files (FPKM UQ) were obtained for normal and tumor samples for these patients. Median value of AR FPKM UQ was used as cut-off and divided patient group as AR(+ve/-ve).

Results: Out of 925 patients, 101 patients have TNBC. Among TNBC patients, 107 are QNBC and 8 patients are AR-positive TNBC. Reads per million for 1046 miRNAs were considered for this study. 40 miRNAs showed differential expression in QNBC. (p-value <0.05). All BC Patients were organized based on race (CA/AA), stage (I/II/III, IV) and subtype (Luminal, Her2type, TNBC). Expression of these 40 Oncogenic miRNAs

**Discussion/Conclusion:** Standard treatment of breast cancer relies on reliable assessment by IHC analysis of ER, PR, and HER2. Our results suggest that the heterogeneity of TNBC is at least partially associated with the presence or absence of AR expression, suggesting that QNBC should be considered as a clinically relevant breast cancer subtype. IHC analysis of AR appears to be a practical assay to determine the most aggressive TNBC subtypes and identifies tumors that could benefit from available targeted therapies. miRNA isoform or novel miRNA needs to be discovered to further investigate the gene regulation for QNBC patients.

**B053 Expression of alternative mRNA splicing variant MBD2_v2 promotes triple-negative breast cancer tumor initiation and is associated with body mass index.** Emily A. Teslow1, Cristina Mitrea2, Bin Bao1, Ramzi M. Mohammadi1, Lisa A. Polin1, Greg Dyson1, Kristen S. Purrington1, Alicia Bollig-Fischer2. 1Karmanos Cancer Institute, Wayne State University, Detroit, MI, 2Wayne State University, Detroit, MI.

According to epidemiologic research, obesity is a risk factor for triple-negative breast cancer (TNBC). The underlying molecular biology remains unknown. We reasoned that obesity-induced chronic inflammation, reactive oxygen species (ROS) being central, serves as the general link to TNBC. We are the first to report that expression of the epigenetic reader methyl-CpG-binding domain protein 2 mRNA variant MBD2_v2 in TNBC cell cultures depends on ROS and is necessary to maintain and promote expansion of cancer stem cell-like cells (CSCs). The relevance of CSCs is that they are a subpopulation of cancer cells recognized as the source of malignant tumor initiation, and they give rise to drug resistance and metastatic recurrence. We also previously reported evidence that MBD2_v2 expression underlies TNBC resistance to EGFR inhibitor drugs. Now, having used a diet-induced obesity (DIO) mouse model that mimics human obesity, we report that MBD2_v2 and serine/arginine-rich mRNA splicing factor 2 (SRSF2) levels were increased in tumors that formed more frequently in DIO mice relative to lean controls. To more directly test if increased MBD2_v2 drives increased tumor initiation capacity, we stably modified MBD2_v2 or SRSF2 expression in TNBC cells prior to inoculation. MBD2_v2 overexpression increased tumor initiation while SRSF2 knockdown, resulting in decreased MBD2_v2 expression, attenuated tumor formation. In addition, our analysis of TNBC patient tumors revealed a significant positive association for MBD2_v2 expression and body mass index (BMI). African American (AA) women are 1.7 times more often obese relative to European American women, and a TNBC driver mechanism fueled by obesity-coupled inflammation could underlie the higher incidence of TNBC among AA women.

**B054 Analysis of a cancer gene expression and next-generation sequencing dataset representing hispanic predominant South Florida population.** Zuanel Diaz1, Arpit Mehta1, Zasha Pou2, Muni B. Rubens3, Don Parrish4, Miguel Villalona-Calero1. 1Baptist Health South Florida and Florida International University, Miami, FL, 2Baptist Health South Florida, Miami, FL.

People of different races and ethnicities have different likelihoods of being diagnosed with certain types of cancer and respond differently to therapeutic agents. However, genome-wide association studies of cancer have typically assumed fixed genetic effects across ethnicities, and rarely compared and contrasted findings across ethnic groups, especially the Hispanic population. Baptist Health South Florida enrolled more than 3,000 patients into the Total Cancer Care Protocol, a prospective longitudinal outcomes study designed to bank tissues and clinical information in order to allow scientists and clinicians to bring cancer treatment to a new level. Tissue samples were snap-frozen within 15 minutes of surgical removal, macrodissected to >85% tumor purity, and quantified for the percent of malignancy, cellularity, stroma, normalcy, and necrosis. Longitudinal clinical and pathologic data were extracted from patients' electronic medical records to annotate the biospecimens. We analyzed gene expression and sequencing data from 443 cancer patients enrolled in this study whose tumors were molecularly profiled. All the cases had gene expression data, and 32% (n=140) also had next-generation sequencing data. Most common primary cancers were breast...
cancer (44.2%, n=196), followed by large bowel (18.9%, n=84), lung (15.8%, n=70), and uterine (9.5%, n=42) cancer. The uniqueness of this data is the distinctive racial and ethnic distribution of the patients; the majority of them were Hispanic (51.7%, n=229) specifically from Cuban, Mexican, Puerto Rican, Central American, and South American populations, followed by whites (36.3%, n=161), blacks (6.1%, n=27), other racial/ethnic groups (5.0%, n=22) and unknown (1.0%, n=4). Microarrays, across all sites of origin, were normalized using IRON against the median sample. An RNA quality-related technical artifact was observed and corrected by subtracting the 1st principal component of a partial least squares (PLS) model trained against the RNA integrity number (RIN), a measure of RNA quality. All samples were then extracted from this master normalized quality-corrected dataset and gene expression analysis was performed. For sequencing data, reads were aligned to the human reference genome (hs37d5) using the Burrows-Wheeler Aligner (BWA). Duplicate reads were marked with Picard-Tools. Indel realignment and base quality score recalibration were performed with GATK. Variations observed among ethnic and racial groups for each primary cancer are described in this representative South Florida population.

**B055 Characterization of immune cell subsets from tissue expression profiles in African American triple-negative breast cancer patients.** Lee D. Gibbs1, Jung Byun2, Tingfen Yan3, Anna Napoles2, Eliseo Pere-Stables2, Troy McEachron1, Nasreen Vohra3, John D. Carpten1, Kevin Gardner1,1Keck School of Medicine of University of Southern California, Los Angeles, CA, 2National Institute of Minority Health and Health Disparities, Bethesda, MD, 3Brody School of Medicine of East Carolina University, Greenville, NC, 4Columbia University Medical Center, New York, NY.

Triple-negative breast cancer (TNBC) is more frequent and aggressive in African American women and women of African descent. The heterogeneity of TNBC has become a challenge in today’s clinical practice, and significant research efforts have been deployed to better understand the molecular nature of TNBC. Clinically, the heterogeneous nature of TNBC has not been accounted for, hence leading to therapy resistance, metastasis, and relapse. TNBC has been associated with an elevation of immune infiltrates, which suggests that some patients may benefit from immune-based therapies. In this study, we used analytical tools that perform cell type enrichment analysis and provide an estimation of the abundances of immune cell types in a mixed cell population using gene expression data to compare the differences among immune cell types between African and Caucasian American breast cancer patient samples. Here, we examined RNA-sequencing data from 1,215 patients from two breast cancer cohorts including The Cancer Genome Atlas, which consists of 32 African American and 64 Caucasian TNBC samples, and data from 130 breast cancer cases with extensive clinical annotation collected and accrued from rural regions of eastern North Carolina in collaboration with Noreen Vohra at the Brody School of Medicine at East Carolina University. This cohort contained data from 23 African American TNBC samples and 25 Caucasian TNBC samples. Results revealed that tumor-associated macrophages and T cells were significantly represented among TNBC patients in both datasets with uncommitted macrophages (MO), M2-like macrophages, and CD4 memory resting cells as the predominant populations. Additionally, known antitumor immune cells, such as CD8 T cells and NK cells, were under-represented among TNBC patients. Although expression of immune cells and immune cell subsets was represented in our datasets, we did not find any significant difference between African American and Caucasian TNBC patients. We plan to present analyses from this data stratifying cases by mutational burden and expression of immune checkpoint markers. Our findings suggest that TNBC patients could possibly benefit from immunotherapies and their therapy could be personalized to their immune profile. Therefore, immune profiling may unlock new therapeutic opportunities for African American TNBC patients.

**B056 Tumor-associated ACKR1/DARC is correlated with a unique signature of proinflammatory chemokines and TILs in African-American women with breast cancer.** Brittany D. Jenkins1, Talina Fleifel2, Rachel N. Martini1, Haythem Ali1, Lisa A. Newman1, Melissa B. Davis1, 1University of Georgia, Athens, GA, 2University of Michigan, Ann Arbor, MI, 3Henry Ford Health System, Detroit, MI.

Part of the delicate interplay of interactions between tumor cells, immune cells, and other cell types cells contribute to the complexities of the tumor microenvironment (TME). Specific interactions between chemokines and their receptors can influence the migration of immune cells, thereby directing tumor immune responses. In general immune response, the Atypical Chemokine Receptor 1 (ACKR1/DARC) modulates chemokine levels through the sequestration of proinflammatory chemokines in circulation and transcytosis across endothelial and epithelial tissue. This can affect not only the concentration of immune cells brought to the TME, but also the profile of immune cell types, given that ACKR1 is a promiscuous binder of both chemokine classes (CXCL and...
CCL). ACKR1 also serves as an ancestral informative marker. The gene harbors a mutation (“Duffy-null”) in its promoter/5’ UTR region that abolishes its normal erythrocytic expression, a status that only exists in populations of sub-Saharan African descent, conferring an evolutionary advantage against malaria. This polymorphism is carried by 60-80% of African-Americans, and based on our findings, it can influence chemokine and immune cell migration in the context of tumorigenesis. Our study reveals the potential effect of this mutation in women with breast cancer (BC) by showing correlations between circulating chemokine concentrations, measured through Luminex multiplexing immunoassays, and relative levels of ACKR1 and tumor-infiltrating lymphocytes (TIL), scored through immunohistochemistry. Our initial investigation of epithelial expression of ACKR1 on breast tumors revealed supporting data of our hypothesis that differential expression of ACKR1 on breast tumor tissue is correlated with a distinct signature of TILs and associated proinflammatory chemokines. Specifically, lower levels of tumor-associated ACKR1 were seen in African-Americans, in addition to a less robust signature of TILs, including macrophages and T-cells. Genotyping for the Duffy-null mutation also showed correlations with proinflammatory chemokines, including CCL2 and CXCL8. Our data suggest that ACKR1 levels in circulation and tissues can indirectly influence the immune cell profile in African-American women with BC, potentially leading to changes in tumor aggressiveness and response to treatment.

**B058 In silico and in vivo analysis of the Duffy Antigen Receptor for Chemokines (DARC) in the breast tumor microenvironment.** Rachel Martin, Brittany Jenkins, Clayton Yates, Lisa Newman, Nancy Manley, Melissa Davis.

*University of Georgia, Athens, GA, *Tuskegee University, Tuskegee, AL, *Henry Ford Health Systems, Detroit, MI.

Racial genetic admixture (RGA) was performed using a custom panel of previously validated SNPs for estimation of ancestry from African, European, and Amerindian ancestry. Full-genome RNAseq library was constructed and sequenced on Illumina HiSeq instrument. Differentially expressed genes were inferred using DESeq2 software. Candidate gene sets of significantly regulated genes were used for functional and pathway enrichment analyses.

**Results**: 72 patients were included with SR 58% (n=42) Non-Hispanic White and 42% (n=30) Black. SR black patients had mean RGA of African descent of 89.6% (range 48.3-100%), while SR white patients had mean European descent of 88.6% (range 27.5-99.7%). Survivals were similar between SR groups. However, survival differences were seen when compared by proportion of African racial genetic admixture (RGA). Regardless of SR, patients with the highest tertile of African ancestry (AA) had lower median progression-free survival than patients in the lowest AA tertile (8 vs. 23mos; p=0.003). An OS difference of 27 vs. 54mos was seen for the highest and lowest AA tertiles, respectively (p=0.02). Genetic analyses were grouped based on (a) SR vs. (b) Tertiles for African RGA vs. (c) Continuous African RGA. A total of 1,954 genes demonstrated significant up/down expression across all racial cohorts. The “Top 40” genes with the greatest 20 upregulated and 20 downregulated log-fold expression for each genetic cohort demonstrated low concordance among the 3 genetic cohorts, with sentinel genes specific to each racial cohort. Subsequent pathway analyses based on gene expression demonstrated low concordance rates among racial cohorts as well.

**Conclusions**: Racial genetic admixture for African ancestry was more predictive of disparate progression-free survival in high-grade serous ovarian carcinoma than self-designated race. Additionally, how race was defined had significant differences in global gene expression levels and subsequent molecular pathway analyses. Collectively, these data support the incorporation of racial genetic admixture when evaluating biologic etiologies of racial disparities in cancer.

**B057 Racial disparity research in ovarian cancer: Evaluating race definition in differential gene expression.** Luciana Madeira da Silva, Dmytro Starenki, Megan Missanelli, Jennifer Young-Pierce, Jerlinda Ross, Jaroslav Slamecka, Nathaniel Jones, Jennifer Scalicci, Rodney P. Rocconi.

*University of South Alabama, Mobile, AL, *Hudson Alpha Institute, Mobile, AL, *University of Chicago, Chicago, IL.

**Objective**: Several studies have reported worse prognosis for Black ovarian cancer patients in comparison to non-Hispanic White patients, even after adjusting for clinical parameters, treatment and environmental factors. Self-reported race has been widely recognized as one of the biggest limitations to racial disparities research. Here we evaluated the effect of race definition in differential gene expression.

**Methods**: Differentially expressed genes (DEGs) were inferred using DESeq2 software. Candidate gene sets of significantly regulated genes were used for functional and pathway enrichment analyses.

**Results**: 72 patients were included with SR 58% (n=42) Non-Hispanic White and 42% (n=30) Black. SR black patients had mean RGA of African descent of 89.6% (range 48.3-100%), while SR white patients had mean European descent of 88.6% (range 27.5-99.7%). Survivals were similar between SR groups. However, survival differences were seen when compared by proportion of African racial genetic admixture (RGA). Regardless of SR, patients with the highest tertile of African ancestry (AA) had lower median progression-free survival than patients in the lowest AA tertile (8 vs. 23mos; p=0.003). An OS difference of 27 vs. 54mos was seen for the highest and lowest AA tertiles, respectively (p=0.02). Genetic analyses were grouped based on (a) SR vs. (b) Tertiles for African RGA vs. (c) Continuous African RGA. A total of 1,954 genes demonstrated significant up/down expression across all racial cohorts. The “Top 40” genes with the greatest 20 upregulated and 20 downregulated log-fold expression for each genetic cohort demonstrated low concordance among the 3 genetic cohorts, with sentinel genes specific to each racial cohort. Subsequent pathway analyses based on gene expression demonstrated low concordance rates among racial cohorts as well.

**Conclusions**: Racial genetic admixture for African ancestry was more predictive of disparate progression-free survival in high-grade serous ovarian carcinoma than self-designated race. Additionally, how race was defined had significant differences in global gene expression levels and subsequent molecular pathway analyses. Collectively, these data support the incorporation of racial genetic admixture when evaluating biologic etiologies of racial disparities in cancer.
In clinic, we observe that women of African descent have higher incidence rates of breast cancer (BC). These women are disproportionately diagnosed with the most aggressive subtype of BC, triple-negative BC, compared to women belonging to any other ancestry groups. To investigate factors driving this disparity, our work focuses on the tumor microenvironment (TME), specifically through the lens of an atypical chemokine receptor. The Duffy Antigen Receptor for Chemokines (DARC) is a nonsignaling, atypical chemokine receptor that binds two structural classes of chemokines. DARC modulates chemokine availability in circulation and participates in chemokine transport in tissues, to recruit immune cells back to sites of inflammation. DARC additionally serves as a portal of entry for the malaria-causing parasite Plasmodium vivax. In Sub-Saharan Africa, where malaria is endemic, a regulatory variant arose removing DARC expression from red blood cells (RBCs). This mutation, known as the Duffy-Null allele, was highly beneficial in this population, and quickly rose to fixation. Despite being called Duffy-Null, these individuals retain DARC expression in other cell types, only lacking expression on RBCs. Knowing that the Duffy-Null allele is prevalent in this population of women, we aim to investigate how DARC tumor expression and Duffy-Null status impacts the TME in silico through analysis of The Cancer Genome Atlas (TCGA) data, and in vivo through establishment of mouse models that depict Duffy-Null status in the BC TME. Using TCGA data, we see that DARC tumor gene expression is significantly lower among African-Americans compared to Whites. Using the CIBERSORT online platform, we quantified tumor-associated leukocyte (TAL) abundance in the TME. Overall, we found that tumors with high DARC expression have significantly higher total TAL abundance (p < 0.0001), and that DARC expression and TAL abundance are positively and significantly correlated (R = 0.545, p < 0.0001). Specifically, DARC expression influenced levels of B cell, T cell, monocyte and macrophage population in the TME. In our mouse models, we have utilized the C3(1)Tag BC transgenic mouse model, alongside a DARC knock-out mouse. To better recapitulate the Duffy-Null phenotype in our mouse model, our approach is to generate a BC/Duffy-Null bone marrow derived (BMD) chimera, where a DARC+/-; C3(1)Tag+/-/O recipient will receive bone marrow from a DARC-/- donor. The resulting chimera mice will retain DARC expression in all cells, aside from bone marrow-derived cells from the null donor. In the C3(1)Tag line, disease onset is at approximately 12 weeks, at which time we will assess changes in disease progression in our chimeras compared to controls by collecting total number of tumors, tumor location, tumor size and weight, and hematoxylin and eosin staining of tumor sections, and immune cell infiltration quantification.

**B059 African American pancreatic cancer microRNAs profile to identify links to drug resistance and tumor progression.** Maria Munoz-Sagastibelza1, Mohamed Alshal1, Sayed Imtiaz1, Jenny E. Paredes Sanchez1, Mubarak Akadri1, Raavi Gupta1, Maksim Agaronov1, Ellen Li1, Jovanny Zabaleta1, Laura Martello-Rooney1. 1SUNY Downstate Medical Center, Brooklyn, NY, 2Stony Brook University, Stony Brook, NY, 3Louisiana State University, New Orleans, LA.

Pancreatic cancer is a deadly disease with only 8% of the patients surviving 5 years (1). Recent data published for African Americans (AA) showed that this population has the highest death rate and shortest survival of any racial/ethnic group in the US for most cancers (2). The causes of this disparity are unknown; some of them may be socioeconomic as well as barriers to high-quality cancer prevention, early detection, and treatment information and services. It is clear that there is a gap between AA and Caucasian Americans (CA) concerning the development and death from pancreatic cancer. We hypothesize that there also are molecular differences in the tumors from AA and CA patients that contribute to this disparity. Importantly, The Cancer Genome Atlas (TCGA) numbers for pancreatic cancer reveals that only 7 out of 185 cases of pancreatic cancer are from African American patients. This clearly shows a prominent under-representation of tumor-related genetic information for the AA population. MicroRNAs (miRNAs) are able to regulate dozens of targets, especially those involved in cancer, making them a potential tool to study differences between populations. It is known that patients develop drug resistance against gemcitabine and one factor could be due to differential expression of miRNAs (3). The analysis of potential miRNA differences in AA and CA tumors would be a starting point to study the function(s) and mechanisms to understand the gap between these populations. We analyzed the tumor miRNAs expression of the TCGA 7 AA patients and compared the expression with 10 CA patients from TCGA to understand the main differences in expression between the two sets of samples. Using R studio, we found 26 miRNAs significantly different between CA and AA tumors. Some of them are involved in pathways related with tumor progression, cell invasion and tumor growth. We are interested in miRNAs involved in upregulating drug resistance against gemcitabine such as miR21, miR 155, or miR 196 as well as those miRNAs that downregulate resistance to treatment like miR148, miR200 or miR34. Importantly, these miRNAs have been defined only in CA pancreatic tumor samples. We are collecting retrospective pancreatic cancer cases at SUNY Downstate Medical Center and Kings County Hospital Center to study the expression of miRNAs using Illumina technology in our
AA population in Brooklyn, NY. These tissues will be matched for age, gender, body mass index, and for stage and site of disease to the best of our ability. Adjacent normal tissues will serve as standard controls. We will use CA PDAC cases from TCGA for comparison. This work is in progress. In conclusion, we found in our analysis 26 miRNAs differentially expressed between AA and CA using TCGA data. We expect to see a difference in expression of miRNAs using samples from our patient population. In addition, we are interested to see if our patients have a different expression pattern of miRNAs related to drug resistance and if this could explain the poor response often seen in AA PDAC patients.

B060 Health disparities and the molecular genomics of colorectal cancer by ancestry: The translational impact on colorectal cancer screening, surveillance, and treatment. Taylor Thompson, John Greally, Parvathi Myer, Albert Einstein College of Medicine, Bronx, NY.

Background: African Americans with colorectal cancer (CRC) have significantly worse outcomes than Caucasians with higher incidence, later stage at presentation, and worse overall survival. Even when controlling for socioeconomic status and stage at presentation, African Americans compared to Caucasians have a poorer response to medical therapy. We hypothesized that African Americans with colorectal cancer have a distinct genomic mutational profile that explains the observed differences in the natural history and response to treatment. Furthermore, self-reported data on race are imprecise, especially in individuals of mixed race as often found in under-represented communities.

Methods: Using unpublished data from The Cancer Genome Atlas (TCGA), we utilized genomic data to accurately capture a person's ancestry (i.e., European, African, Asian). For each patient with CRC, we used a microarray of single-nucleotide polymorphisms (SNPs) and matched their genome with the publicly available 1000 Genomes project, which is a well-characterized database of the major world populations. Each individual's self-reported race was reclassified using a microarray of their SNPs using Ancestry Informative Markers with Principal Component Analysis. After genotypically defining each individual's ancestry, we studied differences in their somatic mutational profiles. To determine somatic mutational variations, we utilized MuTect2 software to study whole-exome sequencing data of the tumor and normal tissue. The functional impact of each mutation was then classified as high or low. Somatic mutation results were separated based on mutation type (e.g., single-nucleotide variants or insertions/deletions). Mutation-specific tables were separated by genotypically defined race. Permutation analysis was performed using 1000 random samplings to determine whether the observed gene frequency for each race was statistically significant (p <0.05).

Results: 633 patients with colorectal cancer were analyzed and their baseline characteristics were: females (62%), self-reported African Americans (10%) and Caucasians (47%), stage III/IV (35%) and proximal CRC (50%). Preliminary data reveal unique somatic mutations that were distinct in individuals from African ancestry with specific genes playing key roles in oncogenesis. Additional data, including genotypically defined ancestry and somatic mutational differences, will be reported at the time of the conference.

Conclusions: To our knowledge, this is the first application of ancestry informative markers using whole-exome sequencing to study health disparities in colorectal cancer. Differences in tumor mutational profiles may help explain disparities in outcomes between individuals of European and African ancestry.

B061 Mechanistic and functional interrogation of novel ancestry-related alternatively spliced androgen receptor signal genes in prostate cancer. Rob U. Onyenwoke1, Jennifer A. Freedman2, Brendon M. Patierno2, Cedric Eze1, Adepeju Dayo1, Daniel J. George2, Steven R. Patierno1, 1North Carolina Central University, Durham, NC, 2Duke University, Durham, NC.

The age-adjusted incidence and mortality rates for prostate cancer (PCa) among African American (AA) men are significantly higher than among white men. Our studies address the urgent need to interrogate and modulate, for therapeutic application, the molecular mechanisms underlying the more aggressive PCa biology in AA men. The Duke Cancer Institute (DCI) has identified novel alternatively spliced genes between PCa from AA and white patients that drive race-related PCa aggressiveness and drug response, including androgen receptor (AR) target genes. In parallel, North Carolina Central University (NCCU) has interrogated AMP-activated protein kinase (AMPK) signaling, which operates in a regulatory loop with AR, and seeks to target AMPK for therapeutic application. Within the context of the AR/AMPK signaling axis, we have delineated the structures of race-related alternative splicing events in fatty acid synthase (FASN) and six-transmembrane epithelial antigen of the prostate, family member 4 (STEAP4) using polymerase chain reaction and generated CRiSPR-Cas constructs to specifically express these variants. In addition, from our exon array analysis, we have identified differential splicing
POSTER SESSION B

of a cancer-specific ubiquitin ligase complex (MAGE-A3/6-TRIM28), which targets AMPK for degradation, between PCa from AA and white patients. Moreover, we have shown that a PCa cell line derived from an AA patient has a decreased expression level of AMPKα and increased expression levels of TRIM28 splice variants using Western blot. Studies to assess the effects of expression of race-related FASN and STEAP4 variants on PCa cell biology and to directly dissect race-related mechanistic differences in AMPK signaling biology are currently under way. This work identifies and delineates novel AR/AMPK signaling pathway splice variants that may be targetable for PCa.

B062 Genetic driving factors of aggressive Ethiopian breast cancer. Alyssa Schwartz1, Kathryn Bittner1, Manu Platt2, Daniel Seifu1, Sallie Schneider4, Patrick Flaherty1, Courtney Babbitt1, Shelly Peyton1. 1UMass Amherst, Amherst, MA, 2Georgia Tech University, Atlanta, GA, 3Addis Ababa University, Addis Ababa, Ethiopia, 4PVLSI, Springfield, MA.

In Ethiopia, a breast cancer diagnosis is associated with a prognosis significantly worse than that of Europe and the US. Further, patients presenting with breast cancer in Ethiopia are far younger, on average, and patients are typically diagnosed at very late stages, relative to breast cancer patients of European descent. The standard of care for Ethiopian breast cancer patients is radiotherapy and broad-spectrum chemotherapy, which is also the case for US patients with triple-negative breast cancer (TNBC). However, the limited publications that do exist on Ethiopian tumors, and our own preliminary data, suggest that a large proportion of these patients have hormone-positive (ER+) breast cancer. This is surprising 1) given the aggressive nature of the disease, 2) given that African Americans with breast cancer frequently have TNBC, and 3) given the non-hormone targeting treatment these patients are receiving. There is a paucity of information on the molecular and genetic driving factors driving Ethiopian breast cancer, and this is critically hindering treatment strategies for these patients. The Black Lion Hospital in Addis Ababa treats patients from all over the country, and so we have partnered with Dr. Daniel Seifu at the Black Lion Hospital to gather more information about this deadly disease. In this project, we have brought together expertise across multiple institutions to collect tumor specimens, subtype the specimens, and perform DNA and RNAseq on these tumors. We used the TruSeq Exome kit (Illumina) to sequence matched normal and tumor tissue from 3 patients from a small pilot collection. We identified mutations in 127 genes across all three patients, unique to the tumor tissue. We found mutations in BARD1, BRCA2, and BRIP1, and each patient had a mutation in a different spot in the BRCA2 gene. Second, we compared our data to a list of mutations found for inherited breast and ovarian cancer (1), and found mutations in BRCA2, BRIP1, and MSH2, but not the other 7 panel genes. Finally, we compared our initial data set to the Personalized Cancer Mutation Panel (covering 737 mutational hotspots on 45 genes, across many different cancers (2), and found mutations in 3 of these genes: ALK, APC, and HNF1A, but not in the other 42 genes in their panel. At the same time, all these mutations we identified were specific to the tumor tissue and were not found in the matched healthy tissue we analyzed. At this conference we will discuss these results and our analysis from the additional collected samples as the project continues.

References

B064 Investigation of the breast microbiome and mucosal immune system in African American and non-Hispanic White women with and without breast cancer: A pilot study. Alana Smith1, Breia Reed1, Joseph F. Pierre1, Beverly Lyn-Cook2, Athena Starlard-Davenport1, 1University of Tennessee Health Science Center, Memphis, TN, 2National Center for Toxicological Research, Jefferson, AR.

Growing evidence shows that an imbalance in the breast microbiome due to inflammation may give rise to cancer development, particularly in non-Hispanic white women. However, there is a lack of data on the role of the breast microbiome among African American women. Since African American women are more likely to develop aggressive forms of breast cancer and die from the disease, we hypothesize that distinct microbial signatures exist in the breast and these signatures differ between normal and breast cancer tissues by race. Using 16S rDNA hypervariable tag sequencing, we identified distinct microbial signatures between normal (n = 40) and breast tumor (n = 61) tissues samples from African American and non-Hispanic white women. Women with breast cancer had a higher abundance of Enterobacteriaceae, Bifidobacteriaceae, Bacteroides, and Streptococcus when compared to women without breast cancer. African American breast tumors (n = 27) had lower abundance of the phyla Proteobacteria, Firmicutes, and Actinobacteria compared to non-Hispanic white breast tumors (n = 34). We further evaluated expression of genes involved in immune response using the Innate and Adaptive RT2 Profiler PCR microarray.

Program and Proceedings • November 2-5, 2018 • New Orleans, LA
in breast cancer tissues and adjacent normal tissues from the same donor. Expression of several inflammatory response genes, including CD8, TLR8, and GATA3, were significantly increased in breast tumors compared to adjacent normal breast tissues from the same donor. This study provides preliminary evidence of a breast microbiome in African American women and supports further investigation to identify a microbial risk signature for breast cancer and potential microbial-based prevention therapies.

**B065 Polo-like kinase 1 (PLK1) and aurora kinase B (AURKB) collude with survivin to augment tumor cell proliferation in African-American TNBC: Implications for racial disparity.**
Chakravarthy Garlapati, Shriya Joshi, Rida Padmashree, Ritu Aneja. Georgia State University, Atlanta, GA.

Mitotic kinases such as polo-like kinase 1 (PLK1) and aurora kinase B (AURKB) are known to phosphorylate survivin, an IAP family member, to mediate cell survival and proliferation. Interestingly, the triad is significantly overexpressed in multiple tumors including triple-negative breast cancer (TNBC), an aggressive breast cancer subtype, associated with high proliferative capacity, propensity for distant metastasis and therapeutic resistance. Not only TNBCs disproportionately afflict African-American (AA) women compared to European-American (EA) women, AAs demonstrate a much more aggressive disease course compared to their EA counterparts. Largely, most efforts on examining molecular underpinnings of breast cancer-related racial disparity have so far focused on differences in gene expression, epigenetic aspects, and single-nucleotide polymorphisms (SNPs) in tumor tissues. Herein, employing racially distinct TNBC cells, we illuminate the role of survivin phosphorylation, an important post-translational modification, in dictating enhanced cell proliferation and survival in AA TNBC cells compared to EA TNBC cells. Using the publically-available TCGA dataset, our comprehensive in silico analysis of various mitotic and cyclin-dependent kinases yielded a significantly higher gene expression of PLK1 (p=0.061) and AURKB (p=0.003) in AA (n=41) compared to EA TNBC (n=86) patients. Surprisingly, we found no race-related differences in survivin gene expression in TCGA breast dataset (n=127, p=0.343). In addition, there was no statistical difference in survivin protein levels as shown by immunohistochemical staining of survivin in TNBC samples (n=142, p=0.45) from Emory Hospital, Atlanta. Based on these intriguing findings, we hypothesized that the differential functional activity of survivin in AA vs EA TNBC cells augments tumor proliferation in AA TNBC cells. Literature suggests that phosphorylation of survivin at Ser-20 and Thr-117 plays a role in the activity of the chromosome passenger complex (CPC) facilitating mitosis and cell proliferation. We observed an upregulation of phosphorylated substrates of PLK1 and AURKB, namely, p-survivin [Ser-20] and p-survivin [Thr-117], respectively, in AA compared to EA TNBC cell lines. Since most proteins are regulated post-translationally to perform diverse activities, we next knocked down survivin expression in AA, and EA TNBC cell lines, using a siRNA approach. Survivin ablation significantly attenuated cell proliferation, cell cycle progression, but not invasion, and migration in AA TNBC cells compared to EA TNBC cells. These data strongly support our premise that higher functional activity of survivin confers enhanced proliferative capacity on AA TNBC cells compared to EA TNBC cells, suggesting that survivin may be a viable therapeutic target for AA TNBC patients. Further studies intended to tease out the role of survivin phosphorylation in TNBC-related racial disparity are currently under way in our lab.

**B066 SCUBE3 inhibition improves doxorubicin response in breast cancer.**
Benjamin C. Onyeagucha, Kashish Dhillon, Subapriya Rajamanickam, Subbarayalu Panneerdoss, Vijay K. Eedunuri, Tabrez A. Mohammad, Santosh Timilsina, Yidong Chen, Manjeet K. Rao. UT Health Science Center, San Antonio, TX.

The development of novel targeted therapies is urgently required for improving the outcome of breast cancer patients. Chemotherapy is the common treatment option for malignant breast cancer. However, resistance and toxicity remain the major obstacles hindering the effectiveness of chemotherapeutic agents in cancer patients. Therefore, identifying genes/factors that sensitize breast cancer cells to chemotherapy could improve treatment outcome in patients. Using an unbiased high-throughput screen, we identified Signal peptide CUB domain EGF-like 3 (SCUBE3) genes as a novel therapeutic adjuvant that can improve the efficacy of doxorubicin, a chemotherapeutic agent commonly used in treating breast cancer patients. Our findings demonstrated that SCUBE3 promotes breast cancer cells’ progression as knockdown of SCUBE3 inhibited the ability of breast cancer cells to form colony, migrate, and invade, while overexpression of SCUBE3 promoted tumor growth in preclinical mouse models. Our results revealed that SCUBE3 mediates its protumor effects by regulating genes involved in growth and survival in the MAPK pathway, DNA damage surveillance pathway including RAD51 and FOXM1, and apoptotic pathway including Mcl-1. Using interaction studies, we demonstrated that EGFR is a true receptor of SCUBE3 as EGFR and SCUBE3 interact and this interaction mediated
**POSTER SESSION B**

progrowth signaling of SCUBE3. These findings underline the importance of SCUBE3 as a potent therapeutic target for treating breast cancer patients.

**B067 L-Arginine in the regulation of NOS2 expression to overcome renal cell carcinoma tumor growth.** Charity F. Sylvester, Paula Datri, Arnold Zea. LSUHSC-NO, New Orleans, LA.

Renal cell carcinoma (RCC) is a cancer that is hard to treat because of its evasive nature, and its resistance to chemotherapy, radiotherapy, and immunotherapy. There is only a 10% survival rate in humans if RCC is not caught at early stages. L-Arginine metabolism is a highly regulated process that can produce global effects in tumors and in the immune system. Arginase 1 (ARG1) and ARG2 can metabolize L-arginine to induce the synthesis of polyamines necessary for tumor growth, whereas inducible nitric oxide synthase (NOS2) can metabolize L-arginine to produce nitric oxide (NO) which has been shown to possess antitumor activity. In addition, L-citrulline, another metabolite of NOS2, may play an important role in cancer, since it acts as a substrate for the de novo synthesis of L-arginine. Previous data have shown that certain RCC cell lines respond to IFNγ or IFNα treatments by activating the NOS2 protein to produce NO, which inhibits tumor growth. However, in several other RCC cell lines there is a lack of NOS2 protein induction, suggesting that these RCC cells have developed a mechanism that blocks NOS2 expression. Therefore, treatments that could activate NOS2 expression to induce tumor regression are much needed. We believe that the lack of NOS2 is due to L-arginine deprivation, which is highly depleted in ARG2-RCC tumors. It is possible that decreased extracellular L-arginine limits its intracellular availability, deactivating downstream translational proteins, then blocking NOS2 expression. We hypothesize that in some RCC, the competition of ARG and NOS2 for L-arginine regulates the expression of NOS2 as a mechanism to increase tumor growth. To test our hypothesis, increasing concentrations of L-arginine of 1,000, 2,000 and 4,000 μM were added to RPMI media and cells were cultured for 24 and 48 hours. At each time point cell lysates were tested for ARG2, NOS2, GCN2 and eIF2α proteins, as well as for intracellular levels of L-arginine. Supernatants were tested for L-arginine, L-glutamine, L-citrulline and nitrite production. Our results show that after 48 hours in culture, there was a decrease in ARG activity as compared to untreated controls (p=0.004) in cells treated with 4,000 μM of L-arginine; a slight increase in NOS2 protein was observed with no significant increases in nitrites. More experiments using closer L-arginine concentration increments are under way in lieu to determine the expression of GCN2 and eIF2α. The levels of L-citrulline were significantly higher at 48 hours in cells cultured in 4,000 μM of L-arginine. One striking observation was that the cells consumed L-glutamine at higher rates as early as 24 hours. This finding is very important because these cells are possibly using L-glutamine as a source for polyamine synthesis, bypassing the L-arginine-ARG pathway. Understanding the mechanisms by which RCC tumors grow could help us to develop new and more effective immune-therapeutic strategies to overcome RCC growth and resistance.


This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR09) of the Conference Proceedings.

**B069 Ecological model links proto-oncogene to high susceptibility of Blacks to TRPV6-expressing metastatic cancers.** Constance B. Hilliard. University of North Texas, Denton, TX.

**Introduction:** This ecological model traces the etiology of a certain class of metastatic cancers, which kills Blacks at more than twice the rate of Whites. These malignancies, defined by the uncontrolled proliferation of TRPV6 mRNA in mutagenic tissue, include metastatic prostate cancer, triple-negative breast cancer, and colorectal and ovarian cancer. This study will show that the cause is an ethnic-specific haplotype of the TRPV6 calcium ion channel. This proto-oncogenic African TRPV6a variant is more calcium absorbent than the non-African/European TRPV6b allele. African-Americans inherited strong bones from their low-calcium-consuming (200-400 mg/day) Niger-Kordofanian West African ancestors. However, American Blacks are maladapted to the high-calcium food environment of the U.S. This research shows that the ancestral TRPV6a allele can become invasively oncogenic when overexposed to free calcium ions, leading to the aforementioned class of cancers.
POSTER SESSION B

**Methods:** Analyses of the incidence of TRPV6-expressing cancers in Blacks and Whites as a function of dietary consumption are conducted.

**Results:** These data show a direct correlation between levels of calcium intake in Blacks, who carry the ancestral TRPV6a calcium ion channel, and incidence of the following hormonal cancers: metastatic prostate cancer, triple-negative breast cancer, colorectal cancer and ovarian cancer.

**Summary:** Because the African TRPV6a calcium ion channel variant is more absorbent of free calcium ions than its non-African counterpart, this ecological model shows that carriers of this variant are at increased risk of metastatic prostate cancer, triple-negative breast cancer, and ovarian and colorectal cancers, when exposed to high-calcium food environments.

**Conclusions:** Hypersensitivity to Ca2+ triggers certain metastatic cancers in Blacks, characterized by the upregulation of TRPV6 transcript. Lidocaine and SOR-C-13, a peptide derived from the saliva of the short-tail shrew, are identified as potential TRPV6 calcium channel inhibitors.

**B070 Loss of cytoskeletal protein palladin desensitizes pancreatic cancer associated fibroblast to TGFβ1-dependent desmoplastic induction.** Jennifer Alexander1, Edna Cukierman1. 1Drexel University College of Medicine, Philadelphia, PA. 2Fox Chase Cancer Center, Philadelphia, PA.

Pancreatic ductal adenocarcinoma (PDAC) claims ~93% of patient lives in less than 5 years proceeding diagnosis. Therapeutic options for PDAC are challenged by the deposition of a fibrous-like extracellular matrix (ECM) known as desmoplasia. This desmoplastic-ECM (D-ECM) forms the bulk of the tumor mass while remodeling the once tumor-suppressive microenvironment to become tumor permissive. Ironically, ablation of the D-ECM results in an even more aggressive PDAC. Thus, unraveling the mechanism of D-ECM induction is vital to reinstating the natural tumor-restrictive microenvironment of the pancreas. Although the underlying biology remains unclear, the D-ECM is initiated and maintained by activated cancer associated fibroblasts (CAFs). CAF activation is primarily driven by TGFβ1 signaling, which causes cytoskeletal rearrangements in support of CAF-dependent D-ECM onset. As such, the goal of this study is to define the cytoskeletal regulation needed to restore the natural tumor-suppressive properties of the pancreas. Therefore, we focused on the actin cross-linker palladin whose expression is regulated by TGFβ1 and has been identified as an independent prognostic marker for PDAC progression as well as CAF activation. We postulate palladin has an isoform-specific role in PDAC-associated desmoplasia that ultimately fuels cancer progression. Using an in vivo-mimetic 3D stroma model, I used a CRISPR/Cas9 approach to delete one or both of the major palladin isoforms in patient-derived CAFs and assessed CAF’s activation via quantitative immunoblotting, real-time polymerase chain reaction, and multiplex confocal microscopy in addition to palladin knockout CAF-derived ECM’s ability to influence PDAC cell viability and invasive spread. My data indicate that palladin isoforms 3 and 4 are required for TGFβ1-dependent CAF activation as well as for CAF-dependent D-ECM induction whereby knockdown of either isoform in CAFs results in a normalized ECM that restrain the inherent aggressive nature of PDAC cells. These findings suggest that targeting palladin alters the desmoplastic compartment by impeding tumor progression. Taken together, these results propose a strategy to restore a normal tumor-suppressive stroma in PDAC that will complement current PDAC treatment dogmas.

**B071 Genomic differences between non-small cell lung cancer (NSCLC) in African American and white patients.** April E. Deveaux1, Dadong Zhang1, Muthana Al Abo1, Nadine J. Barrett1, Rick A. Kittles2, Kouros Owzar1, Shannon J. McCall1, Jeffrey Crawford1, Steven R. Patierno1, Jeffrey M. Clarke1, Jennifer A. Freedman1. 1Duke Cancer Institute, Durham, NC, 2City of Hope, Duarte, CA.

**Background:** Racial disparities in lung cancer exist, as African Americans (AAs) have the highest incidence of lung cancer and rate of lung cancer-related death and develop lung cancer at an earlier age compared with other racial groups. Multiple structural determinants of health affect poorer survival in AAs. In addition, evidence suggests that differences in tumor biology also contribute to disparities in clinical outcomes. This work addresses the urgent need to define further the molecular landscape of non-small cell lung cancer (NSCLC) in the AA population in order to drive novel biomarker and therapeutic development and ultimately improve clinical outcomes.

**Methods:** We have analyzed differentially expressed genes (DEGs) and differentially spliced genes (DSGs) between resected formalin-fixed, paraffin-embedded lung squamous cell carcinoma specimens from 20 AA and 20 white patients (self-reported race) using Affymetrix Clariom D Assay, human and Transcriptome Analysis Console Software. To obtain genetically estimated indicators of race, we performed ancestral genotyping. After excluding specimens from biracial
patients and those with positive versus negative area under the curve less than 0.6, we used a cohort of 14 specimens from AA patients and 13 specimens from white patients for analysis.

**Results:** Transcriptome analysis revealed 450 DEGs and 7,089 DSGs, in which we identified 13,763 unique splicing events, between NSCLC in AA and white patients. The nuclear receptors meta pathway and the olfactory receptor pathway are over-represented with such DEGs. Seven of the DEGs also exhibit differential expression between lung squamous cell carcinoma in AA and white patients. Among the 7,089 DSGs between NSCLC in AA and white patients, 599 also exhibit differential splicing between prostate cancer in AA and white patients. 33 also exhibit differential splicing in breast and liver cancer, and 6 also exhibit differential splicing in breast, liver and prostate cancer. Validation of prioritized genomic differences using polymerase chain reaction and investigation of the functional significance of prioritized genomic differences to lung cancer cell biology using CRISPR-Cas9 technology is currently under way.

**Conclusions:** This study identifies novel aggregate gene expression and splicing differences between NSCLC in AA and white patients. Interestingly, the number of DSGs far exceeds the number of DEGs in the same tissues and a number of DEGs and DSGs exhibit differential aggregate gene expression and splicing, respectively, in additional solid tumor types. Upon further study, these mechanisms have the potential to serve as novel targets for the development of biomarkers or therapeutic agents for lung cancer, and to reduce the mortality burden from lung cancer among AAs.

**B072 Cadmium elicits a differential cytotoxic response in triple-negative breast cancer cells.** Sherette Godfrey, Checo Rorie. North Carolina A&T State University, Greensboro, NC.

Understanding the relationship between heavy metal exposure and triple-negative breast cancer cells may help to elucidate the high breast cancer mortality rate and health disparity in African-American women, as they may be exposed to these heavy metals at higher rates and/or their cells may react more negatively to the heavy metals when compared to their Caucasian counterparts. Triple-negative breast cancer (TNBC) accounts for about 15% of all breast cancers and is characterized by cancer cells that lack the expression of estrogen, progesterone, and HER2/Neu receptors. For this reason, TNBC cells do not respond to hormone therapies or HER2/Neu targeted treatments. The human body utilizes some metals in small amounts as micronutrients; however, many metals such as cadmium-2, chromium-6, arsenic, lead, and mercury that are introduced to the body are not needed physiologically. Human exposure to trace metals in higher-than-needed amounts or exposure to nonessential metals can cause damage to the body as they can be toxic or even carcinogenic. Here we expose the TNBC cell line HCC 1806 to Cadmium-2. While less is known about the long-term carcinogenic potential of cadmium exposure in the broader population and for other organs, evidence suggests its potential association to lung, breast, and endometrial cancer and mortality. Previous lab data revealed that exposure to high concentrations of Cadmium-2 ions causes a differential cytotoxic cell death response in TNBC cells and demonstrates different genotoxic targets and implications in their mutagenic potential when HCC 1806 cell lines were exposed to this ion. Here, the cell line HCC 1806 has been treated with 5 µg/ml of Cadmium-2 ion, revealing increased toxicity using the lactate dehydrogenases assay (LDH), decreased viability (MTS assay), and flow cytometry reveals an abrogation of the cell cycle. The LDH assay revealed that the cells exposed to cadmium resulted in a P-value less than 0.0001 and assay data present percent cytotoxicity of 5.1 and 10.7, respectively, for control and treated cells. The MTS assay alongside trypan blue exclusion assay demonstrated a trend of decreasing viability among the treated cells. The flow cytometric analysis revealed an increase in the S-Phase in the cadmium treated cells compared to the controls. These results are potentially early indicators of a molecular effect of Cd ions on breast cancer cells that could elucidate the role that cadmium may play in promoting the aggressive behavior of TNBC or could potentially lead to future treatment regiments.

**B073 Estimating genetic ancestry of commonly used cancer cell lines.** Stanley E. Hooker Jr1, Madhavi Bathina1, Stacy Lloyd2, Priyatham Gorjala2, Ranjana Mitra2, Kevin S. Kimbro3, Rick A. Kittles2. 1City of Hope, Duarte, CA, 2Baylor College of Medicine, Houston, TX, 3Roseman University of Health Sciences, Las Vegas, NV, 4North Carolina Central University, Durham, NC.

Given the scarcity of human cell lines from under-represented populations available for study, it is crucial that these cell lines be accurately characterized regarding their genetic ancestry so findings can be properly contextualized. Mischaracterization of a cell line’s race/ethnicity can lead to wasted time and resources and potentially publication retractions. Here we calculated genetic ancestry proportions

Program and Proceedings • November 2-5, 2018 • New Orleans, LA

161
for 22 commercially available cell lines to test the accuracy of the “race/ethnicity” categorization assigned to these cells and to provide previously unknown genetic ancestry estimates to the scientific community. To determine cellular genetic ancestry proportions, DNA was extracted from the cell lines and genotyped for ancestry informative markers using the Agena MassARRAY platform with iPLEX chemistry. Genotypes for each cell line were analyzed with STRUCTURE software using settings of 30,000 for burn-in length, 70,000 replications, and K = 3 ancestral populations, representing West African (WA), Native American (NA), and European (EA) input genotype data. Commercially available cell lines designated as “Caucasian” in ethnicity were accurately described with mean European ancestry proportions of 97% (range 92-99%). Recently, using a much smaller panel of markers, the 22Rv1 cell line was found to have 41% WA ancestry. Our genetic ancestry analysis found the 22Rv1 cell line to have mostly EA ancestry, 91% EA, while also containing a non-negligible proportion of WA ancestry (8%). Three of the commercially available cell lines ascribed “Black” race appear to be accurate (HeLa, MDA-MB-PCa2, MDA-MB-468), although two of the three, HeLa and MDA-MBPCa2, fall far below the mean of 80% WA ancestry for US-born African Americans with 60% and 66% WA ancestry, respectively. Interestingly, the MDA-MB-468 “Black” cell line had an appreciable amount of NA ancestry, 23% NA and 77% WA ancestry, which could suggest possible Afro-Caribbean ethnicity. Most notably, the E006 cell line, designated as “Black,” is as European as the previously mentioned cell lines ascribed Caucasian ethnicity with > 92% EA genetic ancestry. Cell lines with unassigned ethnicity varied widely in genetic ancestry with ranges of WA, NA, and EA ancestry proportions of 1%-92%, 0%-30%, and 2%-96%, respectively. Our results suggest predominantly European ancestry for the Caucasian-designated cell lines and high variance in genetic ancestry proportions for the Black-designated cell lines. However, the E006 cell line is an example of extreme misclassification, which has led to erroneous findings in the disparities literature and leave open the possibility of mischaracterization of other unanalyzed cell lines. Genetic ancestry estimates add more advanced and detailed ancestral characterization to these cell lines and allow for better contextualization of comparisons, applicability, and significant findings. We suggest robust genetic ancestry estimates as a requirement for all current and novel cell lines used in research.

**B074 Development of genetic assays for the surveillance of HPV 90 in New Orleans.** LaKia M. Williams1, Alex Berry2, Jennifer Cameron2, Tulane University, New Orleans, LA; LSU Health Sciences Center, New Orleans, LA.

Human papillomavirus (HPV) is the main etiologic agent in 90% of anogenital and 70% of oropharyngeal cancers. Seventy percent of those cancers stem from HPV 16 or HPV 18 infection, with the remaining cases attributed to other high-risk (HR) HPV genotypes. The development and use of HPV vaccines such as Gardasil have directly affected the prevalence of HR HPVs in patient populations. The decline of dominant oncogenic strains may create an ecological vacuum, potentially allowing nondominant low-risk or unknown-risk genotypes to spread and evolve. HPV 90 was recently classified as an unknown etiologic risk and has previously demonstrated an ability to become oncogenic from a single base pair mutation within the E6 viral gene. HPV 90 has also been seen to exhibit higher prevalence than other unknown risk HPVs in patient populations similar to those populations found in New Orleans. To allow for the real-time surveillance of HPV90 during the post-vaccine era, it is our goal to establish nucleic acid-based assays that allow for sensitive and specific identification of HPV90 genotypes within a patient sample. The assays utilized for the surveillance of HPV90 are based on both traditional and qualitative polymerase chain reaction (PCR) technology done with HPV90 genotype specific primers for the L1 and E6 genes. The amplification of a 155bp segment of HPV90 E6 was successfully done through touchdown qPCR. The amplification of HPV L1 was done with primers and cycle methods derived from the previously published PGMY09/11 primer set. Amplicons from each PCR method were visualized via gel electrophoresis. The L1 patient amplicon will be denatured and fixed to a nylon membrane to allow for analysis by dot blot using novel HPV 90 L1 specific biotinylated probes. The patient samples utilized in this study were collected from a longitudinal study examining the genotypes found in HIV+ women in the greater New Orleans area. The cohort of HIV+ women in New Orleans (n=100) had a HPV90 prevalence of 9% when examining L1 alone and a 10% prevalence when examining E6 alone. L1 and E6 have a preliminary correlation of 90%. Testing the remaining samples from the longitudinal study will determine the persistence, prevalence and oncogenic contribution of HPV90 to patients in New Orleans. Future directions include confirming our findings utilizing our conceived dot blot assay. Once established, our L1 technique could be integrated into the clinically available Roche Linear Array genotyping assay for the additional surveillance of locally relevant HPV genotypes.
POSTER SESSION B

B075 Effect modifiers of surgery and adjuvant hormone treatment delays among patients diagnosed with breast cancer in South Carolina. Oluwole A. Babatunde, Swann A. Adams, Jan M. Eberth, Tisha M. Felder, Robert Moran, Samantha N. Truman, Christian Alvarado, James R. Hebert. University of South Carolina, Columbia, SC.

Introduction: Black women are more likely to experience delays in receipt of breast cancer surgery and adjuvant hormone treatment (AHT) compared to White women. The aim of this study was to assess the effect modifiers that influence the relationship between race and delay in receipt of surgery and AHT among patients diagnosed with breast cancer.

Methods: Breast cancer cases were obtained retrospectively from the SC Central Cancer Registry, linked with administrative data from the State Health Plan and Medicaid Plan from 2002 to 2010. The main outcome variables were diagnosis-to-surgery time and diagnosis-to-AHT for breast cancer. The main exposure variable was patient race (White vs Black). Chi-square tests, logistic regression and generalized linear regression analyses were conducted to compare patients’ treatment delays among Blacks and Whites to identify effect modifiers in the receipt of delayed treatment. Receipt of surgery was dichotomized into early and late receipt of treatment using the median of 22 days as cut-off. In assessing the relationship between race and time to surgery, the identified effect modifiers were marital status, urban status, and distance to provider of first service. The multivariable logistic model was stratified by the effect modifier variables and each model was adjusted for age, year of diagnosis, hormone-receptor status, stage, grade, and enrolment in Best Chance Network (BCN) program.

Results: A total of 2,155 breast cancer patients (nWhites=1557; nBlacks=598) were reported in the study period. Multivariable logistic regression that adjusted for 8 variables (age, year of diagnosis, hormone receptor status, cancer stage, cancer grade, being in BCN, definitive surgery type and insurance provider) showed that the odds of late receipt of surgery was 1.96 (95% CI: 1.38-2.79) among unmarried Black women compared with unmarried White women and 1.40 (95% CI: 1.08-1.82) among Blacks who live in urban areas compared with White women who lived in urban areas. Result of multivariable generalized linear regression analysis showed that among Blacks who had surgery >30 days after diagnosis, the least square means from diagnosis to AHT were statistically increased by 42 days compared to Whites, while among Blacks who had surgery >60 days after diagnosis, the least square means from diagnosis to AHT were statistically increased by 63 days compared to Whites.

Conclusions: Late receipt of surgery was higher among Blacks who were unmarried and lived in rural areas. Those who received late surgery also had a higher likelihood of receiving late AHT. To improve timely receipt of surgery, efforts need to be directed at Black breast cancer patients who are not married and who live in rural areas. Navigation efforts directed at reducing delays in receipt of surgery should also be directed at reducing delays in receipt of AHT.

B076 Did the Affordable Care Act improve insurance coverage and stage at diagnosis among nonelderly underserved breast cancer patients? Abigail Silva, Arielle Guzman, Charlotte Picardi, Yamile Molina, Alexandrina Balanean, Paramjeet Khosla. 1Department of Public Health Sciences, Loyola University Chicago, Maywood, IL. 2Sinai Urban Health Institute, Sinai Health System, Chicago, IL, 3Division of Community Health Sciences, University of Illinois at Chicago, Chicago, IL, 4Mount Sinai Hospital, Sinai Health System, Chicago, IL.

Background: Through its various provisions, the Patient Protection and Affordable Care Act (ACA) has the potential to increase access to cancer care, particularly among the most vulnerable, and reduce disparities in cancer care and outcomes. The ACA might ameliorate disparities in cancer stage by improving access to health care coverage and preventative care, such as screening. The purpose of the present analysis is to examine the change in the percent uninsured and early-stage diagnosis among nonelderly breast cancer patients who receive care in an urban safety-net institution.

Methods: We conducted a retrospective, observational study using medical record and cancer registry data from an urban minority-serving hospital. Patients were identified through the cancer registry and included if they were non-Latina (nL) black, or Latina; diagnosed or treated with stage I-IV breast cancer between 2008-2016; and aged 18-64 years at diagnosis. The pre- and post-ACA periods of the expanded health care coverage provision were identified as 2008-2013 and 2014-2016, respectively. Descriptive statistics were calculated to compare patient demographic, insurance, health care use, and tumor characteristics between the pre- and post-ACA periods, overall and across racial/ethnic groups. Logistic regression models, with model-based standardization (predictive margins), were used to estimate proportion differences (PDs) with bias-corrected bootstrapped 95% confidence intervals.
POSTER SESSION B

Results: A total of 174 nL black and 160 Latina patients were identified. Between pre- and post-ACA, the overall proportion of uninsured at the time of diagnosis decreased from 36.6% to 20.9% (p=0.00). The decrease in the uninsured population was statistically significant only for Latina women (p=0.00). There was a small shift in early-stage diagnoses. Post-ACA, the overall proportion of Stage I cancers increased from 26.8% to 31.8% (PD=5.0; p=0.33). However, this shift occurred among nL black women (PD=9.6%, p=0.18) but not among Latina women (PD=0.0, p=0.91). This pattern remained even after adjusting for age, insurance status, and history of outpatient preventative care use. Of note, compared with women diagnosed pre-ACA, those diagnosed post-ACA were less likely to have had a preventative care visit during the 24 months prior to diagnosis (26% versus 51%, p=0.00).

Conclusion: Early results suggest that the ACA has increased access to insurance for underserved nL-black and Latina breast cancer patients. However, its impact on preventative care utilization and early cancer diagnosis is unclear. Post-ACA patients might be newly entering the healthcare system, due to having obtained insurance, and so may need assistance navigating to obtain preventative care, such as mammograms. Next steps include examining changes in screen-detected versus symptom-detected cancer, time to treatment, and conducting semistructured interviews to examine women’s experiences with breast cancer care pre- and post-ACA.

B077 Fewer rural cancer patients treated with antineoplastic agents. Cathy J. Bradley, Marcelo Coca Perraillon. University of Colorado, Aurora, CO.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR10) of the Conference Proceedings.


This poster demonstrates that advocacy support enhances diversity recruitment in the WISDOM Study (Women Informed to Screen Depending on Measures of Risk). Initially funded by a grant from the Patient-Centered Outcomes Research Institute, with advocates having a key role in design and planning, WISDOM is a 100,000 healthy women preference-tolerant, pragmatic study comparing annual to personalized risk-based breast screening. The novelty of WISDOM personalized screening is the integration of previously validated genetics and clinical risk factors (age, family history, breast biopsy results, ethnicity, mammographic density) into a single risk-assessment model that directs the starting age, timing, and frequency of screening. Importantly, the genetic component of risk is calibrated by race/ethnicity (Caucasian, Asian, African American, Hispanic), to provide each woman the most tailored personalized risk assessment. The goal of WISDOM is to determine if personalized screening, compared to annual screening, is as safe, less morbid, enables prevention, and is preferred by women. The study is registered on ClinicalTrials.gov, NCT02620852.

The study’s “preference-tolerant design” encourages women to be randomized but also allows self-assignment (this component was recommended by advocates) for those with a strong personal preference for either annual or risk-based screening. WISDOM study researchers aim to help all women make better-informed decisions by comparing the outcomes of women who have annual mammograms with those women who received mammograms on a schedule determined by their personal risk.

Enrollment and consent take place entirely online at www.wisdomstudy.org, which serves as a patient portal where participants register, complete electronic consent, take health-related questionnaires and receive screening recommendations and genetic test results. Currently the clinical sites and infrastructure associated with this study are part of the Athena Breast Health Network (Athena), a unique collaboration among the five University of California (UC) medical/cancer centers (UCSF, UC Davis, UCLA, UC Irvine, and UCSD) and the Sanford Health System (based in Sioux Falls, SD).

Athena has fostered partnerships with advocates since its inception in 2009 and formed the Consumer and Community Advisory Committee (CCAC). The CCAC comprises patient advocate representatives from each Athena site and community members with expertise in public health, breast health, and under-represented populations. In addition to participation at twice-yearly WISDOM Retreats, advocates participate on regular WebEx WISDOM Study calls with committee updates on advocacy involvement, marketing and outreach materials, recruitment, bioethics, protocol and adherence. Each advocate’s skills and background inform all aspects of the study as we focus on addressing recruitment strategies for expanding and encouraging enrollment in traditionally under-represented populations including, but not limited to, racial/ethnic, underserved, older women, and women with little or no access to the internet. Advocates, partnering with study staff, are championing efforts to further
POSTER SESSION B

WISDOM diversity outreach by identifying key community champions in women’s organizations, local nonprofits and faith-based organizations; identifying people who do community-based research and have established community relations; working on strategies on what we can offer to the community such as presentations events and in-person discussions; and, finally, helping to bridge technology gaps and access.

As of July 2018, the WISDOM study is open to all eligible women in California, North Dakota, South Dakota, Minnesota and Iowa. To date, 23,329 eligible women have registered and 14,393 women have consented to participate in the trial. The median age is 56 years, 82% Caucasian, 1% African-American, and 6% Asian, and 9% self-reporting as Hispanic. WISDOM Study data collected so far do not reflect the diversity of our potential participant population. We are partnering with health insurers and self-insured companies and expanding to other states with enrollment continuing past 2019. With the engagement of patient advocates, expanding diversity recruitment will help fill gaps in scientific knowledge, resulting in personalized breast cancer screening recommendations for all women.

B079 The Affordable Care Act and cancer stage in an underserved population. Yan Lu1, Bradford E. Jackson1, Deanna Cross2, Latha Neerukonda1, Bhavna Tanna1, Bassam Ghabach1, Rohit P. Ojha1. JPS Health Network, Fort Worth, TX, 2University of North Texas Health Science Center, Fort Worth, TX.

Background: The Patient Protection and Affordable Care Act (ACA), particularly provisions enacted in 2014 including the health insurance exchange and Medicaid expansion, aimed to reduce the number of uninsured individuals in the United States. The ACA has increased insurance coverage and improved cancer stage at diagnosis for certain populations, but unknown is the effect of ACA on cancer stage at diagnosis specifically among the underserved (i.e., socioeconomically disadvantaged). Therefore, we aimed to assess the effect of ACA enactment on advanced-stage cancer diagnosis among underserved cancer patients.

Methods: We used data from the JPS Center for Cancer Care institutional registry (accredited by the Commission on Cancer). This center is part of an urban public hospital network that serves Tarrant County, TX (population >2 million) and is a primary source of care for underserved individuals. Our eligible population included individuals aged ≥18 years who were diagnosed with a first primary solid malignancy between 2008 and 2015. We compared the effect of ACA implementation on advanced stage diagnosis for overall, screen-detectable, and non-screen-detectable cancers using a natural experiment framework and interrupted time-series analysis to estimate prevalence differences (PD) and 95% confidence limits (CL), where January 2014 differentiated the pre- and post-ACA periods in 6-month intervals.

Results: Our study population comprised 6,679 underserved patients, of whom 46% were aged <55 years, 55% were female, 25% were non-Hispanic Black, and 24% were Hispanic. Private insurance coverage increased from 4.6% to 10% after ACA enactment. The overall prevalence of advanced stage diagnosis increased 2.5% following ACA enactment (95% CL: -2.0%, 7.0%), which modestly varied for screen-detectable cancers (PD = 4.3%, 95% CL: -0.3%, 8.8%) and non-screen-detectable cancers (PD = 1.4%, CL: -3.7%, 6.6%).

Discussion: Our results do not suggest a reduction in late-stage diagnosis after ACA enactment among underserved cancer patients. The small increase in prevalence of late-stage diagnosis post-ACA could be an initial consequence of increased access to care (i.e., recognition of previously undiagnosed cases) given the small increase in private insurance coverage, but longer follow-up is necessary to interpret this result. Texas did not expand Medicaid coverage as part of ACA enactment, and thus our findings raise questions about whether Medicaid expansion would have affected late-stage diagnosis among underserved cancer patients.

B080 Insurance status and delayed adjuvant chemotherapy among women with breast cancer at an urban public hospital. Bradford E. Jackson1, Yan Lu1, Jolonda Bullock2, Muhammed Isa1, Bassam Ghabach1, Rohit P. Ojha1. JPS Center for Outcomes Research, Fort Worth, TX, 2JPS Center for Cancer Care, Fort Worth, TX.

Background: Lack of insurance has been identified as a key barrier to timely adjuvant chemotherapy, but this evidence may not be generalizable to public hospitals, where care is provided regardless of insurance status. Therefore, we aimed to assess whether insurance status is associated with delayed adjuvant chemotherapy among underserved women with stages I-III breast cancer treated at an urban public hospital.

Methods: We used data from the JPS Center for Cancer Care institutional registry (accredited by the Commission on Cancer).
on Cancer). This center is part of an urban public hospital network that serves Tarrant County, TX (population >2 million) and is a primary source of care for underserved individuals. Our eligible population included females aged ≥18 years diagnosed with stages I-III primary breast cancer between 2008 and 2015 and received surgery (lumpectomy or mastectomy) plus adjuvant chemotherapy as first course treatment. Treatment delay was defined as >120 days from diagnosis to adjuvant chemotherapy. We estimated risk ratios (RR), risk differences (RD), and corresponding 95% confidence limits (CL) for the association between insurance status and treatment delay, adjusting for age, race/ethnicity, marital status, and household income.

Results: Our study population comprised 223 female breast cancer patients, of whom 55% were aged <55 years, 29% were non-Hispanic Black, 34% were Hispanic, 51% were uninsured, and 40% were publicly insured. The median time to adjuvant chemotherapy was 98 days (interquartile range: 83-119). Overall, 77% initiated adjuvant chemotherapy within 120 days after diagnosis. The initiation of adjuvant chemotherapy later than 120 days was 22% among publicly insured individuals and 25% among uninsured (RR=1.1; 95% CL: 0.63, 1.8; RD=0.06; 95% CL: -0.06, 0.17).

Discussion: Our results suggest minimal differences in delayed adjuvant chemotherapy between publicly insured and uninsured breast cancer patients treated at an urban public hospital. More importantly, time to adjuvant chemotherapy in our population is only nominally longer than at National Comprehensive Cancer Network Institutions (93 days), which may be partially attributable to uninsured patients being enrolled in a hospital-based insurance assistance program. Future studies should assess whether hospital-based insurance assistance programs are similarly effective in other settings, which could have implications for reducing disparities in breast cancer outcomes.

B081 How patient cost sharing of tyrosine kinase inhibitors affects initiation, adherence, and outcomes in patients with newly diagnosed chronic myeloid leukemia: A retrospective claims-based study. Hsiao Ling Phuar, Charles E. Begley, Trudy M. Krause, Wenyaw Chan. The University of Texas Health Science Center at Houston School of Public Health, Houston, TX.

Background: High out-of-pocket costs may lead to disparities in the initiation of and subsequent adherence to expensive medications. For newly diagnosed chronic myeloid leukemia (CML) patients, early access to tyrosine kinase inhibitors (TKI) is a consistent predictor of adherence and optimal response. The study examines the association between TKI out-of-pocket costs, initiation, adherence, and total health care utilization and costs among patients who initiated TKI within 12 months following first CML diagnosis.

Methods: Individuals aged 18 to 64 with an initial diagnosis of CML were identified in the Truven Health MarketScan® Commercial Claims and Encounters database between 1/1/2011 and 12/31/2015. The association between cost sharing and TKI initiation was evaluated using Cox proportional hazards regression models applied to early (patients receiving therapy within 6 months of diagnosis) and late initiators (6-12 months after diagnosis). The association between initiation, adherence, utilization, and costs was examined in a subset of the sample with continuous enrollment for 12 months following TKI initiation. Adherence was estimated using the proportion of days covered (PDC), defined as the percentage of the proportion of days covered by the prescription fill during the 12-month follow-up period (adherent patients have PDC ≥80%). Health care utilization was compared using negative binomial regression models. Health care cost differences between early and late initiators were estimated using generalized linear models. All models were controlled for potential confounding factors.

Results: The study sample consisted of 624 patients, 607 (97.3%) early initiators and 17 late. Patients with late initiation had higher TKI out-of-pocket costs (≥75th percentile in the distribution of costs) for the initial 30-day supply (HR=0.83; p=0.047). Among 479 patients who were continuously enrolled during the 12-month follow-up period from TKI initiation, 472 (98.5%) initiated TKI within 6 months. Early initiators had a twofold increase in predicted PDC (75.4% vs. 36.2%; p<0.001). Over the 12-month follow-up period, early initiators incurred $34,075 more in total annual health care costs (p=0.002); cost differences were mainly driven by a TKI pharmacy cost difference of $31,929 (p=0.001). Late initiators were much more likely to have all-cause hospitalizations (IRR=5.94; p=0.026), or CML-specific hospitalizations (IRR=6.94; p=0.019).

Conclusions: Higher out-of-pocket costs for TKI may lead to delays in initiation and nonadherence. Patients with early initiation of TKI and adherence had lower nonmedication health care costs that were more than offset by higher TKI medication costs. Findings suggest that high drug out-of-pocket costs may limit access to life-saving oral cancer medications, causing disparities in TKI initiation and adherence for CML treatment. The timeliness of TKI initiation, however, was not shown to lead to overall cost savings during a 12-month follow-up period.
POSTER SESSION B

B082 Precision medicine guided by next-generation sequencing: Slow recognition of emerging technologies leads to crucial coverage gaps in health insurance. Phoebe A. Rollyson, Camille Abshire, Adam Greer, Ellen Friday, Catherine Chaudoird, Glenn Mills, FWCC, Shreveport, LA.

While the medical/research community has made great strides in the fight against cancer, providing new and innovative methods and technologies that improve the diagnosis and treatment of the disease, health insurers are slow to recognize the significance of these developments. Numerous biomarkers have been identified for various types of cancers and a variety of therapies have been developed to target these specific genetic abnormalities. However, just as the various types of cancers have varying biomarkers, each patient’s tumor bears its own specific genetic signature, causing each patient to respond to prescribed therapies in a different way. Next-generation sequencing (NGS) of a large test panel allows physicians a much broader knowledge of tumor-specific mutations in order to provide the best possible therapy tailored to the patient’s specific needs. This individualized treatment is the patient’s best hope for managing and defeating the disease. NGS identifies genetic abnormalities present in the patient’s tumor. Testing a wider range of genes provides a more specific genetic profile of the patient’s tumor, offering a broader range of treatment options and predictive indicators of a patient’s response to therapy. The Feist Weiller Cancer Center Genomics Core sequences solid tumor tissue using a 435-gene panel. We provide a comprehensive report identifying genetic variants that are currently targeted by FDA-approved therapies. For each actionable variant, the report lists targeted therapies currently in use for the patient’s disease and for other cancers, therapies associated with resistance when the variant is present, and new therapies in clinical trial for the patient’s disease. Our panel sequences whole coding regions and is able to detect less common variants in therapy-targeted pathways, dramatically increasing the chance of matching the patient to available treatment. Our panel also measures microsatellite instability and mutation burden, identifying patients as candidates for immuno-oncology therapy. At the Cancer Center, we have tested approximately 200 patients using this panel. In the state of Louisiana, our payer breakdown consists of 44% Medicare, 31% state Medicaid, and 20% private insurance. The federally funded Medicare program recognizes the benefits of genetic testing in cancer treatment and reimburses for the test. However, many private insurers consider broad panel testing to be investigational and many providers of state Medicaid deny coverage of numerous Current Procedural Terminology (CPT) codes covering molecular diagnostic testing. This coverage gap leaves a large portion of our state’s population without the necessary access to crucial information needed to make an informed decision concerning cancer treatment.

B083 Patterns of HIV testing among New Jersey Medicaid enrollees diagnosed with invasive cervical cancer. Jennifer K. McGee-Avila, Michelle Doose, Jose Nova, Rizie Kumar, Antoinette M. Stroup, Jennifer Tsui. 1School of Nursing, Francois-Xavier Bagnoud Center, Rutgers, The State University of New Jersey, Newark, NJ, US, 2School of Public Health, Cancer Institute of New Jersey, Rutgers, The State University of New Jersey, New Brunswick, NJ, 3Center for State Health Policy, Rutgers, The State University of New Jersey, New Brunswick, NJ, 4School of Public Health, Cancer Institute of New Jersey, Rutgers, The State University of New Jersey; New Jersey State Cancer Registry, New Jersey Department of Health, New Brunswick, NJ, 5School of Public Health, Cancer Institute of New Jersey, Center for State Health Policy, Rutgers, The State University of New Jersey, New Brunswick, NJ.

Purpose: HIV infection and cervical cancer disproportionately impact low-income and racial/ethnic minorities in urban areas. Few studies have examined factors associated with HIV testing during cancer diagnosis in vulnerable populations. Current National Comprehensive Cancer Network (NCCN) guidelines recommend an HIV test during initial invasive cervical cancer (ICC) workup. We examine factors associated with patterns of HIV testing among Medicaid enrollees diagnosed with ICC in New Jersey.

Methods: Using linked data from the New Jersey State Cancer Registry and New Jersey Medicaid claims and enrollment files, we examined patterns of HIV and other STI testing (chlamydia, gonorrhea and syphilis) among nonelderly (ages 21-64) ICC cases diagnosed between 2012 and 2014. We evaluated two HIV testing time periods: at any point during our study period (2011-2014; pre- or post-cancer diagnosis) and during the cancer workup (6 months pre/post ICC diagnosis). Bivariate and multivariable logistic regression models were used to identify sociodemographic, clinical tumor, and area-level factors associated with patterns of HIV testing.

Results: A total of 248 ICC Medicaid enrollees were included in the analytic sample, of whom 83 (33%) received an HIV test at any time. A little over a quarter (26.6%) received STI testing at any time, including 21% for chlamydia and gonorrhea testing. Of those who received any HIV testing, almost half (46%) received their HIV testing during the
POSTER SESSION B

Factors associated with longer time to surgical treatment in melanoma. Marissa L.H. Baranowski1, Howa Yeung2, Suephy C. Chen1, Theresa W. Gillespie1, Michael Goodman1, 1Department of Dermatology, Emory University School of Medicine; 2Department of Epidemiology, Emory University Rollins School of Public Health, Atlanta, GA.

Methods: The National Cancer Database was used to examine factors associated with an increased interval between diagnosis and definitive surgical treatment among 205,665 patients with Stage I, II, or III cutaneous melanoma between 2004 and 2015 using multivariable Cox proportional hazards modeling.

Results: The data demonstrated that the direction of the association between age at diagnosis and timing of surgery differed depending on insurance status. Among 115,461 privately insured patients, delay in surgical treatment was associated with older age (HR 0.85 in 70+ years, p <0.0001; HR 0.97 in 50-70 years, p <0.0001). By contrast, in 90,204 patients without private insurance, the association with age was weaker and in the opposite direction (HR 1.09 in 70+ years, p <0.0001; HR 1.09 in 50-70 years, p <0.0001). After adjustment for important patient and disease characteristics, other factors significantly associated with a longer time from diagnosis to surgery included non-white race, higher comorbidity burden, thicker tumor, higher disease stage, and head or neck melanoma location.

Conclusion: Melanoma patients experience disparities in timely receipt of surgery. Identifying groups at risk of delay reveals who would benefit most from patient navigation or care-coordination programs. Public health intervention is warranted to address specific roadblocks contributing to surgical delay to improve care for all patients with melanoma.

Disparities and factors associated with 30-day mortality following surgical treatment for squamous cell head and neck cancer with or without adjuvant therapy. Aleksandr R. Bukatko1, Parth Patel1, Vindhya Kakarla1, Matthew C. Simpson1, Eric A. Boakye2, Katherine A. Stamatakis3, Nosayaba Osazuwa-Peters1, 1Saint Louis University School of Medicine, St. Louis, MO, 2Saint Louis University, St. Louis, MO.

Introduction: Factors such as anatomic complexity and extensive surgical procedures increase the risk of serious, sometimes fatal complications post-surgical treatment for head and neck cancer squamous cell carcinoma (HNSCC). Thirty-day (30-day) mortality is a common quality metric that evaluates short-term survival; however, no study has described disparities associated with 30-day mortality following surgery in HNSCC United States population. The aim of this study was to identify disparities and factors (clinical and nonclinical) associated with 30-day postoperative mortality in patients with HNSCC treated with and without adjuvant therapy.

Methods: In this retrospective study, we utilized a patient cohort of 102,877 confirmed HNSCC cases from the National
Cancer Database (2004-2013) who were treated surgically with curative intent for the primary head and neck cancer. The effects of adjuvant therapy and other clinical and nonclinical factors on 30-day postoperative mortality were estimated via multivariate logistic regression with adjustment for time-varying nature of adjuvant therapy. Outcome was defined as any-cause-death within 30 days after definitive surgery of primary cancer. We controlled for several clinical and nonclinical covariates, including age, race, sex, health insurance status, primary tumor site, stage of presentation, and Charlson-Deyo comorbidity score.

**Results:** There were 859 patients who died within 30 days of definitive surgery for cancer, yielding a 30-day mortality rate of 0.83%. Treatment differences were associated with mortality, and patients who received adjuvant therapy had were significantly more likely to die within 30 days compared with those treated with surgery alone (aOR: 3.51; 95% CI 1.85, 6.66). Increasing number of comorbidities was also associated with greater odds of 30-day mortality (Charlson-Deyo comorbidity scores of 1: aOR: 1.45; 95% CI 1.23, 1.71, and Charlson-Deyo comorbidity scores of 2+ aOR: 2.52; 95% CI 2.05, 3.09). There were also sociodemographic disparities associated with 30-day mortality. Odds of 30-day mortality were significantly increased among patients with Medicaid insurance (aOR: 1.99; 95% CI 1.48, 2.68), as well as those who lived in neighborhoods with little education (≥ 29% missing high school diploma: aOR: 1.43; 95% CI 1.08, 1.88).

**Conclusions:** Disparities impact short-term mortality in the head and neck cancer population. Patients that were significantly more likely to die within 30 days of surgical treatment were those treated with adjuvant therapy, those with greater burden of comorbidities, those with little education, and those covered by Medicaid. To our knowledge, this is the largest study to document short term (30-day) mortality disparities among patients with head and neck cancer post-surgery in the United States. To improve short-term survival among head and neck cancer patients, it is important to account for these disparities found in this study.

**B086 Planning for the unexpected: Strategies for maintaining a robust clinical trial program.** Lemuel Melecio1, Jessica Hernandez1, Victor Carlo Chevere1, Luz Rodriguez2, Marcia Cruz-Correa1, UPR Medical Sciences Campus, San Juan, PR, 1NCI, Bethesda, MD, 1UPR Cancer Center, San Juan, PR.

As researchers engaged in conducting clinical trials, maintaining the well-being of our participants is the most important objective and above any other study research objective. Similarly, research protocols have well-delineated participant and sponsor communication plans as well as clearly outlined loss-to-follow-up algorithms. However, limited plans are developed to help investigators deal with unforeseen disasters such as those caused by natural disasters or political/governmental problems, such as government closeouts, long-term strikes or political unrest, that we may encounter during the time span of the study. Unexpected events, like natural disasters, may cause a great amount of infrastructure damage and affect our everyday life and the lives of research participants. Anticipation of and preparation for unexpected events such as natural disasters would allow development of strategies that are incorporated into the research protocol and will ultimately provide a road map for participants, investigators and sponsors. Hurricane Maria devastated Puerto Rico on September 20, 2017, causing damage to virtually all infrastructures in the island. All basic life necessities in Puerto Rico were severely compromised. FEMA reported that during the first 30 days after Hurricane Maria, only 61% of the population had cell phone service, 69% had potable water and 21% had power. In addition, communication by roads was severely impaired as roads’ integrity and accessibility were largely disrupted to several parts of the island. Hurricane Maria taught us how our duty as clinical investigators extended beyond the immediate research protocol needs and included providing support in other areas that affected the well-being of our research participants. We identified four main challenges faced as a result of the natural disaster: (1) infrastructure damage, (2) shortage of basic necessities (water, fuel, food, medications, etc.), (3) transportation difficulties and (4) communication failure. We will discuss the strategies and interventions that allowed us to continue our research enterprise, protect participants’ lives and provide support during the post-natural disaster emergency. Surviving Hurricane Maria has given us a new perspective on planning for emergencies and developing redundant systems, operating procedures and protocols that incorporate loss of infrastructure support. Moreover, budgets that include funds to support transportation and communications costs to sustain the clinical research enterprise during natural disasters or other unexpected social/political events should be developed. In addition, research protocols should have clear algorithms for emergencies (preapproved by sponsors and the IRB) and extended lost of communication.
POSTER SESSION B

B087 Disparities and trends in genetic testing and erlotinib treatment among metastatic non-small cell lung cancer patients. Lauren Palazzo, Deirdre Sheehan, Angela Tramontano, Chung Yin Kong. Massachusetts General Hospital Institute for Technology Assessment, Boston, MA.

Despite reports of socioeconomic disparities in rates of genetic testing and targeted therapy treatment for metastatic non-small cell lung cancer (NSCLC), little is known about whether and how such disparities change over time in the context of the rapidly evolving field of precision cancer treatment. We performed a retrospective analysis to identify disparities and trends in genetic testing and treatment with erlotinib. Using the Surveillance, Epidemiology, and End Results (SEER)-Medicare database, we identified 9,900 stage 4 NSCLC patients diagnosed in 2007-2011 at age 65 or older and used procedural codes to identify receipt of a genetic test and Medicare Part D records to identify erlotinib treatment. We performed multivariate logistic regression analyses to identify patient factors associated with differences in odds of receiving a genetic test and in receiving erlotinib treatment, and to assess temporal trends in these differences with respect to diagnosis year. We considered socioeconomic, clinical, and demographic patient factors, as well as whether any gaps due to these factors grew, narrowed, or stayed the same. We found that patients were more likely to receive genetic testing if they were under age 75 at diagnosis (odds ratio [OR]=1.58, 95% confidence interval [CI] 1.23 to 2.05) or had adenocarcinoma (OR=1.58, 95% CI 1.20 to 2.09); odds also grew with later year of diagnosis (OR=2.14, 95% CI 1.78 to 2.56). Patients with low income level were less likely to receive genetic testing (OR=0.72, 95% CI 0.53 to 0.99). Only the odds associated with being under 75 at diagnosis showed change (a decrease over time (OR=0.93, 95% CI 0.87 to 0.99). Erlotinib treatment was associated with race (OR=0.58, 95% CI 0.36 to 0.94 for black vs. white; OR=2.44, 95% CI 1.54 to 3.88 for Asian vs. white), was more likely among female patients (OR=1.38, 95% CI 1.19 to 1.59) and those with adenocarcinoma (OR=1.19, 95% CI 1.03 to 1.38), and was less likely among low-income patients (OR=0.79, 95% CI 0.67 to 0.93). All of these associations persisted throughout the study time period. Our results demonstrate that low socioeconomic status is the only nonclinical patient factor that independently predicts lower rates of both genetic testing and erlotinib treatment, and this disparity has remained steady over time. This finding suggests that more attention to closing this socioeconomic gap is needed as precision cancer treatments continue to be developed and refined.

B088 Health insurance status, stage at presentation and survival among female patients with head and neck cancer. Neelima Panth1, Matthew C. Simpson2, Rosh K.V. Sethi3, Mark A. Varvares4, Nosayaba Osazuwa-Peters2. 1Duke University School of Medicine, Durham, NC, 2Saint Louis University School of Medicine, St. Louis, MO, 3Massachusetts Eye and Ear Infirmary, Boston, MA.

Introduction: Head and neck cancer epidemiology has historically focused on the burden of disease among males. Despite a concerning increase in the incidence of certain types of head and neck cancer among females, females with head and neck cancer continue to represent an understudied and overlooked patient population. While previous studies have established that health insurance status is associated with mortality and stage at presentation among patients with head and neck cancer, the impact of health insurance on female patients with head and neck cancer is not well understood. This study describes incidence trends in stage at presentation and investigates the association between health insurance status, stage at presentation and survival among female patients with head and neck cancer.

Methods: This retrospective cohort study included 18,923 female patients from the Surveillance, Epidemiology, and End Results (SEER) database (2007 - 2014), aged ≥ 18 years, and diagnosed with a malignant primary head and neck cancer. Incidence trends for stage at presentation was estimated using Joinpoint regression analysis. Binary logistic regression estimated odds of presenting with late-stage disease. The association between health insurance status (private insurance, uninsured and Medicaid), and stage of presentation (AJCC stages I-IV) on the outcomes of interest (overall and disease-specific survival) was estimated using Fine and Gray proportional hazards models, while adjusting for covariates, including age at diagnosis, race/ethnicity, marital status, and tumor site.

Results: The incidence of stage IV head and neck cancer in this subpopulation rose by 1.24% from 2007-2014 (APC=1.24, 95% CI 0.30, 2.20). Patients with Medicaid (aOR=1.59, 95% CI 1.45, 1.74) and who were uninsured (aOR=1.73, 95% CI 1.47, 2.04) were more likely to be diagnosed with advanced-stage (stages III/IV) head and neck cancer. Cancers of the hypopharynx (81%) and oropharynx (83%) were most likely to be diagnosed at an advanced stage. Female patients with Medicaid (aHR=1.47, 95% CI 1.38, 1.56) and who were uninsured (aHR=1.45, 95% CI 1.29, 1.63) were more likely to die from any cause compared to privately insured patients. Medicaid (aHR=1.34, 95% CI 1.24, 1.44) and uninsured (aHR=1.41, 95% CI 1.24, 1.60) patients also had a greater hazard of death from head and neck cancer compared to
POSTER SESSION B

privately insured patients.

Conclusions: There has been a significant increase in the incidence of advanced-stage presentation for female head and neck cancer patients in the United States since 2007. Patients who are either uninsured or are on Medicaid are more likely to present with late-stage disease and die earlier than those with private insurance. This study illustrates the need to evaluate and address the unique burden of head and neck cancer among females. It is critical that physicians are aware of the trends in head and neck cancer among females and the need for further evaluation or referral of their high-risk patients when concerned.


My poster will go further into how and why we need to change racial disparities in the AA community. My poster was well received at my first AA conference that I attended in Chicago. I look forward to further research on this most important topic.

B090 Exploring the roles of CHWs in improving uptake of family health history assessment among patients and providers: Implications for cancer risk reduction and prevention among minority populations. Caitlin G. Allen1, Lawrence McKinney2, Brittaney Bethea2, Cam Escoffery1, Gail McCray2, Colleen McBride1, Tabia Akintobi2. Emory University, Atlanta, GA, 2Morehouse School of Medicine, Atlanta, GA.

The collection of family health history (FHH) is integral to the implementation of population screening that could identify those at high cancer risk who could benefit most from life-saving interventions. Although most individuals believe FHH is important to their health, few actually collect or know their FHH. Recent findings have identified a reduced likelihood of FHH collection among minority populations who may already be at an increased risk for familial cancers such as kidney, cervical, prostate, ovarian, and triple-negative breast cancer. The community health worker (CHW) workforce is especially well positioned to address these challenges in FHH collection, as they are trusted members of their community and well recognized for their work in creating community-clinical linkages. Engaging CHWs in promoting FHH collection could help improve cancer risk assessment utilization among minority populations. We conducted 30 semistructured interviews with CHWs in Georgia to understand their current roles and opportunities to expand their roles to include the gathering and sharing FHH information. Interview questions were guided by the Consolidated Framework for Implementation Research and also included current engagement in FHH collection, beliefs and understanding of FHH collection, and perceived training needs to complete an FHH record using an FHH collection tool. All interviews were double coded in MAXQDA using a codebook developed, adapted, and agreed upon by the research team. Findings demonstrate that most CHWs believe that there is value in collecting FHH and that they are well suited to gather basic FHH information, but the majority had no experience collecting FHH, either formally as part of their jobs or from their own family members. Some concerns raised about this role include the potential for community members to be resistant to providing the information, CHWs’ lack of medical knowledge required to address questions from clients about genetics, and the potential complexity of information needed to complete FHH tools. CHWs also provided recommendations for reducing the burden of FHH collection such as tutorials about how to gather accurate and complete information. They also suggested providing resources to clients that focus on the importance of knowing FHH and how it can be used to improve health and become knowledgeable about cancer risk-reduction resources and prevention strategies. Understanding opportunities for CHWs to extend their role in this way could help improve health care delivery and access by enhancing patient-provider communication about FHH in order to tailor recommendations, prevention, and treatment of diseases. Results from this study may inform efforts to strengthen the utility of existing FHH collection tools and accompanying materials to promote the uptake of FHH assessment among patients and providers.

B091 Across border: Towards increasing Pap testing and HPV knowledge and acceptability among minority populations. Kimlin Ashing1, Camille Ragin2, Ndifeke Etim1, Francisca Rivera1. 1City of Hope Comprehensive Cancer Center, Duarte, CA, 2Fox Chase Cancer Center, Philadelphia, PA.

Introduction: The Pap test and human papillomavirus vaccine (HPVV) have the potential to eradicate cervical cancer globally, but implementation continues to prove challenging among minority populations in the United States, especially immigrants and Blacks. The goal of this study was to assess the efficacy of a regional intervention trial designed to increase Pap testing and HPVV knowledge and acceptability.
Methods: The study was conducted in collaboration with community partners to enhance cultural and linguistic relevance. The intervention employed social marketing strategy using electronic (public service announcements via local TV and radio) and print media (local, ethnic newspaper and circulars) for broad, cost effective dissemination of HPVV and Pap testing information and resources. Regions were assigned to one of two intervention conditions: 1) direct mailing of printed materials with Pap test and HPVV resources and 2) direct mailing only. Women 18-70 years old were included and completed the pre- and post-intervention questionnaires. Univariate and bivariate analyses were conducted to measure changes in Pap test uptake and HPVV knowledge and acceptability from baseline to post-intervention.

Results: Analyses included 322 women who had baseline and post-assessment data: African Americans (n=97), Latina English-language preferred (n=39), Latina Spanish-language preferred (n=129), and Trinidadians (n=57). Results showed statistically significant differences in improved HPV knowledge for African Americans (p = .019), Latina Spanish (p=.009), and Trinidadians (p=.034), but not Latina English-language preferred participants. Changes in acceptability of HPV vaccine were also significant across all groups except Trinidadians. Pap testing also showed significant increases. At preintervention, 21% of women reported not having a Pap test in the past 2 years. Post-intervention results showed Pap test completion increased by 10% in the mailed intervention group and 23% in the mailed plus social marketing group.

Conclusion: The results suggest utility and efficacy for the trial as both the mail-only and the mail-plus-social-marketing groups improved. However, compared to the mail condition only, mail plus social marketing seemed more likely to be effective for improving Pap testing. Our findings show multilevel contextual factors (including culture, country of origin, SES, and immigration) influenced Pap testing and HPVV acceptability.

B092 Promoting HPV vaccination among adolescent girls in Ghana, West Africa: A case study. Joycelyn Cudjoe1, Dora Cudjoe1, Bernard Fiifi Brakatu1. 1Johns Hopkins School of Nursing, Baltimore, MD, 2The World Bank Group, Washington, DC, 1University of Cape Town/Groote Schuur Hospital, Cape Town, South Africa.

Background: Cervical cancer remains one of the leading causes of cancer-related death among Ghanaian women. Although there are vaccines available to protect women against human papillomavirus (HPV), the virus that causes cervical cancer, the use of cervical screening and prevention services among Ghanaian women remains low. In addition, many people in Ghana still reside in areas where access to health care services such as vaccinations and cancer screening is limited.

Description: Gavi, the Vaccine Alliance, established a pilot HPVV vaccine program to provide subsidized HPVV vaccines to young girls living in low-income countries with a high cervical cancer burden. To be eligible, countries must demonstrate their capacity to vaccinate more than 50% of young girls between ages 9-13 years living in an average-sized district or community. In November 2013, the Ghanaian government partnered with Gavi to provide subsidized vaccines to over 6,000 girls living in seventeen districts in the Greater Accra, Central and Northern regions.

Lessons Learned: Lack of political commitment is a challenge to the successful implementation of the HPVV vaccine program in Ghana. Financial uncertainty, logistical problems such as poor infrastructure, lack of public buy-in, and the lack of relevant scientific data to inform decision making are threats to the successful implementation of the HPVV vaccine initiative in Ghana.

Conclusion: To improve vaccination coverage rate, we recommend that the Ghanaian government commits to making HPVV vaccination a health priority. Community participation and buy-in must be strengthened through active advertisement and outreach programs. This case study has also given an indication of the importance of further studies on the burden of cervical cancer in Ghana and cost effectiveness of an HPVV vaccine initiative.


Background: Pap testing has decreased cervical cancer incidence in the United States. However, persons of African descent are disproportionately burdened and experience worse health outcomes due to underutilization of screening services.

Purpose: Identify and compare the prevalence of Pap smear testing among African-American (AA), African immigrant (AI) and Afro-Caribbean (AC) women living in the United States.
**POSTER SESSION B**

**Methods:** A retrospective study was conducted using the 2010-2014 National Health Interview Survey data. Females of African descent, aged of 21-65, categorized into the 3 subgroups were included. We analyzed the prevalence of ever receiving Pap test and performed multivariate logistic regression to compare the likelihood of Pap testing among the 3 groups.

**Results:** Total of 3,740 respondents comprising 3,373 (90%) AA, 163 (4%) AI and 204 (6%) AC. 92% of AA reported Pap testing in the past, compared to 86% AC and 68% AI. After adjusting for age, marital status, insurance and income, the odds of Pap testing were 86% lower among AI [OR: 0.14] and 56% lower among AC women [OR: 0.44] than AA.

**Conclusion:** This study highlights importance of addressing cancer screening needs of each subgroup separately. Studies on the impact of culture on the subgroups' screening behaviors are needed.

**B094 Impact of a multi-theory-driven community-based intervention to increase mammographic screening in a Midwest American Indian tribe.** Wesley Petersen, Ann Nicometo1, Robert A. Vierkant1. 1Mayo Clinic, Rochester, MN, 2EmpowerInt Communities, Rochester, MN.

**Purpose:** The “No Squeeze Can Defeat Me: Mammograms for Life!” study is locally known as “My Life Matters: Mammograms for Life!” and is funded by the Minnesota Department of Health. The intervention’s purpose with one Midwest tribe is to increase American Indian women’s regular participation in yearly mammographic screening beginning at age 40. At study initiation, mid-year 2016, adherence with annual screening guidelines stood at 36% for women 40 and older. Using previous work that significantly differentiated nonadherent women from adherent women, we are working with tribal health and the Indian Health Service partners to utilize differentiating theoretical models and elements of those models in an attempt to increase screening and adherence through poster messaging. Posters incorporated six elements of the Health Beliefs Model, two components of the Social Norms and Social Support Models, and three features of the Theory of Planned Behavior model. Multiple elements or features of each model are employed in the poster messaging.

**Procedures:** No Squeeze works through a Community Advisory Project Board (CAPB) and a Project Implementation Team (PIT) consisting of tribal health, Indian Health Service, and community members of varied ages, screening status, and cancer history status. CAPB members take the lead on all decisions regarding messaging, message placement, frequency of new message placements, messaging evaluation and radiology performance figures. The PIT is responsible for executing CAPB decisions. Mayo Clinic is responsible for development of poster messages and data analysis. Evaluation of the intervention considers changes in screening participation and no-show (unfilled scheduled appointments) rates and collection and analysis of community women’s evaluations of posted messages. The intermediate analysis takes into account comparable months from July-June of 2016/17 and 2017/18. Analysis is primarily descriptive. Where appropriate, chi-square statistics are calculated.

**Results:** In the first half of each of the two years of the intervention (2017 and 2018), the average number of mammograms increased by 8 and 10, respectively, over an average of 36 at baseline (2016). In the same period, monthly no-show mammogram appointment rates decreased from an average of 47% to 39%. Community women’s poster evaluations indicate that messages are likely to contribute to increased mammogram screening (p = <0.004). Among notable evaluation findings: Women of all ages like the posters and will continue to read them. They find the messages personally important and important to other women of the tribe. Use of community women’s images in the posters adds interest in the posters and has a positive effect on women’s future screening (p = 0.0002).

**Conclusions:** To date, poster messaging appears to be associated with increased screening, decreased no-show rates and community receptiveness. Further study will be necessary to determine whether it can be employed with other tribes.

**B095 Eat, Move, Live: An intervention strategy for the reduction of cancer and chronic diseases tailored to the Latina population.** Cristal Resto, Mayra Serrano, Katty Nerio, Marisela Garcia, Alejandro Fernandez, Victoria L. Seewaldt. City of Hope, Duarte, CA.

Chronic diseases such as diabetes and obesity have been linked with an increased occurrence of various malignancies. Given that 1 in 3 Latina women will be diagnosed with cancer in their lifetime, it is critical that chronic diseases be targeted. In order to reduce the incidence of cancer and chronic disease among the Latina population, the Eat, Move, Live (EML) program was created. EML is a community-based intervention strategy aimed at reducing...
POSTER SESSION B

the prevalence of chronic disease risk through tailored modifications in lifestyle, nutrition and physical activity. Recruitment for the study occurred through collaboration with community organizations and with the use of flyers, social media, and word of mouth. Through recruitment a total of 48 participants enrolled and 28 completed follow-up data. Participants of the program attended a 5-week series of courses that included a one-hour interactive nutritional education segment aimed at chronic disease risk reduction, a 30-minute food preparation followed by a demonstration, and 30-minute physical activity session. Each of the courses was conducted at a community partner site as a way to increase participation and adherence. Health behaviors, beliefs, demographics, body measurements and biomarkers were taken at baseline and at follow-up. The mean weight at baseline was 174.8 lb and at follow-up was 171.4 lb (p-value < 0.001), with a mean weight loss of 3.4 lbs. The mean waist-to-hip (WHR) at baseline was 0.86 and 0.85 at follow-up. Although WHR mean ratio was not statistically significant, there was a reduction in the WHR to 0.85, and according to the World Health Organization a WHR of 0.85 and below is viewed as healthy for women. Mean BMI at baseline was 32.2 and at follow-up was 30.4. BMI data were approaching significance with a p-value < 0.06. Our findings suggest that a tailored community-based intervention strategy can significantly reduce weight loss among the Latina population. This has important implications because weight loss has been linked to a reduction in the risk for cancer and other chronic diseases (1). Following completion of the program, participants shared that before the intervention views of chronic diseases were viewed as irreversible, but after education an improved understanding that modifiable behaviors could result in the prevention/delay of the onset of chronic diseases was observed. Future implications of this program are focused on increasing the retention rate and sustainability of results.

B096 Responding to stakeholder needs for cancer screening and prevention: Using formative evaluation to tailor outreach and navigation programming in Connecticut. Sakinah C. Sutiratana1, Roy Herbst1, Denise E. Stevens1, Beth A. Jones1, Yale School of Medicine, Yale Cancer Center, New Haven, CT, 2Matrix Public Health Consultants, Inc, Halifax, NS, Canada.

Background: Total cancer incidence rates in Connecticut are well above the national average, with disproportionate impact on our underserved and minority communities. As part of the Yale Cancer Center’s (YCC) Community Outreach and Engagement activities, we translate population research into programmatic innovations designed to reach and address the needs of Connecticut’s at-risk populations. Our recently initiated Yale Cancer Disparities Firewall (Firewall) project aims to strengthen population health through expanded outreach, navigation and health systems change. The project seeks to build a cancer disparities firewall around at-risk populations by addressing patient and system level factors across the cancer care continuum. The programmatic model consists of two primary intervention strategies—outreach and patient navigation—and local health infrastructure fortified by diverse partnerships and programmatic change. Prior to launching, a formative, baseline evaluation was conducted between January and May 2018. Findings from this evaluation are presented alongside proposed programmatic translations.

Methodology: The baseline evaluation consisted of three components: 1) a review of existing programmatic data and data collection strategies, 2) analysis of current outreach and education activities and partnerships and 3) completion of seven stakeholder interviews. By triangulating findings across qualitative analyses, the evaluation, conducted by an external evaluator, identified potential facilitators for and barriers to project implementation and success. Findings were synthesized for translation into program activities as well as for pre-/post-implementation dissemination.

Results and Translation: Baseline evaluation revealed four challenges to successful implementation: 1) limited input from residents “on the ground,” who might be the target of risk reduction and screening services, 2) presence of multiple levels of navigation and coordination for patients during and after cancer diagnoses, 3) few resources for helping would-be patients “navigate” risk reduction and screening services and 4) problematic race/ethnicity data. Despite these challenges, existing outreach and education activities consisted of 14 events, 1,909 contacts and 25 meetings with partner organizations. To incorporate the findings, our project has: 1) complemented existing community advisory board infrastructure with additional neighborhood-level input, 2) piloted community health navigation to draw new patients into cancer screening and risk reduction interventions and 3) initiated high-level meetings about whether and how collection and use of race/ethnicity data may be improved system-wide.


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**Background:** Globally, cervical cancer is one of the most common cancers among women. The risk of invasive cervical cancer remains high among sub-Saharan African immigrant (SSAI) women in the US despite being a preventable cancer. Women’s knowledge about cervical cancer risk factors and preventive behaviors has been found to be related to the uptake of Pap screening and engagement in other healthy behaviors. Given the high prevalence of human papillomavirus (HPV) infection and other cervical cancer risks among SSAI women, it is critical that SSAI women be well informed and knowledgeable regarding their cervical cancer risk and prevention. The purpose of this study is to assess SSAI women’s knowledge of cervical cancer risk factors, HPV, and cervical cancer screening.

**Methods:** This study was a quantitative analysis of cross-sectional survey of 108 English-speaking SSAI women aged 21 and above recruited from Lexington and Frankfort, Kentucky, between October and December 2016. Information on demographics, screening behavior, and cervical cancer knowledge was collected. A knowledge scale including 14 questions about facts and common myths related to cervical cancer and HPV was used. Total knowledge scores were calculated for participants. Analysis was conducted to identify factors associated with knowledge scores.

**Results:** Participants’ mean age was 34 ± 9 years, 56% had a college degree, 65% reported that their income was adequate, and 54% had lived in the US for more than 5 years. The composite knowledge score was 7.8 ±3.6 with a maximum score of 14. In bivariate analysis, length of residence in the U.S (P = 0.001), ever had Pap screening (P < 0.001), health insurance (P < 0.001), having primary provider (P = 0.020), and health provider recommendation for cervical cancer screening (P = 0.006) were associated with knowledge. In multiple regression analysis, longer length of residence in the U.S (P = 0.044) and ever having a Pap screening (P = 0.007) remained significantly associated with cervical cancer knowledge.

**Conclusions:** Findings show a limited knowledge of cervical cancer risk factors and the role of HPV in cervical cancer. Future research should further explore and understand how length of residence in the US and having had a Pap screening are related to cervical cancer risks knowledge. The gaps in women’s knowledge points to the need for targeted educational interventions to address knowledge needs of SSAI women to encourage cervical cancer screening prevention and timely detection.

**Background:** The success of prostate cancer (PCa) prevention and control programs should be measurable as a decrease in the likelihood of PCa diagnosis at a late stage in vulnerable and underserved populations.

**Objective:** To examine the relationship between individual socioeconomic status (SES), county-level measures of social determinants, and PCa stage at diagnosis.

**Methods:** Men aged 40 and older diagnosed with stage 0 to III PCa from 2000 to 2012 were identified from the Surveillance, Epidemiology, and End Results (SEER) tumor registries in 12 states. These states were retained because they had complete information on Federal Information Processing Standard (FIPS) county codes and across the study period. These data were combined with data from the Area Health Resource Files (AHRF). Stage at diagnosis was dichotomized as early stage (in situ, localized) versus late stage (regional, distant). Individual-level factors included age at diagnosis, race (white, black, others), ethnicity (Hispanic/Latino, non-Hispanic/Latino), marital status (married, unmarried), insurance status (insured, uninsured, unknown), tumor stage, tumor grade (undifferentiated, poorly differentiated, moderately differentiated, well differentiated), and year of diagnosis. Contextual-level factors included county level SES status, residence in rural/urban county, and county-level availability of health care resource. Student’s t test for continuous variables and chi-square test for categorical variables were used for statistical comparisons. Hierarchical logistic regression models were used to identify factors associated with late-stage diagnosis.

**Results:** The sample consisted of N = 707,108 PCa cases of which 16.48 % (N = 116,511) are late stage and 16.48 % (N= 590,597) are early stage. The mean diagnosis age was 66 years old. The majority of these individuals were married (76%), White (80.76%), had unknown health insurance coverage (56.30%), were diagnosed in the year 2007 (8.56%), and lived in the state of California (38.48%). In the multivariate analysis, the odds of late-stage PCa diagnosis were higher in older men (odds ratio [OR] =1.013, 95% CI=1.012, 1.014), Blacks (OR=1.07, 95% CI=1.05, 1.09), and those with unknown insurance status (OR=1.12, 95% CI= 1.10, 1.15). County-level socioeconomic indicators including unemployment rates, educational attainment, poverty rates, rural/urban classification were not predictors of late-stage
diagnosis. Furthermore, county-level contextual variables related to the availability and accessibility of health care providers and health services were not associated with late-stage diagnosis.

**Conclusions:** Community-based interventions designed to increase utilization of PCa testing should continue to target vulnerable and underserved populations especially Black, and uninsured/underinsured men. It is hope that these efforts will improve early detection and contribute to improve survival.

**B099 CRC screening in rural community clinics using the fecal immunochemical test (FIT): Issues with repeat screening.** Connie L. Arnold¹, Terry C. Davis¹, James Morris², Peggy Murphy², Glenn Mills¹, Feist-Weiller Cancer Center and LSU Health Sciences Center, Shreveport, LA, ¹LSU Health Sciences Center, Shreveport, LA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR12) of the Conference Proceedings.

**B100 Reported barriers to colorectal cancer screening in Appalachian Kentucky.** Adaeze Arohi¹, Adebola Adegboyega¹, Jennifer Hatcher², ¹University of Kentucky, Lexington, KY, ²University of Arizona, Phoenix, AR.

**Background:** Appalachian Kentucky residents suffer significant colorectal cancer (CRC) disparity, in part related to low utilization of CRC screening. Reducing or removing potential barriers to CRC screening uptake may increase utilization of CRC screening in this population. The purpose of this study was to identify barriers to CRC screening in adults aged 50 years and older in rural Appalachian Kentucky.

**Methods:** This study reports the analysis of baseline data from a randomized controlled trial designed to promote CRC screening in rural Appalachian Kentucky among individuals who have not been screened for CRC recruited from two Emergency Departments at St. Claire Regional Medical Center in Morehead, Kentucky, and Appalachian Regional Healthcare in Hazard, Kentucky. The survey used for this study assessed CRC screening status, barriers, susceptibility, and benefits related to CRC screening, sociodemographic characteristics, and other health-related information such as health care utilization including the reason for ED visit, insurance coverage, and health care access. Descriptive and bivariate analyses are reported.

**Results:** Questionnaires were completed by 191 adults aged 50 and over, waiting for nonurgent care or with a family member in the ED of rural Appalachian hospitals. Participants were mostly Caucasian (98%), female (57%), aged 58 ± 8 years, who had household income < $20,000 (56%), and 95% had never undergone CRC screening. Fear of CRC result (51%), perceived pain (50%), and cost (49%) were the most salient barriers to CRC screening test. The following four demographic variables were significantly associated with barriers to CRC screening: education, marital status, income, and age.

**Conclusions:** Rural Appalachian Kentucky residents do not screen for CRC according to guidelines, partly due to perceived barriers to CRC screening. Education and income level were associated with the perception of painful and costly CRC screening in this population, suggesting that they do not have adequate knowledge or access to CRC screening resources available in the communities. Considering the cultural norms peculiar to Appalachian Kentucky, this population will benefit from a community health worker-led educational intervention to promote CRC screening through short video messages about the CRC screening process, other less invasive screening options, and benefits of CRC screening. This intervention may be able to address the barriers identified in this group, including the perception of painful screening procedure and the fear of screening result. Additionally, appropriate navigation program to affordable and accessible CRC screening resources within the local community would be beneficial to addressing the dismal use of screening resources among individuals in this population.

**B101 Assessment and resolution of breast and cervical cancer screening barriers for underserved women in Louisiana.** Janet Brown, Nannozi Ssenkoloto, Tyler Bartley, Donna Williams. LSUHSC School of Public Health, New Orleans, LA.

The Louisiana Breast and Cervical Health program (LBCHP) provides breast and cervical cancer screenings and navigation services at no cost to about 5,000 uninsured or underinsured women per year across the state. These low-income, uninsured or underinsured women have barriers that prevent them from receiving screenings and early cancer detection. A core part of the program is to provide navigation services to address these barriers to cancer care. LBCHP navigators provide extra layers of patient-centered education and resources to assist with completion of screening. They intervene on behalf of the patient with clinicians and departments to facilitate ease of navigating
POSTER SESSION B

Factors contributing to precancerous polyp detection in initial screening colonoscopies. Yakira David1, Lorenzo Ottaviano2, Jihye Park3, Sadat Iqbal3, Michelle Lihtshteyn1, Samir Kumar1, Helen Lyo1, Ayanna Lewis2, Brandon Lung2, Jesse Frye2, Li Huang1, Ellen Li2, Jie Yang2, Laura Martello3, Shivakumar Vignesh1, Joshua Miller1, Evan Grossman1, 1Mount Sinai Hospital, New York, NY, 2Stony Brook University, Stony Brook, NY, 3SUNY Downstate Medical Center, Brooklyn, NY.

Background: The incidence of colorectal cancer is persistently higher in Black/African Americans than other races in the United States. It is less clear whether Black/African Americans are at higher risk for colon precancerous polyps, which represent an earlier stage in colorectal adenoma-carcinoma progression.

Methods: A retrospective chart review was performed on initial average-risk screening colonoscopies on patients (age 45-75 years) during 2012 at 3 institutions. Multivariable logistic regression models were used to examine the relationship between potential risk factors and the detection of precancerous polyps.

Results: Of the 2,225 initial screening colonoscopies, 1,495 (67.2%) were performed on Black/African Americans and 566 (25.4%) on Caucasian non-Hispanic patients. The mean age of initial colonoscopies was 57.1 y and 56.0 y for Black and Caucasian patients, respectively. Male patients represented 32.0% and 42.8% of the Black and Caucasian patients, respectively. Obese patients represented 41.4% and 31% of Black and Caucasian patients. A higher percentage (30%) of the Black patients were diagnosed with diabetes mellitus compared to Caucasians (11%). Multivariable logistic regression revealed that performance of the colonoscopy by academic gastroenterologists was associated with higher precancerous polyp detection compared to contractual nonacademic gastroenterologists (OR 1.69 95% CI 1.32-2.17, p<0.0001). Because of this observation, a physician feedback program was initiated, and as of 2017 the polyp detection rates at all three institutions reached 25%. In addition, multivariable analysis also identified older age (OR 1.03/year 95% CI 1.01-1.04 p= 0.0006), male sex (OR 1.60 95%CI 1.32-2.00 p<0.0001), current smoking (1.52 95% CI 1.32-2.17 p<0.0001) and diabetes mellitus (OR 1.27 95% CI 0.99-1.63 p = 0.062) as associated with higher precancerous colon polyp detection or adenoma detection rate (ADR). Neither race, ethnicity, BMI, nor insurance was significantly associated with detection rates.

Conclusions: It is imperative that metrics of polyp detection rates be routinely monitored to ensure that all patients have access to high-quality screening colonoscopies. A prospective observational cohort study will help further identify factors associated with precancerous polyp detection, now that variations in operator detection rates have been addressed.

Community-based uptake of self-sampling for HPV DNA-based testing for cervical cancer screening in Ethiopia: Preliminary findings of a cluster randomized trial. Muluken Gizaw1, Friederike Ruddies2, Adamu Addissie1, Alemayehu Worku1, Tamrat Abebe1, Brhanu Tekla1, Andreas M. Kaufmann3, Eva Kantelehardt2, 1Addis Ababa University, School of Public Health, Department of Preventive Medicine, Addis Ababa, Ethiopia, 2Department of Gynecology and Institute for Medical Epidemiology, Biometrics and Informatics Martin-Luther-University, Halle-Wittenberg, Germany, 3Addis Ababa University, School of Medicine, Department of Microbiology, Immunology and Parasitology, Addis Ababa, Ethiopia.
Background: Cervical cancer (CC) remains a leading cause of morbidity and mortality of all cancers among women residing in low-income countries, including Ethiopia. In Ethiopia, although the standard method of CC screening is using Visual Inspection with Acetic Acid (VIA), service accessibility is limited and the uptake by eligible women is very low. Self-sampling for human papillomavirus (HPV) DNA testing might improve the uptake of targeted women for CC screening, especially for hard-to-reach population in Ethiopia. We investigated whether self-collection of cervicovaginal samples for HPV DNA tests would be associated with increased uptake of screening compared with VIA.

Methods: A community-based randomized controlled trial has been conducted in Butajira, one of the Health and Demographic Surveillance Sites (HDSS) of Ethiopia. A total of 55 clusters comprising 2,356 women aged 30-49 were randomized in two arms. Community-based sensitization was conducted using the local community workers at their vicinity. Following the community mobilization women were invited to go to the local health post for self-collection-based HPV DNA testing (arm A) or to Butajira Hospital for VIA screening (arm B). We compared the uptake of screening between the two arms.

Results: In the HPV arm, of the total 1,213 sensitized women, 1,020 (84.1%) (P<0.0001) accessed the health post for HPV screening. In the VIA arm, 575 of 1,143 (50.5%) visited the hospital. Among the women who accessed the health post for HPV DNA testing, 892 of 1,020 (87.5%) (P=0.0007) provided samples, while 466 of 575 (81%) underwent VIA screening. The residual was excluded due to eligibility criteria in both arms.

Conclusion: This preliminary finding of the trial demonstrated better community acceptability and uptake of self-collection-based CC screening at the health post compared to VIA at the hospital. Self-collection-based CC screening can be done at the local health facility and may significantly improve the uptake of CC screening in Ethiopia.


Despite progress in reducing racial disparities in breast cancer mortality, black women in Chicago are still more than twice as likely to die from the disease than white women. For sixteen years, Sisters Working It Out (SWIO), a 501c3 nonprofit, has utilized peer education and patient navigation as evidence-based methods to increase breast cancer knowledge and access to and utilization of quality breast health care for underserved women across the city. Strategic partnerships have been an invaluable resource for the organization. The aim of this study is to evaluate the programmatic impact of an academic-nonprofit partnership in improving breast health knowledge for women on Chicago’s Southside.

B105 Providing colorectal cancer screening interventions at Federally Qualified Health Centers (FQHCs): Addressing the issues of language, culture, and health literacy through culturally tailored education and navigation. Kathryn M. Glaser1, Tessa Flores1, Miranda Lynch1, Jessie Mossop2, Alyssa Abrams1, Carolyn Johnson1, Deborah O. Erwin1, Mary Reid1.

1Roswell Park, Buffalo, NY, 2Jericho Road Community Health Center, Buffalo, NY.

Background: Colorectal cancer (CRC) screening is effective in preventing and detecting cancer at an early stage, yet CRC continues to be the second leading cause of cancer death, and populations served by Federally Qualified Health Centers (FQHCs) are screened at lower rates (39%) than the national average (67%), with the lowest screening rates recent immigrants (34%). Time constraints impede providers from discussing CRC screening; insufficient access to screening facilities and patients’ fear regarding colonoscopy preparation and procedure are just some of the challenges CHCs face. These issues are only compounded by significant language and cultural barriers.

Methods: This quality improvement (QI) initiative measured CRC screening rates from August 2016 to April 2018 at an urban FQHC providing primary care services to diverse, low-income, and predominantly non-English speaking population with two clinic locations (intervention and control site). The patient navigator assigned to the intervention site provided both provider and patient education, developed culturally tailored patient education materials (visual), assisted in scheduling and coordinating services (transportation, interpreters, obtaining prep solution for colonoscopy) and distributed fecal immunochemical testing (FIT) for those refusing or ineligible for a colonoscopy. Our rationale for the project, supported by preliminary data, was that FQHC providers want to increase screening rates, particularly in non-English speaking patients, but need tools and support to implement change.
**POSTER SESSION B**

**Results:** Between August 2016 and April 2018, the intervention site increased from 32% to 59% of eligible patients screened for CRC, with the most notable change in the non-English speaking patients, primarily Burmese, Nepali and Spanish speaking. The change in CRC screening rates at the intervention from baseline is highly significant (p < 0.001), although the change from baseline in control site is also significant (p=0.020), but only in the second year. One year post intervention, there was a 24% increase in odds of participating in screening for a person at the intervention center compared to the control center. By April 2018, this effect increased significantly and the odds of participating in CRC screening are 86% higher for a person at the intervention center compared to the control center. In August 2018, intervention efforts will expand to the control site, piloting a culturally tailored educational video targeting the predominantly African American population served at the site.

**Conclusions:** Specialized and tailored education plus navigation are effective in increasing CRC screening rates at FQHCs, particularly in non-English speaking populations. Understanding how different populations think about CRC screening informs navigation strategies on how to better promote screening in diverse populations and develop more targeted interventions.

**B106 Cervical cancer screening modalities by state, 2016.**

Ann Goding Sauer, Ahmedin Jemal, Stacey A. Fedewa. American Cancer Society, Atlanta, GA.

**Introduction:** The Papanicolaou (Pap) test has long been a recommended cervical cancer screening modality. However, for women age 30–65 years, recommendations of the American Cancer Society and the US Preventive Services Task Force (USPSTF) now include testing for human papillomavirus (HPV) in conjunction with Pap test every five years (co-testing) or Pap testing alone. Additionally, draft USPSTF recommendations issued in 2017 include primary HPV testing for women 30–65 years. HPV co-testing is the preferred cervical cancer screening method in this age group because abnormalities are less likely to be missed. It is unknown how test modality varies by geography and insurance status, but such information could be useful for cancer control efforts. We examined prevalence estimates of cervical cancer screening modality among women age 30–65 years by state and insurance status.

**Methods:** Nonpregnant female respondents age 30–65 years with intact uteri and complete information on HPV and Pap testing (n=83,715) were selected from 2016 Behavioral Risk Factor Surveillance System data. Cervical cancer screening modality was categorized as co-testing (HPV and Pap testing in the past five years), HPV testing alone (in the past 5 years), and Pap testing alone (in the past 3 years), among those recently screened. SAS-callable SUDAAN was used to generate weighted, age-adjusted prevalence estimates.

**Results:** The prevalence of recent cervical cancer screening ranged from 79.9% in Idaho to 92.4% in Massachusetts (median=87.4%). Among those who were recently screened, Pap testing (range: 49.7%-73.3%; median=62.0%) was more common than co-testing (range: 26.1%-48.9%; median=37.4%) or HPV testing alone (<2%). Although modality varied widely by state, in the District of Columbia (DC), Maine, and New York the prevalence of co-testing approached that of Pap testing where 48.9%, 45.9%, 44.2% were co-tested and 49.7%, 53.8%, and 54.6% had Pap testing alone, respectively. Generally, the prevalence of co-testing was lower in Southern and Midwestern states compared to states in other regions. The prevalence of recent screening was about 18% higher among the insured (median=89.1%) compared to the uninsured (median=71.2%). Among both the insured (median=61.5%) and uninsured (median=65.1%) Pap testing was the most common modality, but co-testing was more common in the insured (median=38.1%) than uninsured (median=34.9%).

**Discussion:** In 2016, most women had recently been screened for cervical cancer; however, utilization was notably lower among the uninsured than the insured. Among those who had been recently screened, the prevalence of Pap testing was higher than co-testing in all states, but was most similar in DC, Maine, and New York. Pap testing was even more common than co-testing among the uninsured compared to the insured. Efforts to educate women and their providers on the benefits of HPV co-testing may be needed.

**B107 Cervical cancer screening behaviors and perceptions of medical mistrust among rural Black and White women.**

Marla B. Hall, Paul Vos, Jukelia Bess, Kelly Reburn, Gavin Locklear, Jamila McAlister, Ronny Bell. East Carolina University, Greenville, NC.

**Background:** This study examined the relationship of medical mistrust, using the Group-based Medical Mistrust Scale (GBMMS), and Papanicolaou (Pap) testing behaviors among rural Black and White women.
**POSTER SESSION B**

**Methods:** Utilizing a convenience sample, a cross-sectional study was performed. Inclusion criteria included self-identification as a non-Hispanic Black or White female, at least 21 years of age and a resident of one of the predetermined counties in the region. Analyses conducted were two-sample t-tests, Fisher's exact tests, Pearson's r and logistical regression.

**Results:** Among 338 women, four GBMMS items had statistically significant outcomes using multiple significance tests and remained when adjusting for demographic variables. Analyses indicated that Whites were dissatisfied with the health care system to a greater extent than Blacks. In addition, among White respondents, as the level of medical mistrust increases, an individual’s likelihood of ever having had a Pap test performed decreases. Moreover, among the White subgroup, women who have formed a habit of adhering to the recommendation were more likely to maintain annual commitment.

**Conclusions:** The impact of medical mistrust on health care-seeking behaviors should be explored beyond merely members of racial/ethnic minority groups. The findings will be used to create a community-informed, multilevel cervical cancer screening intervention to foster healthful behaviors among racially diverse rural populations. This approach has the potential to reduce prevalent disparities among rural residents when compared to urban areas of the state.

**B108 Using patient navigation to inform determinants of breast cancer disparities among under-resourced women in Chicago.** Vida Henderson,1 Karriem Watson, Kathy Tossas-Milligan, Erica Martinez,1 Mariela Rodriguez, Barbara Williams, Paola Torres, Lisa Aponte-Soto, Robert Winn. University of Illinois Cancer Center, Chicago, IL.

**Background:** Under-resourced women are subject to many factors that increase their risk of morbidity and mortality from breast cancer, such as being uninsured or underinsured and not having a medical home or primary care provider. They may also lack additional resources to access care such as transportation. Due to variance in mammography recommendations among health organizations, lack of knowledge or confusion about when to receive screening also poses a challenge to both women and providers.

**Objective:** A partnership between University of Illinois (UI) Cancer Center, UI Hospital & Health System, and Chicago Department of Public Health was developed to initiate an implementation science program that aims to mitigate these barriers by providing free breast cancer screening services and patient navigation to under-resourced women at our Mile Square Federally Qualified Health Centers (FQHCs). The program also aims to increase community partnerships to extend community outreach and identify factors that facilitate or challenge women's access to breast care services.

**Methods:** Breast health screening and navigation services are offered at 5 Mile Square FQHC clinics and through “mammography party” events with community partners. Navigators facilitate women's care through screening and any follow-up services, link patients to additional resources, and provide breast health education. Data obtained through electronic medical records and direct correspondence with women and providers are managed securely in REDCap and analyzed with SPSS software. A program evaluation will be implemented in September 2018. Program activities are ongoing.

**Results:** Four hundred ten women completed a screening mammogram from August 1, 2017 to June 30, 2018. Ninety-seven percent of women were racial minorities, most of whom were Latina (60.2%), African American (31.5%) and uninsured (67.8%). Among this cohort of women, the recall rate (24.6%) and cancer detection rate (17 per 1000) exceeded Breast Cancer Surveillance Consortium 2013 recall and cancer detection rate benchmarks (11.5% and 4.8 per 1000, respectively). Ages of women diagnosed (n=7) ranged from 40 to 68 years. The majority of diagnosed women were uninsured (n=6), 4 of whom were not eligible for health insurance.

**Conclusion:** Patient navigation has proven to be effective in increasing breast cancer screening rates, access to care and resources, and disseminating breast health education; however, systematic barriers to care still persist. Although the Affordable Care Act has been instrumental in increasing the number of insured Americans, health care costs still pose a significant challenge for those who are underinsured or not eligible to be insured. Additionally, our data imply that some recommended guidelines for mammography may not address the screening needs for women who are at higher risk for breast cancer, and more personalized screening based on a woman’s individual risk factors may be instrumental in ameliorating breast cancer disparities.

**B109 Architecture of increased breast cancer risk.** Karen Herold,1 Lisa D. Yee1, Chidimma M. Kalu1, Laura L. Kruper1, Veronica C. Jones1, Amy C. Polverini, Sharon Clancy1, Tanya A. Chavez1, Jackelyn A. Alva-Ornelas1, Noe R Chavez1, Ellen J. 1
POSTER SESSION B

Rippberger1, Jerneja Tomsic1, Christopher Sistrunk1, Ombeni Idassi1, Daniel B. Schmolze1, Courtney Vito1, Alan Nunez2, Angela K. Wong1, Krista M. Round1, Christine Thai1, Angelica Sanchez1, Margarita Robles1, Kendall Kennedy1, Terry Hyslop2, Victoria L. Seewaldt1, 1City of Hope, Duarte, CA, 2Duke University, Durham, NC.

Purpose: To highlight the importance of building a high-risk breast cancer clinic for women who do not have a BRCA 1, BRCA 2 or other highly penetrant cancer susceptibility mutation.

Background: Breast cancer is the most common cancer in women and the second most prevalent cause of cancer death of women in the United States; the lifetime risk for breast cancer in women is approximately 12%. Women may be at increased risk for breast cancer for many reasons including family history, genetic alterations, age, reproductive status and menstrual history. Most women who are at increased risk of developing breast cancer do not have a BRCA 1, BRCA 2 or other mutation. The majority of breast cancer diagnoses are due to acquired somatic mutations; only 5 to 10% of breast cancer diagnoses are attributable to highly penetrant Mendelian cancer susceptibility genes. White women with Ashkenazi Jewish ancestry tend to have a higher incidence of BRCA 1 and 2 mutations; traditionally, most research efforts about highly penetrant genes have been focused on this group rather than other racial and ethnic groups. However, there is a great need to study breast cancer risk-reduction strategies in racial and ethnic minorities in the United States, particularly because most breast cancers are not caused by BRCA 1 and 2 mutations. City of Hope is located approximately 21 miles northeast of Los Angeles and operates 13 clinical practice locations including Los Angeles, Orange, Riverside, San Bernardino and Ventura counties. These five counties are home to the majority of California’s multicultural and ethnic residents where San Bernardino County has the highest percentage of Hispanics (49.9%) and blacks (8.3%), Ventura County has the highest percentage of whites (48.1%), and Orange County has the highest concentration of Asians (18.2%). It has been established in the literature that the greatest benefit from breast cancer prevention strategies comes from treating women who are at high risk of the disease. While it is important to build a high-risk breast cancer clinic for women with genetic mutations, it is equally important to build a high-risk breast clinic for women who are at increased risk of breast cancer but do not have a mutation, particularly because most breast cancer is diagnosed in this population. In addition, it is crucial to educate high-risk patients that although they may have tested negative for a genetic mutation if they have a family history of breast cancer, they warrant close clinical surveillance.

Methods: We are proposing a retrospective, descriptive study of data that will be collected as part of a high-risk breast cancer program implemented by City of Hope.

Results/Conclusions: We expect to discuss the findings related to serving women of all races and ethnicities who do not have a mutation in a highly penetrant gene mutation.

B110 Reducing cancer disparities through identification of linkages to care partners within GMaP Region 1 North. Julia F. Houston1, Heenali Fozdar1, Marcela Blińska1, Mark Cromo1, 1University of South Carolina, Columbia, SC, 2Johns Hopkins University, Baltimore, MD, 3University of Kentucky, Lexington, KY.

Introduction: The National Cancer Institute (NCI) Center to Reduce Cancer Health Disparities (CRCHD) supports two national networks within its Integrated Network Program (INP): the Geographic Management of Cancer Health Disparities Program (GMaP) and the National Outreach Network (NON). CRCHD strategically engages in facilitation efforts to integrate and disseminate efforts focused on reducing cancer health disparities among the scientific community and to the underserved communities they serve. The GMaP Region 1 North (RIN) hub is one of 7 regional GMaP hubs, led by Regional Coordinating Directors (RCDs) and inclusive of 8 NON CHES across 6 cancer center sites. The RIN hub is based at the Markey Cancer Center in Lexington, Kentucky. RIN has partnered with Johns Hopkins University’s Sidney Kimmel Comprehensive Cancer Center, the University of South Carolina, and the University of Virginia Cancer Center to serve Delaware, Kentucky, West Virginia, Maryland, Maine, New Hampshire, Vermont, Virginia, and Washington, DC. RCDs and NON CHEs collaborate to enhance the capacity of regional cancer centers, academic and research partners and community partners to reduce regional cancer health disparities. Identification of preventative screening programs, or “linkages to care,” currently in place across our region and dissemination of this information to key partners was a strategy employed by RIN.

Methods: RCDs conducted a web search of all RIN member institutions and organizations and of NON CHEs cancer outreach, education activities and cancer screening initiatives. Using key search terms such as “cancer screenings,” “cancer education,” “cancer awareness,” “clinical trials” for each cancer type (breast, colon, lung, prostate, cervical and ovarian), they searched within each state and DC...
POSTER SESSION B

as well as queried social media channels (Facebook, Google+, Twitter and YouTube) of each RIN member to reveal “linkages to care” data available for each.

Results: While search engines provided results in response to our query methods described above, we noted that cancer-specific awareness months offer frequencies for NON CHE interactions through member institutions and for community members occur at least once a quarter in correlation with cancer-specific awareness months campaigns. Based on methods used, RCDs successfully developed, implemented, and disseminated the plan to identify Linkages to Care within RIN.

Conclusions: RCDs recommend that RIN member institutions and organizations dedicate web pages to Linkages to Care and adopt social media accounts for their respective public health divisions and/or organizations sponsoring cancer education, outreach, screening initiatives and clinical trials recruitment. The goal is to increase visibility of collaborative efforts among regional cancer centers, academic partners, and minority serving institutions to coordinate Linkages to Care within an NCI CRCHD INP.

B111 Previous mammography experience as a predictor of mammography adherence among Hispanic/Latinas living in the Northeast United States. Beth A. Jones1, Krisha Patel1, Inginia Genao1, Marcella Nunez-Smith1, Claus Elizabeth1, Hosanna Soler-Vila2, Markowski Justin1. 1Yale School of Medicine. New Haven, CT, 2Universidad Autonoma de Madrid School of Medicine, Madrid, Spain.

Background: Similar to non-Hispanic Black women, Hispanic/Latino women are more likely to be diagnosed with later-stage breast cancer than White women, and their mammography screening rates are lower than those of both groups. Although the literature generally focuses on women’s behavior to identify predictors of mammography screening, we hypothesized that selected factors associated with prior mammography experience would impact future screening. From a large prospective study of cancer screening in Hispanic/Latinas living in the Northeast US, the purpose of this investigation was to determine how previous mammography experiences influenced adherence to mammography screening guidelines over 2.5-4 years of follow-up.

Methods: Among 1,456 community-living Hispanic/Latinas ages 40 to 75 who had received at least one screening mammogram at the time of their baseline interview and consented to medical record review, we considered “mammography experience” in predicting annual screening mammography (documented screening mammogram within 12 months + 1-month lag time), in accordance with recommendations promulgated by the American Cancer Society (and widely followed) during the study period. Using multivariate logistic regression, we identified independent predictors of adherence to recommended guidelines after adjusting for core sociodemographic, access to care, and medical factors. Key predictors included characteristics of provider (gender, race/ethnicity), ease of communication and use of interpreters, being treated with respect, believing that mammography-related pain was minimized as much as possible, communication of results, and general satisfaction. Odds Ratios (ORs) and 95% Confidence Intervals (CI) are reported.

Results: 54% of Hispanic/Latino women were adherent to recommended mammography screening guidelines over the follow up period. Although needing help with communicating with medical staff and not speaking the same language as the radiologic technologist were significant in bivariate analyses, only 2 “experience” variables were significant predictors after multivariate adjustment: 1) Women who were told the results of their earlier mammogram at the time of the test were less likely (OR= 0.80; 95% CI 0.63, 0.97) to adhere to annual screening guidelines compared to patients who were not told their results; and 2) compared to women who did not have a usual care provider, having a female doctor increased a woman’s odds of being compliant with recommended guidelines (OR = 1.40, 95% CI 1.05, 1.77), whereas having a male usual care provider did not (OR = 0.86, 95% CI 1.05, 1.77).

Conclusion: In a prospective look at adherence to mammography screening guidelines in Hispanic/Latino women living in the Northeast US, having a female usual care provider was associated with adherence to mammography screening guidelines. This finding requires further study, particularly in this subpopulation.

B112 Influence of cholesterol screening on breast cancer detection and survival in the Breast Cancer Care in Chicago Study. Alpana Kaushiva1, Susan Hong2, Katherine Tossas-Milligan2, Garth Rauscher1. 1University of Illinois at Chicago School of Public Health, Chicago, IL, 2University of Illinois at Chicago Cancer Center, Chicago, IL.

Background: The utilization of non-cancer-related screening tests may result in a screening-related comorbidity that also

THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED
serves as a marker for overall increased preventive health care use, including for breast cancer detection. Previous studies have found that a diagnosis of either hypertension or cholesterol has been associated with earlier stage at diagnosis for breast cancer. We sought to replicate these findings in a racially and ethnically diverse sample of patients in the population-based Breast Cancer Care in Chicago (BCCC) study.

Methods: Participants included 989 non-Hispanic White (NHW), African American (AA), and Hispanic female breast cancer patients diagnosed between 2005 to 2008 who completed an interview. All patients resided in Chicago, Illinois, and were between the ages of 30-79 years at the time of their first primary in situ or invasive breast cancer diagnosis. Comorbid conditions were defined from interviews and medical record abstractions. Multivariable logistic regression and Cox proportional hazards (PH) models were used to estimate the associations of comorbid conditions with mode of detection (screen-detected vs. symptomatic), breast cancer-specific survival (BCSS), and overall survival (OS).

Results: Overall, 33% of BC patients had hypertension and 9% had high cholesterol (HC). A diagnosis of hypertension was not associated with mode of breast cancer detection or survival. Screen-detection was nearly 30 percentage points higher for patients with vs. without a diagnosis of HC (78% vs. 49%, PD=0.29, 95% CI: 0.19, 0.39). HC was present in 9% of NHW BC patients and 8% of AA and Hispanic BC patients. The association of HC with screen-detection varied widely by race/ethnicity, being strongest among AA patients (PD=0.41, 95% CI: 0.28, 0.54), more moderate for NHW patients (PD=0.27, 95% CI: 0.14, 0.40), and absent among Hispanic patients (PD=0.05, 95% CI: -0.21, 0.31). With adjustment for age, race/ethnicity, income, education, affluence, disadvantage, insurance status, presence of a regular provider, and time of last clinical breast exam and last mammogram, HC remained associated with screen-detection (PD=0.21, 95%CI: 0.10, 0.32). A diagnosis of high cholesterol was associated with a large but imprecise reduction in age-adjusted BCSS (HR=0.43, 95% CI: 0.14, 1.3) and OS (HR=0.50, 95% CI: 0.21, 1.1). Multivariable-adjusted HRs were 0.54 (95% CI: 0.17, 1.7) and 0.55 (0.24, 1.2), respectively.

Conclusion: High cholesterol may be a potent marker for contact with a primary care physician and willingness to utilize preventive services. We found a particularly strong association of high cholesterol with early detection among AA patients. This association remained after robust control for preventive breast health care variables, suggesting that it is an independent predictor of screen-detected BC. A larger study is required to have sufficient sample to examine subsequent associations with BCSS and OS among racial/ethnic subgroups.

B113 Colorectal cancer screening completion rates and barriers to colorectal cancer screening 6 months following participation in CRC screening intervention. Carolina López de la Torres 1, Jill N. JoaDumbauld 1, Jessica Haughton 1, Anthony Barrios 1, Dalia Rojas 1, Mirna Diaz 2, José López 2, Maria Milla 1, Samir Gupta 1, Jesse Nodora 1, Christian Ramers 2, Felipe Garcia-Bigley 2, Jessica Marquez 2, Balambal Baharti 3, Elva M. Arredondo 1, San Diego State University, San Diego, CA, 2Family Health Centers of San Diego, San Diego, CA, 3University of California, San Diego, San Diego, CA.

Background: Though colorectal cancer (CRC) screening rates have increased significantly over the past two decades, screening disparities persist among Latinos. To increase CRC screening rates among Latinos, a promotor-led intervention was implemented to provide educational workshops and link community members to screenings through a partnered Federally Qualified Health Center (FQHC).

Aims: To assess screening completion at 6-months follow-up. To identify barriers influencing adherence to CRC screening among participants who participated in a promotor-led intervention.

Methods: The Juntos Contra el Cáncer/Together Against Cancer (JUNTOS) program was a promotor-led cancer prevention study that provided CRC prevention workshops to adults ages 50 to 75 in a primarily Latino community in San Diego, CA. Based on the Social Ecological Framework, the intervention targeted knowledge of CRC, screening attitudes, social support, screening barriers, and linked participants to community resources. Promotors assisted participants in scheduling appointments, which is the first step in CRC screening at the partnering FQHC. From December 2016 to July 2018, a total of 66 participants who were not up to date with CRC screening attended a 2.5-hour workshop, received follow-up calls from promotors, and completed a 6-month assessment. Demographics, health conditions, CRC knowledge, and attitudes changes towards screening were compared between participants who completed a CRC screening (adherent) and those who did not at 6 months (nonadherent). Chi-squared and t-tests were conducted to assess significant differences among adherent and nonadherent participants. For nonadherent participants, barriers to scheduling an appointment were evaluated.
Results: The sample included 66 Latinos ages 50 to 75 (women=70%). Results from the 6-month follow-up show that 59% participants reported completing CRC screening. Findings show a statistically significant decrease in negative attitudes towards CRC screening from baseline to follow-up (M1=2.88 [SD=.81], M2=2.53 [SD=.85], p<.001). Differences in demographics, health conditions, attitudes towards screening, CRC knowledge, and health behaviors were not statistically significant at baseline between adherent and nonadherent participants at follow-up. The most frequently reported barriers for nonadherent participants to schedule an appointment with their medical provider were being too busy (48%) and not having health insurance (41%).

Conclusions: Preliminary findings suggest that the delivery of the promotor-led intervention improved attitudes of CRC screening and led to increases in self-reported screening rates among nonadherent adults. For uninsured participants, waiving the appointment or providing additional support to navigate the health system may help them complete CRC screening. Overall, these findings build the evidence on the preliminary efficacy of group-based CRC education and linkages to care for nonadherent adults.

B114 HCV screening and awareness education are much needed among African American baby boomers in Philadelphia. Grace X. Ma1, Lin Zhu1, Yin Tan1, Fayola Levine2, Tamara Gillot1, Gina Simoncini1, Jennifer Arthur-Lewis1, Joanne Rhee1, Zhengyu Wei2, Olorunseun O. Ogunwobi3, 1Center for Asian Health, Lewis Katz School of Medicine, Temple University, Philadelphia, PA, 2Department of Biological Sciences, Hunter College, New York, NY, 3Department of Clinical Sciences, Lewis Katz School of Medicine, Temple University, Philadelphia, PA, 4Deliverance Evangelistic Church, Philadelphia, PA.

Background: African Americans have substantially higher rates of chronic hepatitis C virus (HCV) and HCV-related deaths compared to other ethnic groups. HCV-related chronic liver disease and cirrhosis were among the leading causes of death in baby boomers within African American community. The purpose of this pilot study is to evaluate screening rate, infection history, awareness and knowledge about HCV in African American baby boomers in Philadelphia, Pennsylvania.

Methods: In collaboration with church leaders, a total of 138 African Americans aged between 45 to 74 were recruited from African American churches in Philadelphia, PA. Questionnaires were administered face-to-face with voluntary participants. Demographic characteristics, HCV screening, risk factors and family history of liver disease and HCV, awareness and knowledge of HCV were measured.

Results: The study sample consisted of 74 (54%) women and 64 (46%) men, with an average age of 62. Two thirds (66%) of the sample had high school or lower education. Most of them had health insurance (91%) and a regular physician to visit (90%). Although 82% of the participants had heard of HCV, only 43% had been tested for it. Of the respondents, 10% reported having family members with liver cancer, with 26% reporting that they did not know about their family history of liver cancer; 9% reported having a family history of HCV infection, and 24% did not know their family history of HCV. The study found that participants had low level of HCV-related knowledge. Less than two-thirds (61%) were able to correctly identify one cause associated with HCV infection, and only 36% knew that there are more people infected with HCV than those with HIV/AIDS. About less than 50% participants correctly identified the means of HCV transmission, including blood transfusion (64%), intravenous drug use (55%), tattooing and body piercing (54%), direct exposure to blood (40%), sharing the razor with an HCV-infected person (35%), sexual activity (36%), and mother-to-child transmission (40%). Furthermore, only 25% knew that 75% to 85% of people with HCV will develop chronic liver disease, and only 21% knew that there was no vaccine for HCV. In terms of risk behaviors, 16% participants had used illegal drug through intravenous/subcutaneous/nasal injection, 16% had received blood transfusion, 5% served in the Vietnam War, 13% had tattoo, 3% received hemodialysis, and 2% had been diagnosed with HIV/AIDS.

Conclusions: African American baby boomers present moderate to high risk factors (intravenous drug use, blood transfusion, etc.), yet awareness and knowledge related to HCV family history, transmission, and prevalence remained low. Significant efforts are needed in promoting awareness and education interventions to improve HCV screening in this underserved and vulnerable population.

Acknowledgment: This pilot study was supported by faculty research funds from Center for Asian Health, Temple University (PI: Grace Ma). We acknowledge volunteers and community leaders who made this study possible.

B115 Bridging the gap: Characterizing transportation barriers in rural southern Illinois. Chanelle Y. Chua1, Julia Maki1, Marci Moore-Connelley2, Jean Hunlieth2, Kevin Oestmann2, Sonya Izadi2, Liz Rolf2, Graham Colditz2, Aimee
POSTER SESSION B

James1, 1Washington University School of Medicine, St. Louis, MO, 1Southern Illinois Healthcare, Carbondale, IL.

Introduction: Despite the widespread availability of preventative tests and procedures, colorectal cancer (CRC) remains one of the leading causes of cancer deaths in the United States. While national CRC screening rates have increased, they have languished in rural areas. Routine screening is most effective in reducing CRC mortality when accompanied by timely diagnostic follow-up, but transportation barriers are a hindrance to continuity of care. Distances between homes and providers exacerbate the problem in rural areas. We examined reported transportation barriers in seven counties at both patient and clinic levels as part of a collaborative endeavor with a rural health system in Southern Illinois to characterize current conditions and design multilevel interventions to increase screening and follow-up in rural populations.

Methods: Semistructured interviews and focus groups were conducted with six patients and forty providers across eleven primary care sites and two colonoscopy providers. Interview domains included screening barriers and facilitators. Interview transcripts and field notes underwent text analysis with inductive codes. Themes such as financial resources, transport reliability, and time constraints were used to create subcategories and refine analysis. Transportation was discussed at multiple levels of influence in screening decisions, planning, and completion. Here we present a detailed analysis of how distance and transportation were discussed.

Results: Limited regional provider availability dictates that medical visits require long travel times for many patients. Patients described travel distance and discomfort during transit to colonoscopies as obstacles. Those who had an easier time arranging transportation relied on social support, but encountered issues coordinating time off work. Staff had varying knowledge of available transportation and clinics had different levels of resources to support patients. Travel assistance included referral to transport services, public transport vouchers, and reimbursement. Some clinics did not offer travel assistance, or only provided help in cases of urgent medical need. Outsourced transport service reliability was variable and often required advance notice, which affected colonoscopy scheduling. Some sites that offered transport assistance cited poor communication among clinic staff and role specialization as reasons that patient needs were not met.

Discussion: Patient need communication and provider and staff education regarding community transportation present opportunities to reduce transportation barriers. Evidence-based interventions such as dedicated non-emergency medical transport services are needed to address reliability, infrastructure needs, and the hardships of taking time off work for appointments. In designing multilevel interventions, researchers must consider differences in financial and human resources across sites and limited staff and patient time.

B116 Cervical HPV testing with two home self-collection methods compared to a standard clinical-collection method. Jerry McLarty1, Donna Williams2, Susan Loyd2, Michael Hagensee2, 1Louisiana State University Health Sciences Center, Shreveport, LA, 2Louisiana State University Health Sciences Center, New Orleans, LA.

Background: The purpose of this randomized trial was to examine the feasibility of using home self-sampling for HPV testing to screen for cervical cancer, as compared to HPV samples obtained by a physician or nurse practitioner during a clinical exam.

Methods: Two LSU study sites were used, New Orleans and Shreveport, LA. Stratified, permuted blocks randomization was used to allocate patients to one of two methods of home sampling: a standard tampon inserted and worn for two hours, or an easy-to-use vaginal swab device (HerSwab®). All self-collected and clinical were tested for HPV 16 and 18 subtypes and other high-risk subtypes. Each self-collected sample was compared to the patient’s clinical sample using McNemar’s paired chi-squared test. Tampon and self-collected swab samples were compared using an unpaired chi-squared test.

Results: A total of one hundred and seventy-four (174) eligible subjects were recruited. Ninety-five subjects were recruited from Shreveport and 79 from New Orleans. The age of the women subjects ranged from 21 to 69, with a mean age of 47 years. The predominant race was African American, 73%, with 22% white and 5% Asian, mixed race or unknown. Hispanic or Latino ethnicity was reported as 4%. Overall, 66% of home-collected specimens were returned for processing. The percent positive specimens was approximately the same, regardless of specimen source, e.g., clinical (13.5% positive), tampon (14.5% positive) or swab (15% positive). There was no statistical difference between the positive specimen rates of tampon and swab methods. By oversight, 11 clinical specimens were not collected for HPV testing. Six women had a positive self-test, but their clinical test results were not positive. All the clinical samples were sufficient for valid DNA analysis. Only one of the home swab specimens was...
insufficient, but 15 of the tampon specimens were insufficient. This difference is highly statistically significant, \( p < 0.0001 \) by Fisher’s exact test. Also, as mentioned above, the return rate was better for the swab method. Fifty-five women answered the satisfaction questionnaire. Participants assigned to the tampon use complained about the procedure verbally to the study nurse, although the formal questionnaire did not reflect this. None reported problems with the swab method.

**Conclusion:** The self-collected HPV specimens were not significantly different from the clinically collected specimens, although the tampon method had more unreturned specimens and significantly more specimens of insufficient quality for testing.


Women with luminal breast cancers generally have a good prognosis (92% five-year survival). However, Latina/Hispanic women with luminal breast cancer are 30% more likely to present with advanced luminal breast cancer and twice as likely to die. Disparities persist even when accounting for socioeconomic factors. Whether this is due to a more aggressive biologic subtype remains unclear. Here, we aim to identify the signaling networks and intercellular interactions that drive poor prognosis in luminal breast cancer patients and use this data to tailor therapeutic interventions to improve survival. The tumor microenvironment, which is highly heterogeneous, plays an essential role in cancer progression. An additional layer of information lies in the spatial organization of the tissue, with cells coming in close proximity in order to exchange signals over short distances. Thus, to understand the network of interactions and signaling between cells, there is a need for single-cell measurements of multiple cellular features in the intact tissue. Sequential Fluorescence in Situ Hybridization (seqFISH), developed in the lab of Dr. Long Cai, enables precise quantification of several hundreds to several thousands of mRNA transcripts in single cells, preserving the structure of the tissue. In this methodology, fluorescently labeled probes are hybridized onto the fixed tissue, giving rise to a fluorescent signal whenever the corresponding mRNA is present. The tissue is sequentially imaged, washed and re-hybridized, resulting in a unique barcode for each mRNA. seqFISH has been demonstrated both on cell cultures and on whole organs and has been shown to be highly accurate and repetitive. We will use this methodology and combine it with multiplex antibody staining to line mRNA expression with protein localization and modifications. Combining these experimental methodologies with advanced image analysis tools developed by the Long lab will allow an in-depth investigating of the cellular stated and signaling pathways within malignant tissues. Correlating findings between patients, as well as between samples from the same patient taken over time, could potentially provide a deep understanding of the factors leading to poor prognosis, which can in turn improve diagnostics of luminal breast cancer.

**B118 Using a multimodal strategy to engage Latino communities and improve colorectal cancer screening disparities.** Sneha Prabhu, Armida Flores, Kipling J. Gallion, Edgar Munoz, Laura Tenner, Amelie G. Ramirez. UT Health San Antonio, San Antonio, TX. Mays Cancer Center at UT Health San Antonio MD Anderson, San Antonio, TX.

**Introduction:** Colorectal cancer (CRC) is one of the most commonly diagnosed and one of the leading causes of cancer deaths in both Latino men and women. Latino adults also have disproportionately lower CRC screening rates than their white peers.

**Methods:** To improve CRC education and screening rates, we at UT Health San Antonio used a variety of culturally tailored activities and partnerships to engage the majority-Latino local community to promote and implement the national Screen to Save (S2S): NCI Colorectal Cancer Outreach and Screening Initiative. Our local S2S efforts focused on one-on-one patient encounters at the clinic level, community-wide outreach events, training and incorporating community health workers, and airing powerful Latino role model stories and education through partnerships with local Spanish-language TV station Univision, as well as digitally via the Salud America! Latino health and social media platform.

**Results:** For one-on-one outreach, we partnered with CommuniCare, a local Federally Qualified Health Center situated in high-risk and underserved parts of town, to deliver CRC education via flipchart and screening via FIT kit. Pre- and post-survey data showed increased knowledge and strong intention to get screened for CRC. At 3-month follow-up, strong positive behavior change was observed with majority of patients (73.4%) talking to their doctor about CRC screening and half of patients (51.1%) completing CRC screening as a result of the initiative. We also partnered with the Mays Cancer Center to host tours of a giant inflatable colon, where we educated more than 250 individuals, and
POSTER SESSION B

invited partners such as the American Cancer Society to participate in educational outreach. Because stories are a proven and powerful tool to motivate people to get screened, we recruited real-life community role models and CRC survivors to help us reach the broader community. Our role models, including a Latina mother diagnosed at age 33 and a Latino husband and wife each diagnosed with CRC, shared their experience with screening, early detection, treatment, and survivorship. We shared these role models’ stories of resiliency and hope on multimedia platforms—blogs, social media, and weekly TV segments on Univision. Overall, through our in-person and digital implementation of S2S, we were able to educate more than 450 individuals and distribute 244 FIT kits.

Conclusion: We observed increased CRC knowledge, attitudes, positive behavior change, intent for screening, and screening thanks to our culturally tailored, bilingual in-person educational intervention and multimedia approach.


Despite cancer being the leading cause of death across most racial/ethnic groups, Hispanic women have the second highest mortality rate attributed to diabetes (4.7%) according to the Centers for Disease Control and Prevention (CDC). While cancer and diabetes are two distinct diseases, previous studies have demonstrated that diabetics have a poor chance of breast cancer survival when compared to nondiabetic women. Well-known key drivers of hyperinsulinemia and insulin resistance, such as insulin and AMPK, are also those involved in breast cancer. This link could possibly contribute to the increased mitogenic effects and risk for aggressive breast cancers in Hispanic women. Based on these findings, metformin, a drug standardly used to treat and prevent hyperglycemia, may be a possible alternative (other than tamoxifen) for breast cancer prevention. Eat, Move, Live (EML), a 5-week community-based program, focuses on targeting possible treatments of chronic diseases and risk reduction through attitude and lifestyle modifications. Exercise, nutritional and health awareness classes were implemented to change participants’ perspectives regarding chronic diseases and their susceptibility to other morbidities. Questionnaires were given to the participants at baseline and at two follow-ups (5 weeks and 12 weeks) to assess any changes in their attitudes, behaviors, nutrition, lifestyle and beliefs around taking medication for preventative treatments. A total of 56 participants’ pretreatment responses were collected via a five-point Likert scale (1-strongly disagree, 5-strongly agree). Demographic data showed that 69% of the respondents were Hispanic women, of whom 46% completed an education level of high school or less. A majority of the responses averaged a “neutral” response to taking medication for management and prevention of diabetes. We infer that their inability to select a stance in their responses may be associated with the lack of knowledge that the community has regarding chronic diseases and risk-prevention methods. Therefore, we anticipate that availability of proper education tools and resources is essential to potentially prevent future morbidities and mortalities. Ultimately, we aim to establish a pilot study that emphasizes the necessity and importance of interventional programs, like EML, to enhance chemoprevention using metformin and improve health outcomes in high-risk breast cancer populations.

B120 [Advocate Abstract] Let’s create a generation of proactive consciousness. Fred Hardy. Karmanos Cancer Institute, Detroit, MI.

My mission is to narrow the scope of confusion that the lack of information concerning cancer that can devastate so many families because of late or undetected or lack of awareness and to promote a proactive attitude toward one’s own health. This will be accomplished by talking to people about cancer screening, disseminating information, encouraging people to be proactive and stay on top of their health, and referring people to Karmanos to get checked. For example, conversations can be started by asking men if they know their PSA number, or about how their general health is, or referring to people for cancer screening.

B121 Factors associated with HPV vaccination among childhood cancer survivors: Differences by Hispanic ethnicity and parental health literacy. Yazmin San Miguel, Paula Aristizabal, Yesenia Avitia, Bianca P. Perdomo, Maria E. Martinez, Jesse N. Nodoro. Moores Cancer Center
and Department of Family Medicine and Public Health, University of California San Diego, San Diego, CA, 1Moores Cancer Center and Department of Family Medicine and Public Health, University of California San Diego; Department of Pediatrics, Division of Pediatric Hematology/Oncology, University of California San Diego; Peckham Center for Cancer and Blood Disorders, Rady Children’s Hospital San Diego, San Diego, CA, 2Moores Cancer Center and Department of Family Medicine and Public Health, University of California San Diego; San Diego State University, San Diego, CA, 3Department of Pediatrics, Division of Pediatric Hematology/Oncology, University of California San Diego, San Diego, CA.

Introduction: Pediatric cancer survivors are at high risk of secondary malignancies, which include those related to human papillomavirus (HPV) infection. HPV vaccination has been shown to be safe and effective at preventing HPV-related cancers. Up-to-date vaccination completion rates in healthy children are low, estimated to be 50% for girls and 38% for boys ages 13 to 17. Data on vaccination prevalence for pediatric cancer survivors are scarce. The objective of our study was to determine the association of Hispanic ethnicity and parental health literacy on HPV vaccination among childhood cancer survivors.

Methods: A cross-sectional study was conducted at Rady’s Children’s Hospital in San Diego, California. Parents/guardians of childhood cancer survivors (N=168) completed a questionnaire including their and their child’s sociodemographic characteristics and their child’s HPV vaccination behavior. Clinical information for pediatric cancer survivors was obtained from their medical record. Participants were excluded if self-reported HPV vaccination was unknown (n=18) or they refused to answer (n=2), resulting in 148 total participants. Health literacy was assessed using the Newest Vital Sign questionnaire. The study outcome was self-reported HPV vaccination (yes/no). Logistic regression was used to assess if Hispanic ethnicity and level of parental health literacy were associated with HPV vaccination. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated to assess associations. Multivariable models were adjusted for age at diagnosis.

Results: The study population consisted of 148 parents/guardians of childhood cancer survivors. The pediatric survivors were mostly Hispanic (56%), female (55%), and with hematologic malignancies (63%). The parents/guardians were primarily female (89%) and had more than a high school education (75%). Of the 148 parents/guardians, 28% reported their child having had one or more doses of the HPV vaccine. After adjusting for age at cancer diagnosis of the child, Hispanic children were less likely to have been vaccinated compared to non-Hispanics (OR= 0.88; 95%CI: 0.41-1.97). Results for parental health literacy showed that children of parents with low health literacy were less likely to have been vaccinated compared to those with adequate health literacy (OR=0.51; 95% CI: 0.13-1.97).

Conclusion: Results of this hospital-based study show that HPV vaccination rates among pediatric cancer survivors are low. Hispanic children and those whose parents have low health literacy appear to be a priority for intervention. Health care providers, including pediatric oncologists who see these patients multiple times a year, appear to be missing the opportunity to vaccinate these children with elevated risk for HPV exposure and persistence.

B122 Racial and ethnic disparities and reverse disparities in HPV vaccination: A meta-analysis. Jennifer C. Spencer1, William Calo2, Noel T. Brewer1, 1University of North Carolina at Chapel Hill, Chapel Hill, NC, 2Penn State College of Medicine, State College, PA.

Importance: Studies disagree about whether human papillomavirus (HPV) vaccination uptake differs meaningfully among racial and ethnic groups, an important issue given large disparities in some HPV-associated cancers.

Objective: To comprehensively characterize racial and ethnic differences in HPV vaccine initiation and follow-through.

Data Sources: We systematically searched PubMed, CINAHL, Embase, and Web of Science to identify US studies from 2006 through mid-2017 reporting the association of race and ethnicity with HPV vaccination. We identified 118 studies (n=3,095,486) that met inclusion criteria.

Study Selection: Included studies were published in English and reported HPV vaccine initiation or follow-through in the US with at least one comparison by race or ethnicity.

Data Extraction and Synthesis: We synthesized effect sizes using random effects meta-analysis for Blacks, Hispanics, and Asians as well as for all minority groups combined. We stratified results by source of vaccination data (self-reported or provider-verified). We used meta-regression to identify study characteristics associated with the size and direction of racial/ethnic differences in vaccination.
Main Outcomes and Measures: The effect size was the risk difference, the percentage point difference between White and one or more racial or ethnic minority groups in HPV vaccine initiation and in follow-through.

Results: HPV vaccine initiation showed no racial or ethnic differences overall. However, among studies of provider-verified vaccination, minorities were 6.1% [3.3%-8.8%] more likely than Whites to initiate HPV vaccination. This reverse disparity was larger for Hispanics, males, and younger samples (age <18). In contrast, minorities were 8.6% (5.6%, 11.7%) less likely than Whites to follow-through with the full HPV vaccine series, a disparity present across all participant and study characteristics.

Conclusions and Relevance: Racial and ethnic minorities are more likely to initiate but less likely to follow through with HPV vaccination, a clear finding that self-report studies have obscured. Efforts to promote HPV vaccination should be broad, as uptake remains low across all racial and ethnic groups. Nevertheless, higher initiation among minorities offers potential for future reductions in HPV cancer disparities and may provide insights for reducing disparities in uptake of other preventive services.
**POSTER SESSION C**

**C001 TP53 mutations reprogram fatty acid metabolism and tumor microenvironment in African American patients with non-small cell lung cancer.** Liang Liu1, Farideh Mehraein-Ghomi1, Elizabeth Forbes1, Umit Topaloglu1, W. Jeffrey Petty1, Stefan Grant1, Jimmy Ruiz2, Kristie L. Foley3, Karen Winkfield1, Boris Pasche1, Wei Zhang1. Wake Forest Baptist Comprehensive Cancer Center, Winston Salem, NC, 1Wake Forest School of Medicine, Winston Salem, NC.

Lung cancer is the leading cause of cancer-related death worldwide, with a 5-year survival rate of ~18% (1-3). Non-small cell lung cancer (NSCLC) comprises 85% of all lung cancer cases. Great strides have been made with the development of more advanced diagnosis, prognosis, and treatment strategies. Despite improvements, African American patients (AAs) continue to present with more advanced stages and later-stage metastatic tumors of lung cancer at diagnosis. The severe types of lung cancer can reduce the 5-year survival rate to only 4% (4). The disparities may partially be due to the socioeconomic disadvantages of AAs in receiving cancer services (5). Etiologically, cigarette smoking and exposure to secondhand smoking are leading preventable causes of lung cancer and premature death in the United States (US) (5). Notably, menthol cigarettes, which have been particularly marketed to communities with high AA population (7), can cause deeper inhalation, increased absorption of tobacco toxicants, a higher nicotine dependence and reduced cessation success (6-8). Some genetic alterations have been suggested to contribute to the disparities of breast cancer (9), but genetic factors have not been well studied in lung cancer disparities. Utilizing the genomic data from the Precision Oncology Initiative (POI) cohort at the Wake Forest Baptist Comprehensive Cancer Center (WFBCCC), our initial analysis has shown that TP53 has a significantly higher mutation rate in AA patients, which was validated with the TCGA cohort (10). Furthermore, codons including Cysteine 176 (C176) and C242 mutated more frequently in AA than CA patients. Considering the four amino acids in the zinc-binding region (C176, Histidine 179 [H179], C238, and C242), AA patients have a higher mutation rate than CA patients within both our POI (15% vs. 5%, P=5E-4) and the TCGA (14% vs. 6%, P<5E-4) cohorts. NSCLC patients with TP53 mutations experienced a poorer survival outcome, and, importantly, mutant AA had shorter overall survival than their CA counterparts. Utilizing RNA-Seq data of NSCLC patients from the TCGA cohort and Gene Set Enrichment Analysis (GSEA), we also identified increased transcriptional activation of fatty acid metabolism and reactive oxygen species (ROS) among TP53 mutation carriers; both pathways/processes are related to an immunosuppressive tumor microenvironment (TME). More importantly, significantly increased expression of these two gene sets was observed in AA cases with TP53 mutations than in their CA counterparts. The immunosuppressive TME in TP53-mutant (vs. wild-type) and mutant AA (vs. CA) patients were further validated by analyzing the immune cell components in each patient using computation algorithm CIBERSORT (11). These analyses implicate that mutated TP53 differentially contributes to cancer disparities in the AA population through metabolism and immune suppression, and mutations in the zinc-binding domain of p53 protein are specifically crucial.

**C002 Dysregulation of fatty acid metabolism by TP53 mutations underlies more aggressive endometrial cancers in African American women.** Farideh Mehraein-Ghomi, Liang Liu, Umit Topaloglu, Karen Winkfield, Michael Kelly, Boris Pasche, Wei Zhang. Wake Forest Baptist Comprehensive Cancer Center, Winston Salem, NC.

In the United States, endometrial cancer is the fourth most common malignancy among women, with an estimated 61,380 new cases and 10,920 deaths in 2017 (1). The incidence is increasing more rapidly among African American (AfAm) women than other racial/ethnic groups (2), and the 5-year survival rate in AfAms is much lower than other racial/ethnic groups, including Caucasian Americans (CaAm) (62% vs. 84%) (3, 4). Endometrioid-type endometrial carcinoma (EEC) accounts for about 75% of all endometrial carcinomas. Many patients with early-stage and low-grade EEC can be cured by surgery alone, but for women who present with higher-grade advanced-stage EEC, more aggressive therapy is needed. Studies have shown a close gene/environment interaction in endometrial cancer development and progression (5-7); however, why AfAm women have a higher mortality rate and why their incidence of endometrial cancer is increasing more rapidly remain unknown. To address this issue, we analyzed gene mutation profiles in AfAm and CaAm women with EEC, using samples and genomic data from The Cancer Genome Atlas (TCGA) including 397 patients with EEC (284 CaAm, 67 AfAm, and 46 other races) (8). We found that tumor suppressor gene, TP53, was the top differentially mutated gene that occurred more frequently in AfAm patients with EEC. This is consistent with our recent publication that the TP53 tumor suppressor is more frequently mutated in AfAm patients compared to CaAm patients when several cancer types (e.g., lung, colorectal, bladder, prostate and breast cancer) were analyzed together (9). Moreover, survival analysis of TCGA patients with EEC showed that patients with TP53 mutations have generally poorer outcomes than those with wild-type TP53. Furthermore, our pathway analysis using
POSTER SESSION C

the RNA sequencing (RNA-Seq) data from TCGA showed that fatty acid metabolism pathway is upregulated in AfAm patients with EEC compared to their CaAm counterparts. Further analysis showed that TP53 mutations are also associated with downregulation of AMP-activated protein kinase (AMPK) and activation of mTOR (mammalian target of rapamycin) pathways, which can lead to dysregulation of fatty acid metabolism and promotion of tumorigenesis (10). Furthermore, obesity is a significant risk factor for EC (11, 12), consistent with our TCGA data analysis showing that AfAm patients with EEC were more likely to be obese than CaAm patients (39.1 vs. 34.6, mean BMI indexes) and with our observation in a cohort of 247 patients, including 47 AfAm and 196 CaAm patients with EEC (35.5 vs. 33.6, mean BMI indexes) from the Precision Oncology Initiative (POI) at Wake Forest Baptist Cancer Center (WFCCC). Of note, inhibition of AMPK activity also leads to obesity and type 2 diabetes (13). Thus, differential TP53 mutations emerge as a major genetic factor that contributes to cancer health disparity.

C003 A machine learning-based approach to identify biomarkers of environmental toxicant exposures relevant to liver cancer disparities in rural Illinois. Brandi Patrice Smith, Zeynep Madak-Erdogan. University of Illinois at Urbana-Champaign, Urbana, IL.

Although there have been nationwide reductions in cancer death recently, liver cancer mortality remains a problem in rural Illinois. Research scientists anticipate that exposure to environmental toxicants in rural Illinois may be possible causes of increased liver cancer mortality in females. The purpose of our study is to identify potential biomarkers that are related to early liver toxicity through machine learning. We accessed gene expression data from the open source Toxicogenomics Project-Genomics Assisted Toxicity Evaluation System (TG-GATES) database from rats that had been exposed to over 170 toxicants relevant to liver cancer. We performed a differential gene expression analysis to identify significant features or genes that are related to hepatotoxicity endpoints (e.g., necrosis, centrilobular hypertrophy, and hepatocellular hypertrophy). Then we performed a feature selection method to decrease the dimensionality of the gene set. We then used classification modeling to identify specific genes related to our hepatotoxicity endpoints. Lastly, we built a predictive model by random splitting of the complete gene set by one of the endpoints and used the complete differentially expressed gene set to predict this particular endpoint. Our model predicted specific genes that were highly related to liver toxicant exposure. In the next phase of our studies, we will use these biomarkers to associate geospatial toxicant exposures with health effects in wild mice caught from areas with high liver cancer incidence in the state of Illinois. Our approach identifies biomarkers of potential environmental exposures from wildlife liver gene expression data and associates presence of such compounds in environment soil and water sources in counties with high liver cancer incidence.

C004 Collecting evidence to drive research that addresses community cancer needs in Western Washington. Katherine J. Briant, Beti Thompson, David R. Doody, Clara Reyes, Stephen M. Schwartz, Peggy A. Hannon, Jason A. Mendoza, Fred Hutchinson Cancer Research Center, Seattle, WA, New Mexico State University, Las Cruces, NM, University of Washington, Seattle, WA, Seattle Children’s Hospital, Seattle, WA.

Background: The Fred Hutch/University of Washington Cancer Consortium (Consortium) is a National Cancer Institute-designated comprehensive cancer center located in the Seattle metro area. The Consortium comprises four partnering institutions (Fred Hutchinson Cancer Research Center, University of Washington, Seattle Children’s Hospital, and Seattle Cancer Care Alliance (SCCA)) that together address the full spectrum of cancer research and interventions to reduce the burden of cancer among catchment area (CA) residents. The Consortium’s CA is thirteen counties in western Washington (WA). In an effort to understand and document ongoing research conducted to address the cancer burden, risk factors, incidence, mortality, and inequities in the CA, we initiated a comprehensive needs assessment.

Methods: We conducted a quantitative and qualitative needs assessment from September 2017 to June 2018. Quantitative assessment included secondary data analyses from multiple sources (Seattle-Puget Sound Surveillance, Epidemiology and End Results cancer registry, Behavioral Risk Factor Surveillance Survey data, and WA State Department of Health data). Qualitative assessment included semistructured interviews (n=32) conducted in person and over the telephone with key informants representing county health departments, clinic/health systems, SCCA network sites, and community-based organizations. Interviews included questions about barriers and facilitators to cancer screening, referrals, services, access to care, and cancer inequities.

Results: The quantitative data analysis identified the top five cancer incidence sites in the CA as breast, prostate, lung, hematologic malignancies and colorectal; the top...
five mortality sites in the CA are lung, prostate, breast, hematologic malignancies and colorectal. Comparisons of incidence and mortality for the region revealed several inequities: 1) American Indians and Alaska Natives (AIAN) had the most numerous and severe inequities for incidence and mortality of the top cancers; 2) non-Hispanic Blacks had the most severe mortality for prostate cancer; and 3) outlying rural counties had higher incidence and mortality rates than urban areas. Through the qualitative data analysis, we identified seven major themes that influenced cancer prevention and control, including geography, social determinants of health, financial issues, issues around provider trust and communication, issues with agency partnerships/collaboration, and race/ethnicity. Qualitative interviews suggested opportunities for the Consortium to address barriers that underlie several major cancer inequities in the CA.

Conclusion: The Consortium will use the needs assessment as a baseline measure to evaluate future research that addresses the cancer burden in the CA. The Consortium now has information to take an informed approach to engage key stakeholders to collaborate and holistically improve cancer research and outcomes for all CA residents.

C005 Racial disparity, stage at diagnosis, and treatment patterns of colorectal cancer: Analysis of data from a hospital-based cancer registry, Virginia 2008-2016. Jennifer May1, Hadiza Galadima2, Georges Adunlin1, Marybeth Hughes3. 1Sentara, Norfolk, VA, 2Old Dominion University, Norfolk, VA, 3Samford University, Birmingham, AL, 4Eastern Virginia Medical School, Norfolk, VA.

Background: Using hospital-based cancer registry data, we examined the predictors of late-stage CRC diagnosis and identified factors contributing to CRC treatment patterns in Virginia.

Methods: We conducted a retrospective cohort study using the Sentara Cancer Registry for patients diagnosed with CRC from 2008 to 2016. Patients' demographics and clinical characteristics were summarized and compared between Caucasian and African American in a bivariate analysis using the Chi-square test for categorical variables, and the Student's t test for continuous variables. A hierarchical logistic regression model adjusting for age, sex, race, marital status, primary payer, cancer site, initial year of diagnosis, and the Charlson Comorbidity Index (CCI) was used to model the odds of late-stage CRC disease, and to determine factors associated with treatment patterns, i.e., surgery, chemotherapy, and radiation. Adjusted odds ratios with their 95% confidence intervals were reported.

Results: The data consisted of 4,505 cases of CRC reported to Sentara hospitals during 2008 to 2016. Among these patients, 2,371 (54.34%) were diagnosed late and 1,992 (45.66%) were early-stage diagnosis. About three quarters of the patients were Caucasian (74.93%). On average, patients were 65.95 years old (SD=13.22), and the majority were males (52.01%), married (55.8%), and had primarily Medicare (57.02%), followed by private insurance (31.88%). During the study period, the overall rate of CRC diagnosis decreased from 12.32% in 2008 to 10.36% in 2016. About 47.26% of the patients had a Charlson Comorbidity Index (CCI) score \( \geq 2 \). The bivariate analysis of racial disparity revealed that African American with CRC are younger than their counterpart Caucasian (\( p < 0.0001 \)), and they are generally more likely to be late-stage diagnosis (59.41% vs. 52.65%; \( p < 0.0001 \)). Time to treatment initiation is statistically higher among Black than White (\( p = 0.0307 \)). The fully adjusted multilevel logistic regression model showed a nonexistent racial disparity in late stage diagnosis between White and Black. The odds of late-stage CRC diagnosis were higher among younger patients (<50), those with a CCI score greater than 5, and among the uninsured and self-pay (All \( P<0.05 \)). For treatment patterns, younger patients (<50) had higher odds of having surgery, performing chemotherapy and radiation. The odds of surgery are less likely among Black and more likely among those with a private insurance, and a CCI score between 3 and 5 (All \( P<0.05 \)). Finally, the likelihood of performing radiation is statistically significantly less among patients with a CCI score between 3 and 5 and above 5, [OR=0.563 (95%CI: 0.398 - 0.795)]. Race, sex, and marital status were not significant predictors of late stage CRC, chemotherapy, and radiation.

Conclusion: The impact of patient demographics and clinical factors on late stage and treatment patterns is striking in Virginia. These findings suggest the need for policy to try to delineate those factors associated with those disparities.

C006 Sociodemographic predictors of adherence to postoperative surveillance colonoscopy among patients diagnosed with nonmetastatic colorectal cancer. Janeth Sanchez1, Veena Shankaran2, Joseph Unger1, Margaret Madeleine1, Beti Thompson1. 1University of Washington, Seattle, WA, 2Fred Hutchinson Cancer Research Center, Seattle, WA.

Background: Despite progress in colorectal cancer (CRC) screening and treatment over the past two decades, striking
disparities in CRC survival persist among racial/ethnic minorities, with Blacks experiencing a 10% lower 5-year overall survival compared to Whites (American Cancer Society, 2017). One potential reason for the disparity in survival may be due to lower rates of appropriate surveillance care among racial/ethnic minorities. Among CRC patients, postoperative surveillance (PS) received at recommended intervals within 5-years following surgery improves overall survival up to 33% (Rodriguez-Moranta, 2006). Unfortunately, minority CRC survivors are approximately 30% less likely to receive PS compared to non-Hispanic Whites (NHW) (Carpentier, 2013). There are likely multiple underlying factors contributing to disparities in the timely receipt of recommended PS procedures such as colonoscopy, a PS procedure with adherence proportions as low as 18% among CRC patients. The differences in CRC patients who adhere or do not adhere to PS procedures are understudied.

**Purpose:** Based on Andersen’s (1978, 1995, 2007) Behavioral Model of Health Services Use, this study will assess the association between individual- and contextual-level factors and adherence to PS colonoscopy among Medicare beneficiaries from different racial/ethnic groups.

**Methods:** This is a retrospective population-based cohort study using the SEER-Medicare linked database (2009-2014). Medicare beneficiaries diagnosed with CRC as their first cancer and who received surgical resection for CRC stage II and III, and who are between the ages of 66 and 85, are included in this sample. Chi-squared test will be used to assess significant differences in the distribution of patient characteristics across race/ethnicity, and analysis of variance (ANOVA) is used to assess differences for age as a continuous variable. Descriptive statistics will be presented for all demographic and socioeconomic variables to describe the characteristics of the sample population, stratified by racial/ethnic group. A hierarchical generalized linear model will be used to assess adherence to PS colonoscopy as a nonlinear function of explanatory variables defined at the individual- and contextual-levels. The adjusted odds with 95% confidence intervals of adherence to PS colonoscopy also will be presented by racial/ethnic group.

**Conclusions:** Appropriate surveillance following a CRC diagnosis is critical for improving CRC outcomes. Characteristics that are unique to racial/ethnic minorities may contribute to lower rates of adherence to PS colonoscopy, leading to poor survival outcomes. Findings from the proposed research may help guide future public health and clinical interventions focused on improving the timely receipt of PS procedures among older adults.

**C007 Multilevel analysis of person-, county-, and state-level contributors to triple-negative breast cancer diagnosis among women in the United States.** Lia C. Scott, Georgia State University, Atlanta, GA.

While multiple individual level factors have been identified to play a role in the etiology of breast cancer and triple-negative breast cancer, few studies have used mixed modeling techniques to explore the role that additional levels of predictors may play in triple-negative breast cancer. Since disparities persist even when known factors are accounted for, the scope of research must be expanded to examine factors that contribute to disparate outcomes at an ecologic level. Mixed modeling can perhaps better account for the spatial heterogeneity in these cases. Random intercept mixed models can account for different effects across areas, yet they assumes higher levels are independent, thus are limited in terms of handling spatial dependence. In this study, we explored the odds of triple-negative diagnosis, given breast cancer diagnosis, at the individual level, controlling for individual, county and state level variables. The intraclass correlations for county and state were 3.8% and 0.8%, respectively. When controlling for county and state level predictors, disparities by age, race and stage persisted. Non-Hispanic black women consistently had twice the odds of diagnosis with TNBC, women age 40 and under had 1.7 times the odds of diagnosis, and women diagnosed at late stage had 1.5 times the odds of diagnosis. County-level residential segregation and educational attainment variables were significant predictors of triple-negative diagnosis, while no state level policy variables were statistically significant predictors, after controlling statistically for random state intercepts that account for other omitted state variables. Residential isolation proved to be disadvantageous to diagnosis, while residential diversity and area educational attainment were protective. Future studies should continue to explore various environmental factors, physical and social, that contribute the variation in disparate rates of diagnosis.

**C008 Descriptive analysis of Black/White disparities in triple-negative breast cancer for the United States—A population-based study from the United States Cancer Statistics database.** Lia C. Scott, Georgia State University, Atlanta, GA.

Triple-negative breast cancer has been associated with a more aggressive histology, poorer prognosis and nonresponsiveness to hormone therapy. Due to the lack of therapeutic options for this cancer type, it is imperative that cancer research identify factors that drive disparities and
FOCUSED SESSION C

focus on prevention. This study expands upon the literature by examining the outcome in population-setting rather than a sample, which can validate previous findings, by capturing the majority of the population. Using the United States Cancer Statistics database, we identified 1,151,724 cases of breast cancer from 2010-2014, with the triple-negative phenotype accounting for approximately 8.4% of all cases. The underlying distribution of age, race, and stage were statistically significantly different when we compared triple-negative breast cancer cases to all other breast cancer cases. Unadjusted and adjusted logistic regression results found that non-Hispanic black and Hispanic women had higher odds of diagnosis when compared to non-Hispanic white women, with non-Hispanic black women having over twice the odds of diagnosis. Additionally, those less than 50 years old had higher odds of diagnosis while those older than 64 had lower odds, compared to age 50 to 64. Women younger than 40 had the highest odds of diagnosis, as compared to the referent group, with an odds ratio of approximately 1.8. Diagnosis at stage III and beyond conferred higher odds of diagnosis of triple-negative breast cancer. In adjusted analyses, these disparities persisted. A subset analysis was conducted on only non-Hispanic black and non-Hispanic white cases to explore the interaction of age, race, and stage. This subset accounted for approximately 86% of the breast cancer population. Adjusted logistic regressions were run with age, race, and stage as predictors of triple-negative breast cancer diagnosis. Interaction effects of age and stage by race were explored. Stage and race were statistically significant moderators of the relationship between age and diagnoses of triple-negative breast cancer. As age increased the odds of triple-negative diagnosis decreased; however, those diagnosed at late stage had higher odds of triple-negative breast cancer compared to those diagnosed in early stage. Additionally, non-Hispanic black women consistently had twice the probability of triple-negative diagnosis. This study shows that there is significant burden of disease in triple-negative breast cancer for women of color, specifically non-Hispanic black women, and younger women. Additional studies need to be conducted to determine what may be driving these disparities between race, age, and stage.

Background: Colorectal Cancer (CRC) almost always develops from precancerous polyps in the colon or rectum. Screening tests can find precancerous polyps for removal before they turn cancerous. The U.S. Preventive Services Task Force (USPSTF) recommends screening for colorectal cancer in adults using fecal occult blood test (FOBT) every year, sigmoidoscopy every 5 years, or colonoscopy every 10 years, from the age of 50 to 75. However, only about two thirds of people ages 50 to 75 have been screened for CRC, and racial disparities in colorectal cancer screening still exist.

Method: We performed logistic regression to determine CRC screening racial disparities by using 2016 CDC Behavioral Risk Factor Surveillance System (BRFSS) data.

Results: 190,000 respondents, ages 50 to 75, were used in logistic regression models. 9.0% of White non-Hispanic participants had FOBT within the last 12 months. Black non-Hispanic, Hispanic, other races non-Hispanic only, and Multiracial non-Hispanics are 11.8%, 12.2%, 12.3%, and 13.2%, respectively, to have had FOBT in the last 12 months. 69.0% of White non-Hispanic reported having a colonoscopy within the past 10 years. The percentage of those with a colonoscopy within the past 10 years for Black non-Hispanic, Hispanic, Other race non-Hispanic only, and Multiracial non-Hispanics are 66.6%, 54.0%, 56.4%, and 60.8%. 2.5% of all participants chose sigmoidoscopy within the past 5 years as CRC screening tool with no significant difference among race. 72.4% of White non-Hispanic fully met the USPSTF recommendation. 70.6%, 59.6%, 62.2%, and 67.3% of Black non-Hispanic, Hispanic, Other race non-Hispanic, and Multiracial non-Hispanic, respectively, meet USPSTF recommendations. After adjusting for social economic status and other variables, compared to White non-Hispanics, Black non-Hispanics are still 20% more likely to choose FOBT as a CRC screening tool (OR = 0.800 and 95% CI 0.757,0.846). However, Black non-Hispanics were 17.3% more likely to have a colonoscopy as CRC screening tool and 20% more likely to meet USPSTF recommendations (OR =0.827 with 95% CI 0.793,0.862 and OR = 0.840 with 95% CI 0.804,0.846).

Conclusion: Compared to White non-Hispanics, Black non-Hispanics are more likely to choose FOBT and less likely to choose colonoscopy as CRC screening tool. White non-Hispanics are significantly less likely to choose FOBT as CRC screening tool compared to others. However, colonoscopy as CRC screening between White non-Hispanics and Black non-Hispanics reveals no racial disparity. After adjusting for social economic status, Black non-Hispanics are more likely to choose colonoscopy and more likely to meet USPSTF screening recommendations compared to White non-Hispanic and other minorities. CRC screening between

C009 Colorectal cancer screening racial disparities among respondents who participated in 2016 CDC behavioral risk factor surveillance system. Jingwei Song1, Ligeng Tian2, Muktar Aliyu1. 1University of Virginia, Charlottesville, VA, 2Virginia Oncology Associate, Newport News, VA, 3Vanderbilt University Medical Center, Nashville, TN.
POSTER SESSION C

White non-Hispanic and Black non-Hispanic is driven by basic demographics, socioeconomic variables, access and self-rated health. However, CRC screening racial disparities between White non-Hispanics and other minorities still exist, especially among Hispanics.

C010 The wiring between genes and short noncoding RNAs in cancer depends on race/ethnicity and sex. Aristeidis G. Telonis, Isidore Rigoutsos. Thomas Jefferson University, Philadelphia, PA.

Short noncoding RNAs (ncRNAs) have been attracting increasing interest as regulators of messenger RNA (mRNA) abundance. Such regulatory molecules can have influence the abundance of mRNAs both positively and negatively. Two important categories of short ncRNAs are microRNAs (miRNAs) and their isoforms (isomiRs), and the tRNA-derived fragments (tRFs). We previously showed that their “wiring” with mRNA abundance strongly depends on the race/ethnicity in triple-negative breast cancer. Here, we focused on two cancers, bladder urothelial carcinoma (BLCA) and stomach adenocarcinoma (STAD). Men and women have been known to exhibit different incidence rates of BLCA, as well as differences in invasion, and overall aggressiveness. Analogous observations hold true when comparing White and Asian individuals in the case of STAD. We mined a total of 615 primary tumors, 337 from STAD and 278 from BLCA patients. After stringent abundance filtering, we identified 1,478 distinct isomiRs and 355 distinct tRFs. We found that the abundance profiles of these molecules exhibited strong tissue dependencies. We constructed gene co-expression networks for the healthy and disease states. Mining the correlations of isomiRs/tRFs with mRNAs, we found that core cancer pathways are wired with small ncRNAs. We carried out a large-scale computational analysis of the correlation patterns to dissect the dependencies on race/ethnicity and sex in STAD and BLCA, respectively. We found that core pathways are differentially wired in each case. For example, in BLCA, cell cycle genes are linked with several tRFs in one sex but not in the other. While the contribution of isomiRs in sex disparities in BLCA is limited, we find that isomiRs exhibit strong sex-independent associations with immune system responses and extracellular matrix and cell adhesion. In the case of STAD, we observed several instances of differential-by-race/ethnicity correlations of tRFs with genes involved in cell signaling, like ITPA and PCK1 and numerous cell adhesion genes differentially wired with isomiRs. Our data provide a detailed perspective of the structure and hubs of the gene expression networks in BLCA and STAD as well as their sex- and race/ethnicity-specific components. The identification and discovery of context-specific potential regulators have considerable ramifications for precision medicine and can be leveraged to facilitate the design of better-targeted treatments that are tuned to the patient’s sex and race.

C011 Hospital effects on racial and ethnic disparities in the quality of breast cancer treatment. Brinda Venkatesh1, Scarlett L. Gomez2, Allison Kurian3, Stephen Shortell1, Anu M. Gomez2, Hector P. Rodriguez1. 1University of California, Berkeley, Berkeley, CA, 2University of California, San Francisco, San Francisco, CA, 3Stanford University, Palo Alto, CA.

Importance: The extent to which racial/ethnic disparities in breast cancer treatment are attributable to the hospitals in which minority patients receive care or are due to differential treatment of minority groups remains unclear.

Objective: To examine the relative contribution of within-hospital and between-hospital effects on racial/ethnic disparities on the quality of breast cancer treatment.

Design, Setting, and Participants: Data from the California Cancer Registry for all breast cancer patients diagnosed with a first invasive primary breast cancer between 2011-2014 (n=57,741 patients) were analyzed. Regression models with hospital fixed and random effects disentangled “within” and “between” hospital effects on timeliness and guideline concordant breast cancer treatment.

Main Outcomes and Measures: Timeliness between diagnosis and treatment initiation, measured both as time to care in days (continuous measure) and as treatment delays (binary measure =90 days) and guideline concordance of breast cancer care based on NCCN and QOPI guidelines.

Results: Within-hospital effects contributed more to disparities in time to care (β = 4.91, p<0.001 vs. β = 3.39, p<0.001), treatment delays (β = 0.37, p<0.001 vs. β = 0.19, p<0.001), and guideline-concordant treatment (β = -0.10, p<0.05 vs. β = -0.03, p<0.05) for Black patients than between-hospital effects. In contrast, between-hospital effects contributed more to disparities for time to care (β = 2.45, p<0.001 vs. β = 1.65, p<0.001), treatment delays (β = 0.16, p<0.001 vs. β = 0.13 p<0.01), and guideline-concordant treatment (β = -0.06, p<0.05) for Hispanic patients than within-hospital effects. Within-hospital effects contributed more to disparities in treatment delays (β = 0.15, p<0.01 vs. β = 0.07, p<0.01) and guideline-concordant treatment (β = 0.11, p<0.01 vs. β = -0.02, p<0.05) for Asian/PI patients than between-hospital effects.
Conclusions and Relevance: Disparities in breast cancer treatment in California are attributable to both within- and between-hospital effects, and the effects differ for racial/ethnic groups. Understanding sources of breast cancer treatment disparities may aid in the design and implementation of tailored and targeted quality improvement and patient engagement efforts to mitigate treatment disparities.


Background: Notable breast cancer treatment differences have been established by race/ethnicity in breast cancer, but differences in quality of breast cancer care among Asians ethnic groups remain underexplored. Understanding differences in care among Asian ethnic groups may aid in the targeting of quality-improvement interventions.

Methods: We analyzed California Cancer Registry data to compare quality of care differences between Asian subgroups and non-Hispanic White women and Asian women (aggregate) and non-Hispanic White women with breast cancer in California using hierarchical regression and logistic regression models. Quality of care measures included timeliness and guideline concordance of breast cancer treatment.

Results: Asian women (aggregate) were not significantly associated with time to care, whereas in the fully adjusted disaggregated model, Chinese women experienced significantly shorter time to care ($\beta = -2.78, 95\% \text{ CI: } -4.49, -1.07$) than White women, and Filipina women experienced significantly longer time to care ($\beta = 2.03, 95\% \text{ CI: } 0.62, 3.44$) than White women. Asian women (aggregate) experienced significantly higher odds of receiving guideline-concordant breast cancer care (OR = 1.12, 95\% CI: 1.03, 1.20) than White women, whereas in the fully adjusted disaggregated model, only Filipina women experienced significantly higher odds of receiving guideline-concordant breast cancer care (OR = 1.17, 95\% CI: 1.04, 1.31) than White women. Both Asian women (aggregate) and all Asian ethnic groups were not significantly associated with breast cancer treatment delays of 90 days or greater.

Conclusions: Filipina women were more likely to receive guideline-concordant breast cancer compared to non-Hispanic White women. Filipina women also experienced longer time to care than non-Hispanic White women, while Chinese women experienced shorter time to care than non-Hispanic White women.

Impact: Disaggregating registry data by Asian ethnic groups highlights quality-of-care differences across groups that are often masked when examining this population in aggregate.

C013 Neighborhood socioeconomic status but not individual self-efficacy moderates associations between neighborhood walkability and adolescent physical activity in the NCI geoFLASHE Study. Heather D’Angelo1, Laura Dwyer2, Linda Nebeling3, April Oh3. 1University of Wisconsin-Madison, Madison, WI, 2Cape Fox Facilities Services, Manassas, VA, 3National Cancer Institute, Rockville, MD.

Neighborhood walkability, socioeconomic status (SES) and psychosocial factors have each been associated with physical activity. Yet few U.S. studies have examined whether neighborhood SES or individual factors moderate associations between neighborhood walkability and adolescent physical activity levels. Adolescent data (n=1,288) from the NCI Family Life, Activity, Sun and Healthy Eating (FLASHE) study was used. Minutes per day of moderate to vigorous physical activity (MVPA) were calculated using the self-reported Youth Activity Profile and a subsample of participant accelerometer data. Adolescent home address was geocoded and linked to U.S. Census data at varying street network buffer sizes. Neighborhoods were defined by a 400m buffer around each participant’s home. Factor analysis of neighborhood population density and built environment features revealed three neighborhood factors associated with walkability: 1) high density and non-auto commutes, 2) older homes, and 3) short auto commutes. Neighborhood SES was measured using the Yost index derived from Census data and categorized into quintiles (1 = lowest SES; 5 = highest SES). Multiple linear regression examined associations between neighborhood walkability factors and adolescent MVPA, and interactions between these factors and 1) neighborhood SES and 2) physical activity self-efficacy. We controlled for age, gender, race/ethnicity, and parent education. Living in neighborhoods with higher density ($B=7.3, p=0.003$) and older homes ($B= 4.7, p=0.007$) were positively associated with MVPA. The positive association between living in a higher density neighborhood with more non-auto commutes and MVPA was stronger for those living in neighborhoods at the 2nd and 4th quintiles of neighborhood SES, compared with those in the lowest SES neighborhoods. Similarly, the association between living in a neighborhood with older...
POSTER SESSION C

C014 Geospatial analytics and sensitivity/specificity assessments to inform liver cancer prevention. Shannon M. Lynch1, Daniel Wiese2, Kristen Sorice1, Minhuyen Nguyen1, Evelyn Gonzalez2, Kevin Henry2. 1Fox Chase Cancer Center, Philadelphia, PA, 2Temple University, Philadelphia, PA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR13) of the Conference Proceedings.

C015 Social network analysis with respondent driven sampling data: A study of ethnic and geographic integration on Guam and Hawaii. Grazyna Badowski1, Louis Dulana1, Lilnabeth P. Somera1, Kevin Cassel1, Hye-ryeon Lee2, Janessa Roman1, Jayson Morales1. 1University of Guam, Mangilao, Guam, 2University of Hawaii, Honolulu, HI.

US Pacific Islanders are one of the fastest-growing population groups in the US, and serious disparities in health outcomes exist in this group, with cancer being the leading cause of death. Limited knowledge about the cancer communication practices and risk behaviors of US Pacific Islanders, as well as their social network structure and integration, makes effective cancer prevention interventions difficult, and contributes to disparities. In 2017, we conducted a survey on health communication on Guam and Hawaii using the respondent-driven sampling method (RDS) to recruit participants (N=733 for Hawaii, and N=533 for Guam). RDS is a network-based sampling technique where initial seed respondents recruit others from their social networks. The recruiting process repeats iteratively, thereby forming long referral chains. RDS provides a viable data for making inferences about the underlying network structure. During the sampling process two pieces of information are gathered. First, each recruiter-recruit dyad is documented. Second, respondents are asked how many other members of the target population they know and interact with. In this study, we used this information to create recruitment chains and test the quantity and quality of cross-gender, cross-ethnicity, cross-generation ties. We also analyzed the geographic distribution and spatial clustering of the samples. Self-reported network size (degree) was used to estimate of a homophily, a measure of the strength of association to one’s own group beyond random mixing. In general, strong homophily was found for different ethnic groups (with values ranging from 0.7 to 0.8), whereas gender and age had weak homophily. Even though the participants tended to recruit spatially proximal peers, both samples in Guam and Hawaii eventually covered the whole catchment area.


Background: Differential uptake of prostate-specific antigen (PSA) testing in the US and UK has been linked to between-country differences in prostate cancer incidence. In the US, men of African ancestry have been shown to have a higher incidence of prostate cancer that is ultimately fatal compared with men of European ancestry, thus prompting calls for precision prevention approaches to screening. To assess whether temporal and racial differences are evident in the UK, we assessed the incidence of fatal prostate cancer in the US and England during a period of evolving screening recommendations and practices in both countries.

Methods: Using data from the Surveillance, Epidemiology, and End Results program and Public Health England’s National Cancer Registration and Analysis Service, we identified prostate cancer patients newly diagnosed between 1995 and 2005, aged 45-84 years old. We defined fatal prostate cancer as death attributed to the disease within 10 years of diagnosis. To evaluate incidence trends across the 11-year study period, we used age-period-cohort modeling to calculate estimated annual percentage change (EAPC) and jointpoint regression analysis to identify periods of significant change.
**Results:** In the US, 9% (n=38,409) of the 429,541 prostate cancer cases were fatal, compared with 17% (n=39,249) of the 228,615 cases in England. The age-adjusted incidence of fatal prostate cancer declined in the US by -4.2% per year (95%CI: -4.6%, -3.8%) and increased in England by 7.7% per year (95%CI:7.2%, 8.3%). From 2002-2005, the US experienced a more rapid decline in the incidence of fatal disease (EAPC = -6.4%; 95%CI: -8.3%, -4.5%) while rates in England continued to increase, albeit to a lesser degree (EAPC = 4.3%; 95%CI: -0.1%, 8.9%). Temporal trends for each country did not differ by race. However, a black-to-white difference persisted across the study period, with black men in both the US and England experiencing 2-to-3-fold higher incidence rates of fatal prostate cancer compared with white men.

**Conclusions:** During a period of increased PSA testing in the US and relatively low, but growing, use in England, we observed opposing trends for the incidence of fatal prostate cancer between the two countries. Our ecological study suggests that country-specific screening practices may influence temporal trends for the incidence of fatal prostate cancer similarly for black and white men, though a disparity persists in the absolute rate of disease occurrence between the two groups.

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**C017 Breast cancer trends and disparities in an urban setting.** Hee-Soon Juon, Russell McIntire, Scott Keith, Charnita Zeigler-Johnson. Thomas Jefferson University, Philadelphia, PA.

**Background:** Although efforts have been made to decrease breast cancer disparities, recent changes in breast cancer screening recommendations can influence cancer trends by race/ethnicity. The goal of this descriptive study was to determine how recent trends in breast cancer vary by race/ethnicity in a multiethnic, urban setting.

**Methods:** We obtained PA cancer registry data and female breast cancer rates of patients residing in Philadelphia County (2005-2014). Race was categorized based upon data in the Cancer Registry as all cases (all races), and the most prevalent groups of cases, including white/Caucasian (47%), black/African American (46%), Hispanic (4%) and Asian (3%). Our sample of the 4 major race/ethnic groups included 10,801 women. We conducted descriptive analyses using chi-square tests for categorical variables and Kruskal-Wallis tests for continuous variables. Patient characteristics included incidence, advanced tumor stage (regional and distant disease), and advanced tumor grade (poorly differentiated or undifferentiated). We also calculated the percent change in incidence and mortality rates by race/ethnicity. A cut-point of 50 years were used to examine trends in incidence among younger vs. older patients.

**Results:** The median age at breast cancer diagnosis differed significantly by race/ethnicity (p<0.001). White women were among the oldest at diagnosis (median age 65). Asian women were among the youngest (median age 53). More black women (18%) died from breast cancer compared to white (13%), Hispanic (12%) and Asian women (11%, p<0.001). Advanced tumor grade was most common among Asian women (51%) and lowest among white women (33%, p<0.001). Distant stage was most common among black women (10%) and compared to each of the other groups of women (8%, p<0.001). Breast cancer rates were not available across many of the years for Asian and Hispanic women. However, trends in breast cancer incidence showed that Hispanic women had lower incidence at every point in time than black or white women. Percent change in incidence rates increased by 17% in Hispanics vs. 11% in white and 4% in black women. Among older women (age 50+), breast cancer incidence increased by 17% among black women and 10% among white women. Among young women (<age 50), the incidence increased by 32% among white women but decreased by 16% among black women. Among older women, advanced-stage breast cancer was consistently most common among blacks. However, among younger women, recent trends show that white women now have the highest rates of advanced-stage disease. Breast cancer mortality was consistently highest for black women, although mortality rates have decreased over time. The decrease in mortality was 21% in white women and 15% in black women.

**Conclusion:** We observed race/ethnic differences in breast cancer trends in patient age, tumor characteristics, and disease rates. Future studies should examine factors that have influenced recent shifts in breast cancer incidence and mortality among diverse populations.

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**C018 Disparity subtyping: Bringing precision medicine closer to disparity science.** J. Sunil Rao, Huilin Yu, Jean-Eudes Dazard. 1University of Miami, Miami, FL, 2Case Western Reserve University, Cleveland, OH.

The genomics revolution also spawned the dawn of precision medicine. As in the National Research Council definition, if its promise is fully realized, then more accurate decisions about individual patient treatment decisions and outcomes will be possible. Disparities researchers have also begun looking to the precision medicine paradigm with the hope...
that some incorporation of its principles will allow for a more focused and precise path forward to reduce population disparities. While the emphasis may switch to populations from individuals, central to the paradigm still is the ability to classify individuals into subpopulations who differ in meaningful ways with respect to underlying biology and outcomes. Identification of these subpopulations is an active area of precision medicine research. For instance, there are countless papers on molecular subtyping of various cancer phenotypes. How to do such a thing in disparity science has proven elusive since it requires identifying disparity subpopulations, which is a somewhat abstract concept. In this paper we present two different strategies—level set identification and peeling. The former is based on a recursive partitioning algorithm combined with clustering of similar partitions; the latter adopts a strategy of sequentially searching for and then extracting extreme difference subgroups in a population. Using series of simulation studies and then also studying various cancer outcomes from The Cancer Genome Atlas (TCGA) repository, we demonstrate that such disparity subtypes can indeed be found, characterized, and then validated on test data.

C019 The mediating effect of hormone therapy compliance in the relationship between race and survival among breast cancer patients in South Carolina: A causal mediation analysis. Christian R. Alvarado1, Samantha C. Truman1, Oluwole Babatunde1, Sue P. Heiney1, Jessica M. Escareno2, Swann Arp Adams1. 1University of South Carolina, Columbia, SC, 2University of Memphis, Memphis, TN.

Introduction: Among women, breast cancer is the most common type of cancer diagnosis. Hormone-receptor positive (HRP) cancers compose approximately 80% of all breast cancer diagnoses and are commonly treated with hormone therapies. An estimated 50% of women do not comply with their prescribed hormone therapies due to incorrect dosage or discontinued use. Empirical evidence has shown that hormone therapies have a significant effect on cancer prognosis and patient survival.

Purpose: This study was conducted to investigate the mediating effect of hormone therapy compliance in relation to race and breast cancer survival.

Methods: A retrospective cohort study was conducted on women identified through several administrative databases and the South Carolina Central Cancer Registry (SCCCR). A causal mediation analysis was conducted among women in South Carolina regarding their compliance to prescribed hormone therapy and their survival. Participants in this study were African American (AA) or European American (EA) and less than 65 years old. Counterfactual notation was applied to estimate the controlled direct effect (CDE) and the proportion mediated regarding the relationship between race, hormone therapy compliance, and overall survival. The CDE can be estimated by comparing EA and AA women on their survival while holding the mediator constant as having complied with their hormone therapies. The proportion mediated estimates the mediated effect of compliance on the survival of breast cancer patients in South Carolina.

Results: There were a total of 1,188 women from South Carolina who had HRP cancers. Among this cohort, 72% were EA and 28% were AA women. Approximately 87% of the participants were compliant with their prescribed hormone therapy. AA women were more likely to die from breast cancer compared to EA regardless of age. The odds ratio and 95% confidence interval for the CDE was 1.05 (1.02, 1.09). Finally, the proportion mediated through compliance was estimated to be 26%.

Conclusion: Hormone therapy compliance has been observed to significantly mediate the relationship between race and breast cancer survival among HRP women in South Carolina. The CDE showed a significant association between race and survival when participants were compliant to hormone therapies. Compliance to therapies and physician recommendations may influence the difference in survival that is commonly observed between these two groups. The controlled direct effect estimations can be useful for future policy evaluation. Policy implications include the implementation of effective means of the timely distribution of information concerning the potential side effects as well as education regarding management strategies for these hormone therapies. Finally, understanding the obstacles of compliance to hormone therapies will inform policymakers towards regulations that minimize the impact of these obstacles.

C020 Regularized multiple mediation analysis for big data set—With an application to explore racial disparity in breast cancer survival. Qingzhao Yu1, Lu Zhang1, Meichin Hsieh1, Xiaocheng Wu1, Richard A Scribner1, Bin Li2, 1Louisiana State University Health Sciences Center, New Orleans, LA, 2Louisiana State University, Baton Rouge, LA.

Mediation effect refers to the effect conveyed by a third variable, the mediator, to an observed relationship between an exposure and a response variable of interest. Mediation
C021 Affective mechanisms of stress-induced cigarette craving: Considerations of sex and ethnicity. Joel Erblich1, Guy H. Montgomery2, Julie B. Schnur2, Camille Ragin1. 1Hunter College and Icahn School of Medicine at Mount Sinai, New York, NY, 2Icahn School of Medicine at Mount Sinai, New York, NY, 3Fox Chase Cancer Center, Philadelphia, PA.

Cigarette smoking continues to be the number one modifiable risk factor for the development of cancer. Among the major impediments to successful smoking cessation are strong cravings to smoke, especially during times of heightened stress. Affective responses to stress (e.g., acute anxious and depressed mood) may serve as important mediators of cigarette cravings that are amenable to intervention. Experimental models have been developed to induce cravings reliably during stress under laboratory conditions, permitting a closer examination of possible changes in affect that may be driving cigarette cravings. The possibility that specific types of affect may be responsible for cigarette cravings, however, has not been investigated. Another key limitation of the extant research is its reliance on samples of predominantly male Caucasian smokers. Although several recent studies suggest possible sex- and ethnicity-based differences in affective responses to acute stress, no studies have explored how such differences may contribute to cigarette cravings. To that end, we conducted an experimental study in which an ethnically diverse sample of healthy volunteer female (n=163) and male (n=139) nicotine-dependent smokers were exposed to a mild stressor (guided imagery of painful dental work). We assessed positive affect (happy, relaxed, energized), negative affect (anxious, depressed, emotionally upset), and cigarette craving immediately before and after the imaginal dental stressor. Mean age of the sample was 38.6 (+ 10.2). Participants reported smoking an average of 19.5 (+ 9.8) cigarettes per day for an average of 18.9 (+ 10.0) years. Path analyses revealed that the acute stressor induced significant increases in negative affect and decreases in positive affect (p’s < 0.0001). In turn, increases in anxious, but not depressed mood, mediated effects of the stressor on cigarette craving. Bootstrapped confidence intervals indicated that indirect mediated effects were significant at the 0.05 level. Interestingly, effects were particularly pronounced in women (85% of total effect for women vs. 65% of total effect for men). Among Hispanic (n=81) smokers, elevations in depressed mood mediated increases in cigarette craving (p <0.05), unlike among African American (n=138) and Caucasian (n=62) smokers. Results highlight the importance of considering sex and ethnicity when developing interventions to manage stress-induced cigarette cravings among smokers attempting to quit.
Partial text from the document:

**C022 Integrated molecular approach to identify biologic factors contributing to breast cancer disparities in Chicago.**

- Oana C. Danciu,
- Zeynep Madak-Ercoglu,
- Hariyali Patel,
- Landan Banks,
- Jermya Buckley,
- Garth Rauscher,
- Anita Fareeduddin,
- Elonia Martin,
- Carlos Garcia,
- Lauren Schulte,
- Deanna Taiym,
- Julie Kim,
- William Gradishar,
- Scott Hegerty,
- Archana Bargaje,
- Joanna Frasor,
- Kent Hoskins.

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African American (AA) women have a 4- to 5-fold greater risk of death from hormone receptor-positive (HR +) breast cancer compared to white women, even after controlling for stage at diagnosis, treatment, and other prognostic factors. Biologic mechanisms are activated in HR + BC arising in AA women that result in a higher rate of distant metastases and/or resistance to endocrine therapies. We are performing a metabolomic analysis of serum from AA and white women with newly diagnosed BC, as well as a racially diverse, healthy control population, to identify potential oncometabolites that promote aggressive phenotypes in HR+ BC cells. The association between candidate oncometabolites and established demographic variables related to poor outcomes in AA women with BC, including neighborhood socioeconomic deprivation and individual patient and tumor characteristics, will also be explored. AA and white women, age 20-79, with a new diagnosis of stage I-III ER+ BC who have not yet initiated treatment have been recruited from 3 cancer institutions in Chicago. Control subjects (women presenting for a screening mammogram without breast symptoms and no history of cancer) have been recruited in mammography centers. Serum for metabolite profiling and demographic data were collected. By collecting serum samples prior to initiation of any treatment, the profiles generated will also reflect the metabolome of the tumor itself. Analyses will be adjusted for tumor intrinsic subtype (Luminal A, Luminal B, HER-2 enriched and basal-like) since different molecular pathways predominate in the different subtypes and metabolite profiles are expected to vary.

**C023 Annexin A2 expression level correlates with adverse pathology and disease progression in prostate cancer.**

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- Denise Young,
- Wei Huang,
- Amina Ali,
- Lakshmi Ravindranath,
- Kurt Christen,
- Kevin Babcock,
- Huai-Ching Kuo,
- Yongmei Chen,
- Jacob Kagan,
- Sudhir Srivastava,
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- David G. McLeod,
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**Background:** Annexin A2 (ANXA2) is absent or expressed focally in the prostate epithelium of moderately differentiated tumors but is highly expressed in a subset of poorly differentiated tumors. We observed earlier that ANXA2 expression in prostate tumors correlates with aggressive CaP or disease progression, whether prostate tumors of Caucasian American (CA) and African American (AA) patients have distinct Annexin A2 expression profiles, and if the levels of Annexin A2 in sera is correlated to its expression in tumor tissues. We also speculated on the underlying mechanism likely to regulate ANXA2 expression in the absence of ERG.

**Methods:** We evaluated Annexin A2 and ERG expression in index tumors on whole-mounted prostate sections and tissue microarrays derived from radical prostatectomies of 176 patients by immunohistochemistry. Both cohorts were matched for post RP follow-up, pathologic stage, and race. ERG and Annexin A2 expression status in tumors were correlated to Gleason score, biochemical recurrence and metastasis. We measured, by enzyme-linked immunosorbent assay (ELISA), Annexin A2 proteins levels in sera of 94 controls and 222 patients, matched for race and Gleason sum. Correlation between promoter methylation and gene expression profiles of ANXA2 from TCGA studies were also examined.

**Results:** A significant association was found between ANXA2(+) index tumors and higher Gleason Grade Group (GG) 4 and 5, and worse pathologic stage (pT 3-4). Moreover, ERG(-)/ANXA2(+) tumors were found to be associated with Gleason GG 4 and 5, and ERG(+) / ANXA2(-) tumors with Gleason GG 1 and 2. However, unlike ERG expression, which is more prevalent in prostate tumors of CA men, Annexin A2 expression was not associated with race. Trends toward earlier occurrence of BCR and worse metastasis-free

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Program and Proceedings • November 2-5, 2018 • New Orleans, LA 201
survival were observed among ANXA2(+) cases. Significantly higher levels of secreted Annexin A2 were detected in the sera healthy controls than in CaP patients. Analysis of TCGA prostate cancer dataset revealed an inverse association between methylation of the ANXA2 promoter region and ANXA2 expression in prostate tumor tissues.

**Conclusion:** The association between high Annexin A2 expression in prostate tumors with higher grade and stage suggests a potential for its use as a biomarker for aggressive CaP and to stratify patients after radical prostatectomy.

**C024 Lifestyle-associated advanced glycation end products are elevated in ER+ positive breast cancer patients, alter response to therapy, and can be targeted by lifestyle intervention.** Katherine R. Walter, Ford E. Ford, Mathew J. Gregoski, Rita M. Kramer, Kendrea D. Knight, Laura Spruill, Lourdes M. Nogueira, Bradley A. Krisanits, Marian H. Taylor, Amanda C. La Rue, Michael B. Lilly, Stefan Ambks, King Chan, Tonya F. Turner, Heidi Varner, Shweta Singh, Jaime Uribarri, Elizabeth Garrett-Mayer, Kent E. Armeson, Ebony J. Hilton, Mark Clair, Victoria J. Findlay, Lindsay L. Peterson, Gayenell Magwood, David P. Turner, MUSC, Charleston, SC, 1Campbell University, Buies Creek, NC, 2NCI, Bethesda, MD, 3Icahn School of Medicine at Mount Sinai, New York, NY.

Lifestyle factors associated with personal behavior can alter tumor-associated biologic pathways and thereby increase cancer risk, growth and disease recurrence. Advanced glycation end products (AGEs) are reactive metabolites produced endogenously as a byproduct of normal metabolism. A Western lifestyle consisting of high-fat, high-sugar and processed foods as well as little exercise can lead to a significant increase in AGE accumulation in the body and is also associated with driving cancer disparity. Increased AGE accumulation promotes disease phenotypes through modification of the genome, protein crosslinking and dysfunction, and aberrant cell signaling. We evaluated AGE levels in biospecimens from ER+ and ER- breast cancer patients, examined their role in therapy resistance, and assessed the ability of a lifestyle intervention to reduce circulating AGE levels in ER+ breast cancer survivors. A correlation between ER status and AGE levels was observed in tumor and serum samples. AGE treatment of ER+ breast cancer cells impacted pathways associated with ER regulation. We observed a significant increase in phosphorylation of ERalpha following AGE treatment when compared to untreated control with no change in total ERalpha levels. We also observed a significant increase in both AKT and ERK phosphorylation in ER+ cell lines in response to AGE treatment in a time-dependent manner. Inhibition of AKT with Ly294002 and inhibition of ERK with the MEK inhibitor U0126 significantly reduced ERalpha phosphorylation in the presence of AGE. Significantly, ER+ cells treated with AGEs no longer responded to hormonal therapy with tamoxifen. In a proof-of-concept study we examined the ability of a defined exercise and dietary intervention (i.e., cardiac rehabilitation) to reduce circulatory AGE levels in ER+ breast cancer survivors. A significant increase in very active minutes and average calories burned was observed as a result of the intervention. This was accompanied by a significant reduction in dietary-AGE intake and also showed significant reductions in circulating AGE levels when fasting serum samples were analyzed by ELISA. A analysis of IL6 and CRP levels by ELISA in the same AGE assessed samples revealed no significant differences at any time point. There is a potential prognostic and therapeutic role for lifestyle-derived AGEs in cancer disparity. Given the potential benefits of lifestyle intervention on cancer incidence and mortality, opportunities exist for the development of community health and nutritional programs aimed at reducing AGE exposure in order to improve cancer prevention and treatment outcomes. Lifestyle interventions that lower AGE levels may then be utilized to reduce breast cancer incidence and improve prognosis in cancer disparity populations.

**C025 Dietary-AGE ingestion during puberty modifies the breast microenvironment to alter mammary gland development: Linking lifestyle with cancer disparity.** Bradley A. Krisanits, Jaime F. Randise, Lourdes M. Nogueira, Kristi Helke, Michael C. Ostrowski, Katie Theis, Maria Cuitino, Gayenell Magwood, Marvella E. Ford, Victoria J. Findlay, David P. Turner, MUSC, Charleston, SC.

Advanced glycation end products (AGEs) are highly reactive metabolites that irreversibly accumulate in tissues as we grow older. Accumulation of AGEs in the body can contribute to proinflammatory and pro-oxidant phenotypes when signaling through the receptor for advanced glycation end products (RAGE). The pathogenic effects of AGE-RAGE signaling include tissue degeneration, protein dysfunction, aberrant cell signaling, and reduced genetic fidelity. AGEs are formed during normal metabolism but, critically, lifestyle factors such as poor diet, a sedentary lifestyle and being obese also contribute to the AGE accumulation pool. The permanent nature of AGE adducts and their ability to mediate chronic and persistent inflammatory and oxidative stresses is particularly compatible with the concept of metabolic memory. Our dietary studies in pubertal FVB/n mice after chronic consumption of AGE show a significant
POSTER SESSION C


Nikita Wright1, Chaeyun Lee1, Uma Krishnamurti2, Xiaoxian Li3, Bikram Sahoo1, Andrew Green1, Ian Ellis1, Ayodeji Agboola4, Guanhao Wei1, Lauren McCullough1, Emad Rakha1, Padmashree C.G. Rida1, Remus Osan1, Ritu Aneja1. 1Georgia State University, Atlanta, GA, 2Emory University, Atlanta, GA, 3University of Nottingham and Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom, 4Olabisi Onabanjo University, Sagamu, Nigeria.

Triple-negative breast cancer (TNBC) disproportionately affects African-American (AA) women. Literature underscores that women from West Africa exhibit higher TNBC incidence and mortality rates than AA women. Distinctions in inherent tumor biology between the races have been speculated to underlie this global disparate burden. We conducted a multi-institutional study in which we analyzed differences in expression of BC-related immunohistochemical biomarkers between self-reported European, EA, AA, and African TNBC patients treated at Nottingham University in Nottingham, UK, Emory University in Atlanta, GA, and Olabisi Onabanjo University Teaching Hospital in Sagamu, Nigeria, respectively. We discovered highly significant differences in expression of the members of the HER family, HER1/EGFR, HER3 and HER4, between the racial groups (p<0.0001). HER4 and a summation of EGFR and HER4 (EGFR-HER4) scores decreased with increasing self-reported African ancestry.

Gene expression analysis of The Cancer Genome Atlas (TCGA) publicly available dataset revealed that the genes encoding EGFR (ERBB1) and HER4 (ERBB4) were expressed less among AA compared to EA TNBC samples (p<0.05). A lack of HER4 expression correlated with high Nottingham grade (p=0.03) and mitotic index (p=0.03) among AA patients and high Ki-67 (p=0.04) among early-stage AA patients. Furthermore, low combined EGFR-HER4 expression was associated with low nuclear AR expression (p=0.03) among early-stage AA patients. Among both AA and African patients, low HER4 expression predicted significantly shorter 5-year overall survival (OS) (p=0.001) in Kaplan-Meier analyses. In multivariate models, low EGFR-HER4 score predicted shorter 10-year OS (p=0.03; HR: 0.03; 95% CI:0.001-0.76) and disease-free survival (p=0.04; HR: 0.03; 95% CI:0.001-0.80) among non-chemotherapy treated AA patients. In the TCGA dataset, we also observed downregulation of the EGFR but upregulation of the Notch signaling pathways to be more prevalent among AA compared to EA TNBC patients. Furthermore, peroxisome proliferator-activated receptor (PPAR) signaling was downregulated more among TNBC patients with low compared to high combined EGFR-HER4 scores (p=0.036). These results suggest that HER4 signaling differs among biogeographically distinct TNBC patients and that lack of HER4 and EGFR-HER4 expression may predict more aggressive disease among AA and indigenous African TNBC patient populations. Our findings also suggest that TNBC patients of African descent with low HER4 and low EGFR-HER4 scores overexpress members of the Notch and underexpress members of the PPAR signaling pathways, with potential therapeutic value.
**C027 Racial variation in umbilical cord blood vitamin D concentrations and telomere length: Implications for cancer risk.** Tanya Agurs-Collins1, John Barber2, Jessica Bienstock3, Paige Green1, Christopher Heaphy1, Jiayun Lu2, Alan Meeker3, Anthony Rizzo1, Sabine Rohrmann3, Elizabeth Platz2.

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**Background:** Non-Hispanic Blacks (NHBs) experience a markedly higher cancer burden and cancer mortality compared to non-Hispanic Whites (NHWs). Several factors account for this disparity, including suboptimal or deficient vitamin D status. Vitamin D has an important role in cancer risk, disease/cancer progression and telomere biology. Given the documented cancer disparities between these groups, it is important to examine vitamin D concentrations and leukocyte telomere length in utero, a window of susceptibility for disease and cancer risk later in life. We investigated racial differences in neonate umbilical cord blood vitamin D concentrations, and whether differences in vitamin D concentrations are associated with umbilical cord blood telomere length by race and gender.

**Methods:** In 2006-2007, pregnant women were recruited for the Expanded Hormones in Umbilical Cord Blood Study (EHUB) and followed to postpartum. Venous umbilical cord blood samples, along with maternal and birth characteristics, were collected in 39 NHB and 65 NHW full-term neonates. 25(OH)D and 1,25(OH)2D levels were assayed using an equilibrium radioimmunoassay procedure, and relative telomere length was measured by qPCR in leukocyte DNA. Geometric mean plasma concentrations of 25(OH)D and 1,25(OH)2D were calculated. Linear regression analysis was used to examine associations between neonatal cord blood vitamin D concentrations and leukocyte telomere length by race and gender.

**Results:** Compared to NHW mothers, NHBs were younger, had higher parity, were more likely to be overweight and obese pre pregnancy, and more likely to be exposed to secondhand smoke. NHB neonates had lower birth lengths (19.4 versus 20.2 inches; p<0.0001) and lower birth weights (3287 vs. 3425 gm) than NHW neonates. Compared to NHW neonates, NHBs had lower adjusted mean 25(OH)D (6.4, 95% CI: 5.4-7.6 ng/mL versus 16.4, 95% CI: 14.2-18.9 pg/mL; p<0.0001) and lower 1,25(OH)2D concentrations (51.1, 95% CI: 43.3-60.4 pg/mL versus 71.7, 95% CI: 62.6-82.0 pg/mL; p<0.0003). After adjusting for race and gender, 25(OH)D and 1,25(OH)2D concentrations were not associated with telomere length. There was an interaction between race and vitamin D, but not gender and vitamin D on telomere length. Compared to NHWs, NHB neonates had shorter telomere lengths per increase in vitamin D concentrations (~0.83 per unit of 25(OH)D and ~0.79 per unit of 1,25(OH)2D). The interaction persisted after adjusting for maternal and birth characteristics.

**Conclusion:** We did not find an association between umbilical cord blood vitamin D concentrations and telomere length. Instead, our findings suggest an interaction between race and umbilical cord blood vitamin D on telomere length. Further research is warranted to understand whether the effect of in utero exposure to vitamin D concentration on telomere length can inform the underlying mechanisms that are associated with cancer disparities in adulthood.

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**C028 Hypoxia-associated genes on disparities in the aggressiveness of prostate cancer.** Ingrid C. Espinoza1, Carlos S. Moreno2, Christian R. Gomez1. 1University of Mississippi Medical Center, Jackson, MS, 2Emory University School of Medicine, Atlanta, GA.

The incidence of prostate cancer (PCa) is 70% greater and the mortality rate 137% higher in African-American men (AAM) relative to Caucasian-American men (CAM) (Siegel et al., 2016). AAM also show faster tumor growth, higher levels of PSA, and more aggressive disease relative to CAM (Martin et al., 2013). These data, related to the biology of PCa, suggest that biologic mechanisms contribute to PCa health disparities. Because stratification by clinical parameters alone is not sufficient to predict aggressive PCa, there is an unmet need of reliable biomarkers to anticipate outcome and disease progression. This study was designed to identify hypoxia-associated genes with the potential to anticipate the risk of aggressive PCa in a race-specific manner. Seventy annotated cases with documented follow-up for evidence of biochemical recurrence (BCR) were located. Of these, 22 were AAM (8 with BCR and 14 without BCR) and 48 were CAM (31 with BCR and 17 without BCR). Next, we performed a global sequencing analysis in RNA extracted from formalin-fixed, paraffin-embodied blocks. Among 27 hypoxia-associated genes associated with race and PCa by use of Cox proportional hazards regression analysis (p < 0.05), we identified three genes related with BCR and race: regulator of G-protein signaling 1 (RGS1), nuclear receptor subfamily 3, group C, member 1-glucocorticoid receptor (NR3C1), and myosin light chain kinase (MYLK). A race-independent in silico analysis utilizing TCGA data suggested tumor-specific association between transcripts of RGS1, NR3C1, and MYLK and Gleason score. Likewise, low expression of these...
transcripts was suggestive of poor survival. Currently, we are analyzing transcripts of these three hypoxia-associated genes by independent techniques. Integration of gene expression data with clinical parameters of prognosis will allow us to develop predictive scores. These studies may enable race-specific differentiation of patients at higher and lower risk of BCR. Our findings underscore the prognostic value of hypoxia-regulated genes in aggressive PCa. They also warrant studies to establish the relevance of RGS1, NR3C1, and MYLK as race-specific markers.

Funding sources: GMaP 2 Pilot Grant (IE).

C029 Exosomes-associated miR-5001, miR-3692 and miR-4529 are novel biomarkers for aggressive prostate cancer and associated with poor prognosis in African American patients. Rofaida Gaballa1, Mohamed Gaballah1, Hamdy E.A. Ali1, Andrew S. Sholl1, Hamed I. Ali1, Zakaria Y. Abd Elmageed1. 1Department of Pharmaceutical Sciences, Rangel College of Pharmacy, Texas A&M Health Sciences Center, College Station, TX. 2Department of Pathology, Tulane University School of Medicine, New Orleans, LA.

Background: Although microRNA (miR) profiling has been widely used to predict clinical outcomes, differential miR expressions that can segregate prostate cancer (PCa) patients based on their races and tumor aggressiveness have not been fully investigated. We aimed to determine the diagnostic and prognostic abilities of exosomal miRs to identify the aggressive phenotypes of PCa in African American (AA) men.

Methods: Exosomes were isolated from blood of twenty AA and European Americans (EuA) PCa patients at low and high Gleason scores and their aged-matched healthy subjects (n=20) as well as AA and EuA normal and PCa cells. miR profiling was performed on PCa exosomes derived from blood and PCa cells. The expression level was correlated with clinical outcomes of PCa patients. The sensitivity and specificity of exosomal miRs were assessed using receiver operating characteristic (ROC) curve.

Results: Results from miR profiling showed a number of exosomal miRs that were able to differentiate normal from PCa, low from high Gleason scores and AA from EuA PCa patients. These dysregulated miRs were validated in another cohort of forty PCa patients in addition to a large panel of PCa cell lines. In the validation cohort, miR-5001, miR-3692 and miR-4529 were upregulated in the exosomes derived from blood of AA compared to EuA men. These miRs were correlated with age, T-stage, residual tumor, involvement of lymph nodes, Gleason score, and overall survival of AA patients. The combination of these miRs showed high discriminatory power (AUC=0.91) for segregation of PCa patients according to their clinical outcomes.

Conclusion: miR profiling identified a new set of miRs that can differentiate PCa specimens based on their race and Gleason score. The differential expression of these miRs demonstrates their potential role as biomarkers in the context of racial disparity. Further studies are warranted to determine their role in PCa at advanced stages.

C030 Gastric tumors from Latino patients show extensive intratumor heterogeneity. Ted Toal1, Guadalupe M. Polanco-Echeverry1, Ruta Sahasrabudhe1, Ana Estrada2, Mabel Bohorquez2, Magdalena Echeverry2, Javier Torres3, Luis G. Carvajal-Carmona1. 1University of California, Davis, Davis, CA, 2Universidad del Tolima, Ibague, Tolima, Colombia, 3Instituto Mexicano de Seguro Social, Mexico City, Mexico.

Gastric cancer (GC) is the 2nd leading cause of cancer-related death worldwide, with a five-year survival rate lower than 30%. GC is diagnosed in 25,000 Americans each year, with Latinos twice as likely to succumb compared to non-Hispanic whites. Treatment is currently limited to only two molecularly guided therapies. The Cancer Genome Atlas (TCGA) data show that 70% of GC patients have a mutation in a gene targetable with existing drugs. Significant spatial mutational intratumoral heterogeneity (ITH) has been identified in a variety of tumor types to date, although a GC ITH study has yet to be investigated. ITH is an important consideration for personalized therapy. Driver gene mutations are frequently found to be nonclonal, a crucial factor when assessing effective druggability. The goal of the present study was to examine GC ITH in Latino GC patients using targeted multiregional sequencing (MSEQ). Two to five biopsies from different tumor regions and adjacent normal tissue were obtained from 34 GC patients; DNA was extracted from the tumor and the normal tissues and the coding regions of 783 cancer genes were sequenced using Agilent enrichment and Illumina sequencing. Somatic mutations were called in each tumor sample, using joint analysis of all samples for each patient. Tumor cell fractions were estimated for each mutation in each sample, and phylogenetic trees were made for visualize each patient’s somatic mutational patterns.

We found a high degree of ITH, both intratumoral and interpatient, with the fraction of functional somatic mutations that are clonal ranging from 0 to 52%, the fraction private to one tumor sample ranging from 48% to 94%, and the fraction
POSTER SESSION C

shared between multiple but not all samples ranging from 0 to 21%. There was at least one known drug interaction with a gene containing a clonal functional mutation for 11 of the 16 samples, and in 6 samples there were two or more known drug interactions. Our study is the first one to assess ITH in GC, and our results are important to understand the clonal architecture of these GCs and to improve molecular diagnostics.

C031 NanoString nCounter-based gene expression assay for evaluation of breast cancer molecular subtypes in Ethiopian patients. Zelalem Desalegn Woldemontet1, Martina Vetter1, Meron Yohannes Nigussie1, Tamrat Abebe Zeleke1, Yonas Bekuretsion1, Mahlet Arayeslassie1, Mathewos Assefa1, Abebe Bekele1, Endale Anberber1, Claudia Wickenhauser2, Eva J. Kantelhardt2, Jürgen Bukur2, Barbara Seliger2, 1Addis Ababa University, Addis Ababa, Ethiopia, 2Martin Luther University, Halle (Saale), Germany.

Introduction: The burden of breast cancer is escalating across the globe and becoming a major public health problem in Ethiopia. Considering the fact that breast cancer is a heterogeneous disease in its nature, it demands a coordinated multimeric approach for diagnosis, treatment and management. Therefore, NanoString nCounter-based gene expression analysis might be employed for breast cancer intrinsic molecular subtyping, since it is a robust, highly reproducible tool and allows to simultaneously explore the expression of hundreds of genes in a single reaction tube. The aim of the study was to determine the intrinsic molecular subtypes of breast cancer samples from Ethiopian patients using a tailored NanoString nCounter gene expression assay for formalin-fixed, paraffin-embedded (FFPE) material.

Methods: The present study was carried out to determine the molecular subtypes of breast cancer in Ethiopian patients. Archived FFPE tumor samples from public hospitals in Ethiopia were retrieved and blocks with clinical and pathologic data were used. From each sample total RNA was extracted by miRNeasy kit, then total RNA concentration and quality were determined and high-quality RNA was subjected to NanoString-based nCounter gene expression analysis using a tailored assay consisting of molecular and immunologic markers. For each gene, gene-fold change expression is given when compared to the reference cut-off value. The study focused on the analyses of estrogen receptor 1 (ESR1), progestrone receptor (PGR), erythroblastic oncogene B (ERBB2) genes expression and the intrinsic molecular subtypes done using PAM 50 assay. Statistical analysis was carried out using SPSS software.

Results: A total of 164 FFPE breast cancer blocks were analyzed for protein (ER, PR and Her2) expression status and mRNA expression levels. 86/164 (52.4%) breast cancer patients were tumor grade 3. More than 50% of tumor samples were ER and PR positive. In contrast to hormone receptors, only 20 (12.2%) breast tumor samples were found to be positive for HER-2. With regard to the mRNA expression levels of the respective genes, 106 (64.6%), 43 (26.2%) and 143 (87.2%) of breast cancer lesions analyzed showed an upregulation of ESR-1, PGR and ERBB2 genes, respectively. The samples with ER and PR positive results demonstrated by immunohistochemistry (IHC) showed nCounter levels from -60 to 124 (median=7) and -379 to 9 (median= -2), respectively. Samples with HER-2 positive results by IHC showed nCounter levels from -1 to 60 (median=17.5). Using PAM50 algorithm, we found 32 (19.5%) luminal A, 33 (20.1%) luminal B, 24 (14.6%) HER-2 enriched, 29 (17.7%) basal and 17 (10.4%) normal type breast cancer.

Conclusion: According to the RNA expression assay, the majority of breast cancer subtypes were luminal A and luminal B and the lowest was normal type. In addition, the large majority of the cases analyzed were hormone receptor positive. Thus, hormonal therapy is of high importance for breast cancer care in Ethiopia.

C032 Distinguishing lethal from indolent prostate cancer using N-glycan imaging mass spectrometry in a racial tissue microarray cohort. Richard R. Drake1, Fred David1, Cameron Miller1, Melanie Jefferson1, Laura Spruill1, Michael Liss2, Brandi Weaver2, Peggi M. Angel1, Robin Leach1, Chanita Hughes-Hallett1, 1Medical University of South Carolina, Charleston, SC, 2University of Texas Health Science Center at San Antonio, San Antonio, TX.

Changes in cell surface protein glycosylation are common alterations that occur with tumor progression and reflect the use of many cancer biomarkers like PSA and CA19-9. However, identification of specific glycans associated with tumor regions is still poorly defined. Our group has developed a two-dimensional glycan tissue imaging mass spectrometry approach that can be used with any clinical formalin-fixed, paraffin-embedded tumor tissue used in pathology. Based on the analysis of over one thousand prostate cancer FFPE tissue blocks and tissue microarray samples across the spectrum of disease, it was found that the presence of multi-fucosylated branched N-glycans is associated with advanced tumors with neuroendocrine and metastatic features. These glycans are not present in indolent and lower-grade adenocarcinomas. The hypothesis currently
being tested is to determine whether detection of higher numbers of these fucosylated structures predicts a worse prognosis for progressive metastatic disease. Race could be a factor for increased presentation at the time of diagnosis with more advanced disease. The goal of the present study was to assess whether more advanced tumors containing multi-fucosylated N-glycans are detected more frequently in a racial cohort of 307 samples. A series of 14 prostate tumor tissue microarrays (TMA) representing African-American (n=105), Hispanic (n=101) and Caucasian (n=101) subjects was evaluated with this method. The 307 individual tumor samples represented the spectrum of tumor stage, Gleason grade, and status of disease recurrence. For select cases, the original source tumor block tissues were analyzed to confirm the TMA core results. Each TMA slide was processed for antigen retrieval and peptide N-glycosidase F digestions to release N-glycans. Samples were analyzed by MALDI-FTICR mass spectrometry, and data were visualized and analyzed by SCiLS Lab software. Tumor tissues having increased levels of fucosylation were detected in each cohort, but with an overall increase in numbers detected in the African-American cohort.

In summary, the presence and detection of a distinct panel of multi-fucosylated tissue N-glycans associated with the most lethal forms of prostate cancer can be detected in low-grade tumor samples at the time of diagnosis. This could be developed into a tissue-based prognostic biomarker panel to be applied at the time of initial diagnosis, and impact earlier treatment decisions.

**C033 Racial differences in the associations between luminal master regulator transcription factor expression and breast cancer survival.** Jung S. Byun, Sandeep K. Singhal, Sam Park, Dae Ik Yi, Tingfen Yanl, Ambar Caban, Alana Jones, Partha Mukhopadhyay, Sara Gil Hernandez, Stephen Hewitt, Lisa A. Newman, Melissa Davis, Jorge Sepulveda, Adriana De Sierv, Anna Napoles, Nasreen Vohra, Kevin Gardner. 1National Institutes of Minority Health and Health Disparities, National Institutes of Health, Bethesda, MD, 2Columbia University Medical Center, Columbia University, New York, NY, 3National Cancer Institute, National Institutes of Health, Bethesda, MD, 4Henry Ford Health System, Detroit, MI, 5Laboratorio de Oncología Molecular y Nuevos Blancos Terapeuticos, Instituto de Biología y Medicina Experimental (IBYME), CONICET, Buenos Aires, Argentina, 6Brody School of Medicine, East Carolina University, Greenville, NC.

**Purpose:** Women of African ancestry in the United States are more likely to die from breast cancer than their European counterparts. While prior studies suggest differences in the frequency of hormone receptor-negative disease as an underlying cause, recent studies report higher race-based mortality rates in patients with hormone receptor-positive, luminal breast cancer. Here we explore biologic factors that may underly this disparity by comparing racial differences in the level, functional activity, and prognostic significance of 3 master transcriptional regulators of mammary luminal differentiation.

**Patients and Methods:** Medical records and tissues from 555 patients (293 European and 262 African ancestry) diagnosed with Stage 0 to IV breast cancer, from 2001 to 2010 at a major medical center in East North Carolina, were analyzed for the expression of functional biomarkers of luminal differentiation including estrogen receptor (ESR1), and pioneer transcription factors FOXA1 and GATA3. Differential comparison of protein expression was integrated with network-level gene expression analysis (22% of cohort) to define predictive correlations with race and survival.

**Results:** Univariate and multivariate odds ratios combined with area under the curve receiver operator characteristics show significant differences in predictive activity of these functional biomarkers based on race and survival—ESR1 (EA OR= 0.47, p = 5e-04; AA OR= 0.77, p = 0.22), FOXA1 (EA OR= 0.38, p= 1.4e-04; AA OR = 0.53, p = 1.3e-02), and GATA3 (EA OR= 0.36, p= 3.7e-06, AA OR= 0.57, p= 0.51)—and uncover genes in the downstream regulons of these biomarkers that strongly correlate either with genetic ancestry or overall survival.

**Conclusion:** Transcriptional regulatory networks linked to mammary luminal differentiation reveal race-specific differences in master regulatory activity that may underlie tumor characteristics contributing to racial disparities in outcome. These biomarkers and their downstream regulons represent important targets to explore intrinsic mechanisms that drive breast cancer survival disparities.
**C034** Differential gene expression according to ancestry in Hispanic/Latina women with luminal B breast cancer.

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**Background:** Breast cancer (BC) is the second leading cause of cancer-related death in women. There is a lack of breast cancer studies showing the differential gene expression in minorities. We have previously found differences in gene expression according to ancestry in Hispanic/Latina women with BC. The goal of our study was to determine the differential gene expression between high and low European, African, and Native ancestries of Hispanic/Latina women with luminal B BC.

**Methods:** Breast cancer tissue samples were collected from the Moffitt Cancer Center (MCC) in Tampa, FL, and had been analyzed for ancestry informative markers (AIMs) as part of a collaboration between MCC and the University of Puerto Rico. The RNA was quantified, qualified, and used to prepare genomic libraries using regents and protocols from Illumina at the Translational Genomics Core, Stanley S. Scott Cancer Center, LSUHSC-New Orleans. Quality assessment showed close to 50% alignment in coding regions. Raw counts were normalized and used to perform differential gene expression analysis (p<0.05 and fold change >2.0) using DESeq2 in R-Studio between individuals with high and low European, African, and Native ancestral fractions. Heatmaps were used to compare the distribution of the samples visually based on ancestry fraction and the level of gene expression. We used the online tool Venny (http://bioinfogno.cnb.csic.es/tools/venny/) to identify significantly different genes that were uniquely expressed in each ancestral group or shared between them. In addition, we used online tools (http://xcell.ucsf.edu/) for cell infiltration analysis and the software MetaCore to identify possible pathways in which the differentially expressed genes may be involved.

**Results:** We found a significant inverse correlation between European and both African and Native American ancestries, and these clearly separated based on high and low ancestral fraction. Eighteen genes were shared between European and Native American ancestries, showing opposite expression between the ancestries, suggesting an ethnicity-associated expression. The expression of these genes was validated by real-time PCR. Interestingly, cBioportal analysis showed that ANO1, EPN3, PLAT, and TRPA1 genes are frequently amplified in breast cancer. Furthermore, one gene SPAG6 was commonly expressed among all ancestries with a positive correlation in Native ancestry and negative correlation in European ancestry. We found that African ancestry was associated with the infiltration on lymphocyte progenitors and type 2 macrophages. Meanwhile, European and Native ancestries correlated with type 2 lymphocytes and monocytes, respectively. Pathway analysis revealed possible activation of immune responses driven by genes significant in European and Native ancestries.

**Conclusions:** Overall, our data suggest that patients with luminal B breast cancer may have differential gene expression associated to ancestry, to gene abnormalities and differential immune responses.

**C035** Relationship between ancestry fractions and gene expression in triple-negative breast cancer in Hispanic/Latina women.

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**Background:** Breast cancer is the most frequently diagnosed form of invasive cancer in women and the second leading cause of cancer death. Triple-negative breast cancer (TNBC) accounts for 10-20% of the disease. This aggressive subtype lacks receptors for estrogen, progesterone, and human epidermal growth factor receptor 2 (HER2), drastically reducing treatment options. Hispanic/Latinas, who derive ancestry from European, African, and Native origins, are at least 30% more likely to be diagnosed with TNBC compared to non-Hispanic White women. However, little is known about the genomic architecture of TNBCs in Hispanic/Latinas. The goal of our study was to test the association between genetic ancestry and gene expression in TNBC samples from Hispanics/Latinas to help identify potential therapeutic targets.

**Methods and Results:** We obtained 41 TNBC tissues through collaboration with the National Cancer Institute in Colombia along with demographic and clinical information. Genetic ancestry proportions were estimated using a panel of 106 Ancestry Informative Markers (AIMs). RNA was extracted from FFPE tissues, qualified using Agilent chips, and used
for RNA sequencing at the Translational Genomics Core at the Stanley S. Scott Cancer Center. We used an online tool (http://cbc.mc.vanderbilt.edu/tnbc/) to validate TNBC status, and 33 of the 41 samples were confirmed. Quality control procedures ensured that the samples were of acceptable quality for further analysis. Individuals were classified as having high or low genetic ancestry proportions for each of the ancestral components, based on mean ancestry proportions overall. Differential gene expression between individuals in each ancestry category was estimated utilizing DESeq2 in R-Studio. Average genetic ancestry proportions for the 33 samples analyzed were 0.52 European (18 individuals were in the high European ancestry group, 14 in the low European ancestry group), 0.36 Indigenous American (15 high, 17 low) and 0.1 African (8 high, 24 low). We observed that 91 genes were differentially expressed between high vs. low European ancestry, 21 for the Native and 12 for the African. Interestingly, 5 genes were common between the European and Native ancestries. LGALS9C and MESP1 had significant differences in normalized counts between high and low ancestry for both the Europeans and Natives, though the subgroups displayed opposite correlation patterns. These results were validated by real-time PCR. Using cBioPortal, we found that MESP1 and LGALS9C were associated with amplification in 2.8% and 1.5% of breast cancer cases, respectively. LGALS9C expression displays an inverse correlation with disease outcome in several cancers, including breast.

**Conclusions:** Our data suggest that expression levels of several genes, most notably MESP1 and LGALS9C, may be ancestry specific in TNBC patients from Colombia. Confirmation and further understanding of these findings are of outmost importance given that they could be therapeutic targets.

**C036 Cohesins and colorectal cancer (CRC): Modulation of CRC stem cells and chemoresistance by STAG1 with race-specific implications.** Mart Dela Cruz\(^1\), Caroline Zaworski\(^2\), Somenath Datta\(^1\), Sanjib Chowdhury\(^1\), Hemant K. Roy.\(^1\) Boston University Medical Center, Boston, MA, \(^2\)Colgate University, Hamilton, NY.

Despite advances in treatment and early detective measures for colorectal cancer (CRC), African-Americans (AAs) suffer disproportionately from CRC (~25% higher incidence and -50% higher mortality) than Caucasians. Furthermore, AAs tend to receive earlier diagnoses in CRC and AA CRCs with high-grade differentiation were 3xs more likely to die within 5 yrs post-surgery as compared to whites (Alexander et al., Cancer 2005). The underlying mechanisms behind this more aggressive disease in AAs are poorly understood. Tomassati and Vogelstein postulate stem cell division correlates with risk of cancer (Science 2015). Addressing disease progression/aggressiveness, CRC stem cell markers are linked to chemoresistence; stem cell markers LGR5 and ALDH1a are established CRC stem cell markers. We have shown that the cohesin family member STAG1, a chromatin remodeler, is lost in the colonic epithelium of patients with premalignant lesions and AAs had a more profound loss (Cancer Prev Research 2016) through AA-specific STAG1 SNPs (Neoplasia 2018) and hypothesize that STAG1 loss is associated with poorer prognosis. Therefore, we wanted to investigate if STAG1 loss may lead to CRC stem cell induction as a potential mechanism of the racial disparities in CRC. RNA from rectal biopsies from 100 patients undergoing screening colonoscopies was processed for real-time PCR for CRC stem cell markers LG5R and ALDH1a, as well as STAG1. To determine chemoresistance, STAG1 siRNA was transfected in CRC cell line HT29 and a CRISPR transfection of STAG1 SNP rs34149860 (found only in AAs) was transfected in CRC cell line RKO (possessing wildtype to SNP). Cell were treated with 5-FU and oxaliplatin and subjected to Annexin V Assay. Real-time PCR and analysis of STAG1 and CRC stem cell markers were performed for causation. AAs harboring neoplasias displayed a more robust loss of STAG1 mRNA (~50%, p<0.007) vs Caucasians with neoplasias (~25%, p=0.1). In regard to CRC stem cell markers, AAs with adenomas showed a stronger increase of LGR5 (67%, p=0.14), and ALDH1a (73%, p<0.007) vs Caucasians with neoplasias (LGR5 increased 59%, p<0.2; ALDH1a increased 47%, p<0.05). HT29 cells transfected with STAG1 siRNA showed 30% less apoptotic response to 5-FU vs scramble vector and a marked 74% less response with oxaliplatin. CRISPR SNP transfection in RKO showed similar effects, with a 2-fold less apoptotic response to 5-FU and >90% less response to oxaliplatin. PCR showed RKO STAG1-SNP transfected cells displayed a loss of STAG1 (~40%, p<0.05) and an upregulation of LGR5 (~50%, p<0.05) and ALDH1a (~30%, p<0.05). This shows, for the first time, that STAG1 loss is implicated in colon carcinogenesis through potentiation of cancer stem cells through early carcinogenesis/initiation as well as disease progression and aggressiveness as shown through chemoresistance. Our work provides a potential mechanism in CRC, thus providing a biomarker for cancer screening and therapeutics that could mitigate the racial disparity of CRC in AAs.
C037 Racial disparity in systemic growth-related oncogene-alpha (GRO-α) expression in head and neck cancer patients.
Tara Moore-Medlin, Eleni Mijalis, Xiaohui Ma, Jerry McLarty, Glenn Mills, Cherie-Ann Nathan. Louisiana State University Feist-Weiller Cancer Center, Shreveport, LA. Louisiana State University, Shreveport, LA.

Introduction: The objective of this study was to perform an analysis of cytokines reported to be upregulated in cancer patients to determine differences that may exist between Caucasians and African-Americans. Cancer biomarkers aid in identifying therapeutic targets as well as providing information on the involved signaling pathways. As African-Americans are known to present with advanced disease and have poorer survival even in nonmetastatic head and neck cancer, findings may be indicative of a potential therapeutic target for this population.

Methods: In this IRB approved study, we utilized a multiplex bead-based immunoassay by Millipore to compare serum levels of 13 cytokines (FGF-2, GM-CSF, GRO-α, IFNγ, IL-1β, IL-6, IL-8, IL-10, IL-13, IP-10, MIP-1α, TNFα and VEGF) in African-Americans and Caucasians at diagnosis of primary head and neck cancer. Cytokine expression was detected using Luminex xMAP technology with xPonent software, then analyzed using Milliplex Analyst.

Results: Growth-related oncogene-alpha (GRO-α) was the only significantly different cytokine analyzed in regard to ethnicity, where African-Americans (n=36) exhibited higher serum levels in pg/ml compared to Caucasians (n=85) (1287±303.9 and 415.5±50.1, respectively; 95% CI 453.1 to 1290; p<0.0001).

Conclusions: Systemic levels of GRO-α were higher in African-American compared to Caucasian head and neck cancer patients. There is accumulating evidence that GRO-α is overexpressed in human skin, breast, colorectal and hepatocellular cancers. GRO-α has been most notably implicated in cell proliferation, immune response, and as a regulator of tumor invasion and chemoresistance. With the present survival disparities in head and neck cancer patients, this striking overexpression warrants further study into a possible biomarker or targeted therapeutic agent for African-American patients.

C038 MHC class I polypeptide related sequence A (MICA) race-related differential expression in prostate cancer.

Prostate cancer (PCa) is the second most common cancer in American men, with higher incidence and death rates in African Americans (AA) relative to Caucasian Americans (CA); nevertheless, these disparities are still poorly understood. MHC class I polypeptide related sequence A (MICA) is a cell surface protein able to promote activation of natural killer cells. Cleavage of MICA and generation of its soluble form (sMICA) has been described as an immunoevasion mechanism presented by different types of aggressive tumors. In agreement with the role of MICA on tumor immunoevasion, recent studies correlated better prognosis for patients expressing higher levels of MICA in different types of cancer. We speculated that MICA expression would be different between AA and CA PCa tumors. To access MICA expression in PCa patients, we stained a TMA containing 30 AA and 27 CA tumor cores. Our results showed that CA PCa tumor cores had higher expression of MICA than the AA (p=0.0019). In order to establish an in vitro system to study the biologic effects of MICA in the context of disparity in PCa, we assessed the expression of surface MICA and release rate of sMICA in different PCa cell lines: MDA-PCa-2b and E006AA-hT, derived from AA, and DU-145 and LNCaP, derived from CA. Flow cytometry analysis showed baseline cell fraction expression positive for surface MICA of 3% in MDA-PCa-2b, 18% in E006AA-hT, 54% in DU-145, and 67% in LNCaP, with significant difference between each cell line (p<0.0001). Baseline release rate of sMICA was nondetectable for MDA-PCa-2b, 5pg/ml/106 cells in E006AA-hT, 120pg/ml/106 cells in DU-145, and 54pg/ml/106 cells for LNCaP cells. Overall, our results show that MICA expression is race related. Further studies are necessary to address the biologic function of the expression and the impact in the immune system.

C039 Differences in breast cancer survival by race, age, and tumor estrogen receptor status.
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Background: Improvements in breast cancer survival can be attributed to screening programs resulting in earlier
diagnosis, treatment advances, and more accessible care. However, racial disparities continue to persist. Identifying the most vulnerable populations can help strategize efforts of programs focused on improving disparities. The purpose of this study is to determine trends in breast cancer disease-specific survival (DSS) in black patients compared to white patients by age at diagnosis, year of diagnosis, and tumor estrogen receptor (ER) status.

Methods: The Surveillance, Epidemiology, and End Results database was utilized to identify patients of black or white race diagnosed with stage I-III, ER-positive (+) or ER-negative (-) breast cancer between 1990 and 2005. The Kaplan-Meier method was used to determine 10-year breast cancer DSS. Changes in DSS were analyzed over the study’s time period and in 4 age groups to evaluate women who were of premenopausal age (< 50 years), perimenopausal or postmenopausal and of the average age for breast cancer diagnosis (50-64 years), elderly (65-79 years), and most elderly (>80 years).

Results: The study included 634,434 white (89.8%) and 72,124 black (10.2%) women. In all age groups and years of diagnosis, white patients with ER+ or ER- disease had significantly higher DSS compared to blacks (p<0.05); in patients 50-64 years old diagnosed in 2000-2005, white patients with ER+ cancer had an 88% DSS compared to 77% DSS for black patients and, for ER- disease, whites had a 76% DSS compared to 67% for blacks. All patients diagnosed most recently had stable or improving DSS, except for black patients age ≥80 years who had a significantly lower DSS of 47% for those diagnosed in 2000-2005 compared to 52% for those diagnosed in 1990-1994 (p>0.05). All black patients diagnosed in 2000-2005, independent of age and tumor receptor status, had significantly lower disease-specific survival (DSS) compared to white patients diagnosed a decade earlier in 1990-1994 (p<0.05). For women <50 years of age with ER+ cancer, black patients diagnosed between 2000-2005 had a DSS of 75% compared to 81% in white patients diagnosed between 1990-1994. Among black patients, only young women <50 years of age with ER+ or ER- cancer had consistent and the most improvement in DSS over the study’s 3 time intervals; for ER+ cancer, DSS was 68% for those diagnosed in 1990-1994, 71% for 1995-1999, and 75% for 2000-2005 and for ER- cancer, the DSS was 60% for those diagnosed in 1990-1994, 63% for 1995-1999, and 67% for 2000-2005 (p<0.05).

Conclusion: Black and white women have experienced improvements in breast cancer DSS, particularly in young black patients <50 years of age with ER+ or ER- disease. However, DSS remained lower in all black patients compared to white patients, independent of year of diagnosis, age, and tumor receptor status. Future efforts are needed to identify and address the causes of continued disparities in breast cancer DSS, particularly in subsets of black patients not having survival improvements.

C040 Predictors of blood biospecimen provision among African American women. Lauren E. Barber1, Julie R. Palmer2, Kimberly A. Bertrand2, Catharine Wang1, 1Boston University School of Public Health, Boston, MA, 2Slone Epidemiology Center, Boston, MA.

Background: Under-representation of minority populations in research utilizing biospecimens can prohibit advancements in cancer research, treatment and survivorship from reaching those who are most vulnerable, potentially increasing cancer health disparities. Barriers and facilitators to biospecimen provision among under-represented populations are not well understood. This study examined predictors of biospecimen provision in a large cohort of black women.

Methods: The Black Women’s Health Study (BWHS), an ongoing prospective cohort study of African American women from across the U.S. followed since 1995, initiated a four-year effort in 2013 to collect blood biospecimens. Of 48,956 BWHS participants invited to provide a blood sample, 27% (n=13,037) did so. We used logistic regression analyses to estimate multivariable odds ratios (OR) and 95% confidence intervals (CI) for associations of participant characteristics with sample provision, adjusted for age and education.

Results: The strongest predictors of providing a blood sample were having had a physical exam in the past two years (OR 3.90 [95% CI 3.70-4.11]), and, independently, mammographic screening in the past two years (OR 1.88 [1.76-2.01]). Other predictors included educational status (OR 1.30 [1.21-1.39] for >16 vs. ≤12 years of education) and having a family history of cancer (OR 1.16 [1.11-1.21]). Women who had lower odds of giving a blood sample if they reported more frequent experiences of racism in their daily lives (OR 0.83 [0.77-0.89] for highest vs. lowest level of racism score) or lived in a rural vs. urban area (OR 0.75 [0.69-0.80]). History of cancer was not associated with sample provision. Because interaction with the health care system was such a strong predictor, we repeated analyses restricted to those who had not reported a recent physical exam. No new associations emerged, but both mammographic screening (OR 4.23 [3.81-4.70]) and daily racism (OR 0.64 [0.55-0.75]) became stronger predictors in this group.
**Conclusions:** Recent utilization of the health care system and higher levels of education were the strongest predictors of agreement to provide a blood sample for research in this cohort of black women, while living in a rural area and having more frequent experiences of racism, a unique characteristic of this population, were barriers. Innovative recruitment efforts may be necessary for greater inclusion of individuals who are less educated and infrequent users of the health care system. In addition, the persistent reality of racism in the U.S. may continue to play a role in the under-representation of black Americans in cancer research utilizing biospecimens.

**C041 US Latina immigrants: Is obesity the face of food insecurity?** Maria A. Amador, Mary A. Garza, Evelyn King-Marshall, Meleah Boyle, Leyla Merlo, Robert Feldman, Lesliam Quiros-Alcala. University of Maryland, College Park, MD.

Obesity is a predictor of many chronic illnesses and certain obesity-related cancers. Latinos are a rapidly growing population in the US with high levels of food insecurity, and higher obesity rates. Food insecurity refers to a lack of access to nutritious and safe food. The “food insecurity-obesity” is a paradoxical relationship seen in rising obesity and correspondingly high food-insecurity rates. This paradox differentially affects individuals in the US based on gender, income, and race/ethnicity. Research to reduce these health disparities, particularly among Central American Latina adults, is sparse. To address this research gap, we examined demographic factors among Latina immigrants to understand this paradox.

**Methods:** This analysis is part of a larger study that aimed to assess the health needs, lifestyle behaviors, and other risk factors linked to chronic diseases among Latino immigrants in Maryland. Food insecurity was measured using four validated measures (“hungry but no money for food”; “cannot afford to eat balanced meals”; “worried food would run out before having money to buy more”; “worried about money for food”) and body mass index (BMI) was calculated from measured height and weight. Participants were categorized as overweight (BMI 25-30 kg/m²) or obese (BMI >30 kg/m²). Chi-square tests were used to assess bivariate associations between selected characteristics, food insecurity and BMI, and post-HOC tests conducted (Bonferroni correction).

**Results:** Participants (N=123) were mostly female (87%), obese (67%), and Central American natives (78%) and average age of 51 years. About a third reported being hungry but not having money for food (29%), 50% reported not being able to afford to eat balanced meals, 52% worried about having enough money for food, and 53% worried food would run out before having money to buy more. We observed varied demographic differences: less than a HS diploma was associated with “hungry but no money for food” (p=0.02); those who reported “cannot afford to eat balanced meals” were more likely to have high school diploma (p=0.02), have lived less time in US (p=0.01), were of lower income (p=0.03) and were single (p=0.05); and “worried food would run out before having money to buy more” was associated with time lived in the US. Analysis regarding BMI and food-insecurity items showed participants who reported “worried about money for food” were more likely to be obese (p=0.04).

**Conclusion:** In this cohort of Latina immigrants, there are multiple demographic factors, such as education level, time lived in the US, income, and marital status that were associated with higher food insecurity and BMI. Further analysis will be conducted using a dietary screening tool called PrimeScreen. This tool is used to identify major food group consumption and compliance with USDA MyPlate recommendations. A better understanding of the “food insecurity-obesity” paradox and related factors will inform future culturally tailored interventions to address obesity among Latina immigrants.

**C042 Cultivating the gut microbiome by eating walnuts to slow cancer cachexia weight loss.** Hsiao-Man Chang, Louisiana State University Health and Sciences Center, New Orleans, LA.

Cancer disparities are associated with racial/ethnic minority groups. Due to socioeconomic status or geographical location, many of these groups consume low-quality diets that lack plant-derived foods. Diets lacking in fruits and vegetables are linked to tumor formation and progression. Once a tumor develops, more than 50% of cancer patients may experience cachexia, the involuntary loss of body weight that severely impacts cancer prognosis and therapy. Currently, no medical interventions can reverse cachexia, but alleviating this syndrome would lead to favorable outcomes during cancer treatment. Our lab focuses on diet as a potential therapy to slow the development of cachexia. Walnuts are known to slow tumor growth in genetically programmed mice. In a pilot study, walnuts were found to preserve weight during the tumor-bearing precachectic phase in rats. A possible area where the weight-preservative effects of walnuts may be observed is in the gut microbiome. Since our lab previously observed significant gut microbiota changes of the non-tumor-bearing rats on walnut diets, the
aim of this investigation was to determine the impact of walnuts on the gut microbiome of tumor-bearing cachectic rats. We hypothesized that walnuts would significantly and favorably change the gut microbiome in cachectic tumor-bearing animals, providing a potential mechanism for the weight gain. To test our hypothesis, male Fischer 344 rats were placed on a walnut diet or control diet for three weeks. The control diet replaced the fat, protein, carbohydrate, and fiber contents of the walnut diet with corn oil, casein, corn starch, and alphacel fiber, respectively, allowing the presence of walnuts to be the only testing factor. The Ward colon carcinoma was then subcutaneously implanted on rats’ left hind flank. The rats were kept on the walnut and/or control diet as tumor-driven cachexia developed. Fecal matter was collected from the rats upon sacrifice, and 16s rDNA was sequenced to elucidate specific microbial communities. Rats on the walnut diet had the greatest weight preservation. Changes in the gut microbiome via the consumption of walnuts were evident through measures of diversity, relative abundance, and metabolic pathways at the family level. Compared to the control diet, the walnut diets led to a greater diversity and separation of the gut microbial communities. Walnut diets also significantly altered the relative abundances of Prevotellaceae and Desulfovibrionaceae (p-value < 0.05) at the family taxa level. Lastly, the functional metagenomic data revealed a greater prevalence of metabolic pathways for plant-pathogen interaction, flagellar assembly, bacterial chemotaxis, and ABC transports in rats on the walnut diet. In summary, we conclude that walnut consumption alters the gut microbial community, suggesting a potential mechanism by which walnuts may preserve weight. Increasing walnut consumption may be one way to preserve body weight in racial/ethnic minorities experiencing cancer cachexia.

**CO43 Meat and fish intake and the risk of breast cancer in the Carolina Breast Cancer Study (CBCS).** Omonefe Omofuma\(^1\), Susan Steck\(^1\), Melissa Troester\(^2\), Andrew Olshan\(^3\).

\(^1\)University of South Carolina, Columbia, SC, \(^2\)University of North Carolina, Chapel Hill, NC.

**Introduction:** Cooking meat at high temperatures and charring of meat increases the production of heterocyclic amines (HCAs) and polycyclic aromatic hydrocarbons (PAHs), which are implicated in breast carcinogenesis. Several epidemiologic studies have reported increased risk of breast cancer with higher intake of HCAs or red meat intake. However, few studies have examined these associations in racially diverse populations. The goal of the study was to examine the associations between various meat and fish preparation methods and breast cancer using the Carolina Breast Cancer Study (CBCS) Phase 2.

**Methods:** African American (AA) and European American (EA) women aged 20-74 years with a first diagnosis of invasive or in situ breast cancers were enrolled. Controls were identified through the DMV and Medicare lists and were frequency matched to cases by race and age group (AA: 548 cases and 452 controls; EA: 858 cases and 748 controls). Preparation methods and intake frequencies were obtained through self-report questionnaires. Multivariable logistic regression analysis was used to obtain odds ratios and 95% CIs of breast cancer by frequency of intake of meat and fish cooked by various preparation methods.

**Results:** Using no reported meat intake as the referent, positive associations with breast cancer were observed for intakes of grilled/barbecued hamburger (one or more times per week, OR: 1.30; 95% CI: 1.02, 1.66), and for pan-fried/oven-broiled beef steak (one or more times per week, OR: 1.38; 95% CI: 1.09, 1.74). Inverse associations with breast cancer were observed for pan-fried fish (one or more times per week, OR: 0.77; 95% CI: 0.61, 0.99) and for grilled/barbecued pork chops (OR: 0.82, 95% CI: 0.69, 0.98). Overall, the associations appeared to be stronger among EA women but showed inconsistency within meat categories (fish, pork, beef) depending upon method of cooking.

**Conclusion:** Among AA and EA women, more frequently consuming beef prepared with high-temperature methods (such as grilling or oven-broiling) was associated with higher odds of breast cancer, and the associations were stronger among EA women compared to AA women. In contrast, consuming pan-fried fish or grilled/barbecued pork chops weekly was associated with lower odds of breast cancer compared to less frequent consumption.

**CO444 Dietary inflammatory potential prior to diagnosis and risk of all-cause mortality among African-American women with ovarian carcinoma.** Lauren C. Perez\(^1\), James R. Hebert\(^2\), Bo Qin\(^3\), Kristin A. Guertin\(^1\), Elisa V. Bandera\(^2\), Nitin Shivappa\(^2\), Tareq F. Camacho\(^1\), Deanna Chyn\(^2\), Elisa F. Barnholtz-Sloan\(^4\), Melissa L. Bondy\(^5\), Michele L. Cote\(^6\), Ellen Funkhouser\(^7\), Patricia G. Moorman\(^8\), Edward S. Peters\(^9\), Ann G. Schwartz\(^1\), Deanna Chyn\(^2\), Anthony J. Alberg\(^2\), Jill Barnholtz-Sloan\(^4\), Melissa L. Bondy\(^5\), Michele L. Cote\(^6\), Ellen Funkhouser\(^7\), Patricia G. Moorman\(^8\), Edward S. Peters\(^9\), Ann G. Schwartz\(^1\), Paul D. Terry\(^10\), Joellen M. Schildkraut\(^1\).

\(^1\)University of Virginia, Charlottesville, VA, \(^2\)University of South Carolina, Columbia, SC, \(^3\)Rutgers Cancer Institute of New Jersey, \(^4\)New Brunswick, NJ, \(^5\)Case Western Reserve University School of Medicine, Cleveland, OH, \(^6\)Baylor College of Medicine, Houston, TX, \(^7\)Wayne State University School of Medicine, Detroit, MI, \(^8\)University of Pittsburgh, Pittsburgh, PA, \(^9\)Case Western Reserve University School of Medicine, Cleveland, OH.
POSTER SESSION C

Background: Chronic inflammation is known to be associated with ovarian carcinogenesis, yet the impact of inflammatory-related exposures on outcomes has been understudied. Given the poor survival for women diagnosed with ovarian cancer, especially African Americans, we sought to examine whether a modifiable source of chronic inflammation, dietary intake as measured by the dietary inflammatory index (DII*), was associated with all-cause mortality among African-American women with ovarian carcinoma.

Methods: Data were available from 490 patients enrolled in a multicenter, population-based case-control study of African-American women with ovarian carcinoma, the African-American Cancer Epidemiology Study. Energy-adjusted DII scores were calculated based on prediagnostic dietary intake of foods alone or foods and supplements, as measured by the 2005 Block Food Frequency Questionnaire. We used Cox proportional hazards regression to estimate multivariable hazard ratios (HRs) and 95% confidence intervals (CIs) for all-cause mortality among ovarian carcinoma overall and among the most common histotype, high-grade serous carcinoma.

Results: A more proinflammatory diet (i.e., greater DII including supplements score) was associated with a greater risk of mortality (HR1-unit change in DII=1.06, 95% CI=1.00-1.13), especially among high-grade serous carcinoma, where a 68% increased risk of mortality was observed for the most proinflammatory DII scores compared to the most anti-inflammatory DII scores (HRQuartile4/Quartile1=1.68, 95% CI=1.04-2.69, p trend=0.02). No association was observed for the DII excluding supplements, although trends were similar.

Conclusions: A more proinflammatory prediagnostic diet is positively associated with all-cause mortality among African-American women with ovarian carcinoma. Increasing the consumption of anti-inflammatory foods (through diet or supplements) may lead to improvements in survival after a diagnosis of ovarian carcinoma.

C046 Dietary calcium and vitamin D and sun exposure with the risk of breast cancer among African American women.
Bo Qin1, Baichen Xu1, Nan Ji2, Karen Pawlish3, Song Yao4, Christine Ambrosone5, Kitaw Demissie1, Chi-Chen Hong2, Elisa V. Bandera1. 1Rutgers Cancer Institute of New Jersey, New Brunswick, NJ, 2Rutgers School of Public Health, Piscataway, NJ, 3New Jersey Department of Health, Trenton, NJ, 4Roswell Park Comprehensive Cancer Center, Buffalo, NY.

Colorectal cancer (CRC) is the 1st cause of cancer-related deaths in Puerto Rico (PR). CRC is a heterogeneous disease with lifestyle and environmental factors shown to modify the risk to develop this disease. High intake of red and processed meats was determined to be a risk factor for increased risk of CRC. Genetic variations in genes involved in the metabolism of meat carcinogens have been found to be associated with CRC risk and to vary across racial/ethnic populations. The objective of this project was to determine the association of functional genetic variants in meat-carcinogen metabolism genes with CRC risk in the PR population. First, we analyzed the allelic frequencies of SNPs in key meat carcinogen metabolism genes (CYP1A1, CYP1B1, NAT2 and CYP2E1), that were previously reported to have an association with development of colorectal adenomas or CRC were evaluated in the 1000 Genomes Populations. The 1000 Genomes populations included AFR (African Populations), EUR (European Populations), CLM (Colombians from Medellin, Colombia), MXL (Mexican Ancestry from Los Angeles USA), PEL (Peruvians from Lima Peru) and PUR (Puerto Ricans from Puerto Rico). Then, we genotyped using TaqMan technology 5 functional SNPs localized at key meat carcinogen detoxifying genes, CYP1A1, CYP1B1, NAT1, NAT2 and CYP2E1 in Puerto Ricans (205 CRC cases and 218 controls). Our preliminary results showed that the allelic frequencies of the SNPs differ between PUR and the other 1000 Genomes populations, suggesting that these SNPs might have a distinct effect on the association of red/processed meat intake and CRC risk on Puerto Ricans. Furthermore, genotyping analysis showed that individuals with the AA genotype at the rs1800440 SNP (CYP1B1) who consume processed meat 2-4 times per week were at increased risk of CRC (p=0.008). These preliminary data support a role for genetic variants in genes that play key roles in the mechanisms of meat carcinogenesis as possible modifiers of the carcinogenic effects of meat.

C045 Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats. Julynn Perez-Mayoral1, Maria E. Perez-Hernandez3, Mariana Stern3, Marcia R. Cruz-Correa1, 1UPR Comprehensive Cancer Center, San Juan, PR, 2University of Puerto Rico Rio Piedras Campus, San Juan, PR, 3USC Norris Comprehensive Cancer Center, Los Angeles, CA.

Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats. Julyann Perez-Mayoral1, Maria E. Perez-Hernandez3, Mariana Stern3, Marcia R. Cruz-Correa1, 1UPR Comprehensive Cancer Center, San Juan, PR, 2University of Puerto Rico Rio Piedras Campus, San Juan, PR, 3USC Norris Comprehensive Cancer Center, Los Angeles, CA.

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Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats. Julyann Perez-Mayoral1, Maria E. Perez-Hernandez3, Mariana Stern3, Marcia R. Cruz-Correa1, 1UPR Comprehensive Cancer Center, San Juan, PR, 2University of Puerto Rico Rio Piedras Campus, San Juan, PR, 3USC Norris Comprehensive Cancer Center, Los Angeles, CA.

Polymorphism in CYP1B1 increases CRC risk in Puerto Rican individuals that consume processed meats. Julyann Perez-Mayoral1, Maria E. Perez-Hernandez3, Mariana Stern3, Marcia R. Cruz-Correa1, 1UPR Comprehensive Cancer Center, San Juan, PR, 2University of Puerto Rico Rio Piedras Campus, San Juan, PR, 3USC Norris Comprehensive Cancer Center, Los Angeles, CA.
**Background:** Compared to European American women, African American (AA) women have a higher incidence of breast cancer (BrCa) under age 45, and are more likely to develop estrogen receptor-negative (ER-) tumors, a more aggressive BrCa subtype. Experimental studies drew attention to the potential antitumorigenic properties of calcium and vitamin D. Darker skin color reduces the cutaneous synthesis of vitamin D upon sun exposure. This, together with the tendency of AAs to consume less vitamin D and calcium from food and supplement sources, places AAs at risk for vitamin D and calcium deficiency. However, data are limited regarding the impact of calcium and vitamin D on risk of BrCa and specific subtypes among AA women.

**Objective:** To evaluate calcium intake and vitamin D exposure (through food, supplements and sunlight) with the risk of BrCa and its subtypes among AA women.

**Methods:** We evaluated these associations among 1033 BrCa cases and 391 controls of AA descent recruited since March 2012 in the Women’s Circle of Health Study. Cases were identified by rapid case ascertainment in 10 counties in New Jersey. Controls were identified by random-digit-dialing and community-based recruitment, and were frequency matched by age group and county of residence. Dietary information over the year prior to diagnosis (for cases) or the reference date (for controls) was assessed via a validated food frequency questionnaire through in-person interviews. Supplemental intakes including multivitamin sources and daily hours spent outdoors in daylight were also collected. Hormone receptor status was obtained from pathology reports. Multivariable logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) adjusting for relevant sociodemographic, reproductive, and lifestyle risk factors.

**Results:** Vitamin D intake from food was not associated with BrCa risk. However, for supplemental vitamin D intake, we observed a significant decreased overall BrCa risk for users of ≥800 IU/day vs. nonusers (OR=0.73, 95% CI: 0.54, 0.98), which was limited to estrogen receptor-positive (ER+) BrCa (OR=0.69, 95% CI: 0.50, 0.94), but not for ER- or triple-negative BrCa. More daylight hours spent outdoors in a year predicted a lower risk of pre- and postmenopausal BrCa [comparing the highest quartile (Q4) vs. lowest (Q1): OR=0.37, 95% CI: 0.20-0.68, p-trend: 0.002; OR=0.46, 95% CI: 0.30-0.71, p-trend: 0.001, respectively]. The significant inverse associations were observed for both ER+ and ER-BrCa, but not for triple-negative BrCa. Calcium intake was not associated with BrCa risk.

**Conclusion:** Our findings suggest that moderate intake of supplemental vitamin D may decrease the risk of ER+ BrCa. Sun exposure may decrease the risk of BrCa among AA women, which does not appear to differ by menopausal status and ER status.

**C047 Diet and risk of cancer in minority populations in New York City.** Cristina N. Zambrano,1 Maayan Beeber,1 April Panitz,1 Yin Tan,1 Grace Ma2, Khursheed Navder,1 Ming-Chin Yeh,1 Olorunseun Ogunwobi.1 Hunter College, New York, NY, 2Temple University, Philadelphia, PA.

Colorectal cancer is the second most common cause of cancer deaths in the United States, and it disproportionately affects minority populations. Poor dietary habits, such as diet low in fruits and vegetables, increase the risk of colorectal cancer. Moreover, socioeconomic factors contribute to limited access to fresh and healthy foods and limited opportunities for safe physical activity, leading to poor physical health. In this interdisciplinary study, we aim to investigate any relationships between dietary behaviors and cancer risk in adults aged 50 years and above. We are recruiting participants at a senior center in East Harlem, New York City, a racially diverse and underserved community. The participants complete a NIH-validated survey through which we assess their dietary habits and collect standardized demographic data and history of cancer. Urine samples from participants are analyzed for polyphenols, commonly found in fruits and vegetables. Quantification of polyphenol content in urine is determined by a standard curve based on the concentration of gallic acid, a stable and convenient chemical that is representative of polyphenols from fruits and vegetables. So far, analysis of urine from a cohort of diverse participants (n=15) has been performed. The range of gallic acid concentration obtained was 3.85-17.14 µg/mL. We observed the lowest gallic acid concentration in a participant with history of cancer, suggesting low level of polyphenol content in their urine. Ongoing work includes further recruitment of participants and an intervention consisting of active nutritional education (cooking classes, workshops, etc.). A control group that will not receive this educational intervention will be provided with brochures through mail informing them about general health information. At the end of the intervention period, urine will be collected and analyzed to assess the impact of nutritional education on dietary habits in underserved and minority communities.
C048 Engaging in physical activity after a cancer diagnosis: A Detroit ROCS study. Julie J. Ruterbusch1, Ann G. Schwartz1, Terrance Albrecht1, Tara Baird1, Dave Finlay2, Felicity Harper1, Stephanie Pandolfi1, Julia Mantey1, Andrew G. Rundle1, Jennifer L. Beebe-Dimmer1. 1Wayne State University, Detroit, MI, 2Barbara Ann Karmanos Cancer Institute, Detroit, MI, 3Columbia University, New York, NY.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR04) of the Conference Proceedings.

C049 The association between breast cancer and physical activity levels by race in a prospective cohort study. Shelbie Stahr1, Gail Runnells2, Lora Rogers2, Pearl Mcelfish1, Susan Kadlubar3, Joseph L. Su1, Fay Boozman College of Public Health, University of Arkansas for Medical Sciences, Little Rock, AR, 1Fay Boozman College of Public Health, Department of Epidemiology, University of Arkansas for Medical Sciences; Winthrop P. Rockefeller Cancer Institute, Little Rock, AR, 2College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR.

Background: Although the relationship between physical activity and breast cancer is well established, research demonstrating levels of physical activity and breast cancer association among different racial groups is less definitive. It is perceived by the public that beneficial effects of physical activity depend on the rigorousness of activity performed, and within these levels of physical activity, racial differences are observed.

Objectives: The aim of this study is to evaluate levels of physical activity among different racial groups, while stratifying for menopause status, and their relationship to breast cancer. Specifically examining incidence and prevalent breast cancer cases, this study examined potential variation of physical activity in relation to time of cancer diagnosis among different racial groups.

Methods: A cohort of 26,387 women in the Arkansas Rural Community Health Study (ARCH) was used to evaluate physical activity and its association with breast cancer among different racial groups. Multiple logistic regression (OR, 95%CI) was used to examine the association between breast cancer and intensity, length, and frequency of physical activity while adjusting for confounding variables, such as age and parity. Demographic and weekly physical activity information was reported at baseline. A Metabolic Equivalent of Task score was derived from the self-reported questionnaire data.

Results: A total of 1,455 participants were excluded due to insufficient information regarding breast cancer status, race, and menopausal status, resulting in a sample of 23,980 participants. The analysis consisted of 155 newly diagnosed breast cancer cases after the baseline (incident), 2,330 existing breast cancer cases when entering the study (prevalent), and 21,495 noncancer subjects, of whom 78% identified as European American (EA) and 22% identified as African American (AA). Approximately 49% of eligible participants reported being postmenopausal and 51% being premenopausal. A significant downward trend was observed in vigorous physical activity among EA women for incident and prevalent breast cancer (p = 0.002 and 0.04), whereas no clear trend was seen among AA women due to small sample size. Similar trends can be seen in vigorous physical activity postmenopausal EA women (p = 0.005 and 0.002). The beneficial association was not observed among AA women. On the other hand, overall physical activity appears to be positively associated with breast cancer among AA women (p for trend = 0.04).

Conclusions: There appears to be a beneficial effect of vigorous physical activity and breast cancer among EA, regardless of pre- or postmenopausal status. However, the effect does not seem to apply to AA women, which could be the result of small number of breast cancer cases in African Americans. The current physical activity recommendations may not be applicable to all racial groups. We may be able to get a better race-specific recommendation regarding the level of leisure physical activity by pooling our data with other studies.

C050 Deleterious coding variants in African American Hereditary Prostate Cancer Study (AAHPC) families. Deyana D. Lewis1, Shukmei Wong2, Angela S. Baker2, Joan E. Bailey-Wilson2, John D. Carpten2, Cheryl D. Cropp2, 1Computational and Statistical Genomics Branch, National Human Genome Research Institute/National Institutes of Health, Baltimore, MD, 2Integrated Cancer Genomics Division, Translational Genomics Research Institute, Phoenix, AZ, 3Keck School of Medicine of the University of Southern California, Los Angeles, CA, 4Department of Pharmaceutical, Social and Administrative Sciences, McWhorter School of Pharmacy, Samford University, Birmingham, AL.

Purpose: Prostate cancer is the most common cancer in males, with a 1.5-2-fold higher incidence in African American men when compared with whites. Epidemiologic evidence supports a large heritable contribution to prostate cancer, with over 100 susceptibility loci identified to date that can explain ~33% of the familial risk. A portion of the
undefined risk may be due to rare susceptibility variants. The African American Hereditary Prostate Cancer (AAHPC) Study, established in 1997, enrolled 77 African American families from seven clinical sites across the United States. The aim of this study is to identify rare, predictive, deleterious variants through exome sequencing of 99 cases from families selected from the AAHPC families and three 1000 Genome controls.

**Methods:** To explore the contribution of rare variation in coding regions to prostate cancer risk, we sequenced the exomes of 99 AAHPC cases at a mean coverage of 30x. Post-variant calling quality control (QC) was implemented using Golden Helix SVS 8 software with filters set for removal of variants with Read Depth >10, Quality Score >10, and Quality Score: Read Depth Ratio > 0.5. Mendelian inconsistency was checked using PLINK. Prioritization of all candidate genes/variants was evaluated using online databases 1000 Genome and bioinformatics tool ANNOVAR for non-reference allele frequency and predictions of functional impact.

**Conclusions:** Through exome sequencing of 99 AAHPC cases and three 1000 Genome controls, we identified 37 nonsynonymous single-nucleotide variants that are considered damaging by at least one predictive scoring tool in our candidate genes. Interesting candidate variants were found in known cancer susceptibility loci BRC42, MSR1, PCNT, STAT3, WRN and ZFHX3. Future results are pending additional QC and analyses to determine which variants are shared by related individuals within each family compared to those not seen in the controls.

**C051 A genetic variant at 6q25 associated with estrogen receptor-negative breast cancer subtypes in Peruvian breast cancer patients.** K.M. Marker1, T. Vidaurre2, L.I. Tamayo3, J.N. Vásquez3, R. Meza Flores2, S. Casavilca2, M. Calderon2, J.E. Abugattas2, H.L. Gómez2, H.A. Fuentes2, C.L. Monge Pimentel2, S. Song4, D. Cherry5, S. Huntsman6, D. Hu7, E. Ziv1, L. Fejerman5. 1Division of Epidemiology, School of Public Health, University of California Berkeley, Berkeley, CA, 2Instituto Nacional de Enfermedades Neoplasicas, Lima, Peru, 3University of Chicago, Chicago, IL, 4Division of General Internal Medicine, Department of Medicine, Institute of Human Genetics, University of California San Francisco, San Francisco, CA, 5University of California San Diego, San Diego, CA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR05) of the Conference Proceedings.

**C052 Premenopausal oophorectomy and survival among women with breast cancer: Evidence of effect measure modification by family history status.** Mya L. Roberson, Whitney R. Robinson, Hazel B. Nichols, Andrew F. Olshan, Melissa A. Troester. University of North Carolina at Chapel Hill, Gillings School of Global Public Health, Department of Epidemiology, Chapel Hill, NC.

In the US, bilateral oophorectomies are frequently performed before menopause for one of two reasons: 1) in concert with hysterectomy for benign gynecologic conditions or 2) prevention of breast or ovarian cancer risk and mortality. Prior literature has consistently shown a reduction in breast cancer-specific mortality among women who had premenopausal hysterectomy with bilateral oophorectomy (H + BO) prior to their breast cancer diagnosis. The present study sought to assess whether the relationship between prediagnosis premenopausal H + BO and breast cancer-specific mortality differed by family history status in women with breast cancer. It is hypothesized that women who may have prognostically different breast cancer due to having family history disproportionately benefit from premenopausal H + BO compared to more average-risk women with no family history. This study analyzed data from Phases 1 and 2 of the Carolina Breast Cancer Study (CBCS), a population-based study of Black and White women prospectively identified in central and eastern North Carolina with newly diagnosed breast cancer between 1993 and 2001. Women with invasive breast cancer with known gynecologic surgical status were included (n=1,723). Gynecologic surgery was defined as: no surgery; hysterectomy with bilateral oophorectomy (H+BO); hysterectomy with conservation of ≥1 ovary (H + OC). Cause-specific mortality was ascertained using the National Death Index, last updated in 2016. Hazard ratios (HR) and 95% confidence intervals (CI) for breast cancer-specific mortality were estimated with Cox proportional hazard models. Models were then stratified by family history status, the self-reporting of one or more first-degree relatives with a family history of breast cancer. Models were adjusted for race, age at diagnosis, smoking, alcohol use, menopausal hormone therapy use and reproductive history factors. All participants still living at the end of follow-up were right censored. Among 1,723 women in the sample, 44% (n=759) were Black and 56% (n=964) were White. There were 836 deaths, of which 447 were from breast cancer. In this population, 74.1% (n=1,276) of women reported having no previous premenopausal gynecologic surgery, 8.8% (n=152) reported having H + BO and 17.1% (n=295) reported H + OC. Compared to women who had not had premenopausal gynecologic surgery, the overall adjusted HR for breast cancer-specific mortality associated with H + BO was 0.68 (95% CI: 0.49,0.96)
and 0.90 (95% CI: 0.72,1.12) for women with H+OC. In models stratified on family history, the HR for women with H+BO was 0.11 (95% CI: 0.03,0.42) for those with family history and 0.90 (95% CI: 0.63,1.29) for those without. The HR for women with family history who had H+ OC was 0.77 (95% CI: 0.45, 1.29) and 0.90 (95% CI: 0.63,1.29) for women without. This study suggests that the overall protective relationship observed between premenopausal hysterectomy with bilateral oophorectomy and breast-cancer specific mortality may be driven by a small subset of especially high-risk women.

Results: Compared with white breast cancer patients, black women were younger with tumors that were higher stage, higher grade, and more likely to be larger, node positive and triple negative. In fully adjusted models, black women diagnosed with Luminal A subtype were 58% more likely to die of breast cancer compared to their white counterparts (HR=1.58, 95%CI 1.31-2.00). Similarly, black women with private insurance were 60% more likely to die of breast cancer (HR=1.61, 95%CI 1.25-1.98), and black women in the highest SES group were more than twice as likely to die from breast cancer (HR=2.26, 95%CI 1.26-4.06) than white women with comparable SES. The smallest disparities in breast cancer mortality by race were observed among women without insurance, in the lowest SES index, or those diagnosed with triple-negative breast cancer. The mediation analysis showed 84.8% of the effect between race and breast cancer mortality was through stage, subtype, and SES.

Conclusion: Our results indicate variation in racial disparities in breast cancer mortality by tumor and patient characteristics. Consistent with previous reports, our mediation results suggest that later stage and triple-negative subtype among black women are major contributors of the observed disparity. However, our results also shed new light on the disparity, suggesting that the largest disparities are observed among women with ER+ tumors amenable to adjuvant therapies and are more pronounced among women of high SES. More research is needed to understand the drivers of disparities in these treatable tumors.

**C054 Gastric cancer survival among Puerto Rican Hispanics: A ten-year population-based analysis.** Maria Gonzalez-Pons1, Carlos Torres-Cintrón2, Marivelesis Soto-Salgado3, Douglas Morgan4, Marcia Cruz-Correa1. University of Puerto Rico Comprehensive Cancer Center, San Juan, PR, 2Puerto Rico Central Cancer Registry, San Juan, PR, 3University of Puerto Rico Medical Sciences Campus, San Juan, PR, 4Vanderbilt University, Memphis, TN.

**Background:** Gastric cancer (GC) is one of the top five diagnosed malignancies among U.S. Hispanics. In Puerto Rico during 2011-2015, GC was the 10th and 11th most diagnosed cancer among Puerto Rican Hispanic men and women, respectively. During the same period, GC was the 6th leading cause of cancer death in men and the 8th in women. Although the incidence of GC has decreased during the last two decades in all US racial/ethnic groups, the mortality associated with GC continues to be high and disproportionately affects Hispanics. The aim of this study was to determine and compare the overall five-year relative
POSTER SESSION C

survival of Puerto Rican Hispanics (PRH) with GC during a ten-year period (2001-2005 and 2006-2010) to that of non-Hispanic Whites (NHW), non-Hispanic Blacks (NHB), and Hispanics living in the US.

Methods: Data were obtained from the Puerto Rico Central Cancer Registry. Primary cases with diagnostic confirmation of GC, malignancies arising primarily from the gastroesophageal junction to the pylorus, ICD-O-3 codes C16.0 to C16.9 with histologic confirmation (using ICD-O-3 codes) reported during the period of January 1, 2001 to December 31, 2010 were included in the survival analysis. Five-year relative survival rates were calculated using the incidence case files. Analyses were performed using Stata 13.0 and SEER*Stat Software version 8.3.5.

Results: For the periods of 2001-2005,2006-2010, and 2011-2015, the age-adjusted incidence rate for GC was 10.5 per 100,000 (n =1,893), 8.8 per 100,000 (n = 1,775), and 8.2 per 100,000 (n = 1,819), respectively. The overall five-year relative survival for 2001-2005 was 27.5% and 32.7% for 2006-2010. For the same study periods, when comparing overall adjusted 5-year relative survival among PRH to that of U.S. racial/ethnic groups, PRH had the lowest survival rates in localized and regional GC followed by U.S. non-Hispanic Blacks.

Conclusion: GC continues to be a common cancer among Hispanics despite the decrease in disease burden among other U.S. racial/ethnic groups. GC survival rates among PRH continue to be very low, and marked differences between racial/ethnic groups are observed in localized and regional gastric tumors, suggesting disparities in access to treatment. Studies evaluating the social, genetic, and/or environmental risk factors for GC are of utmost importance to establish health policy and to modify GC screening algorithms among Hispanic populations.


Human papillomavirus (HPV) is the second most commonly diagnosed sexually transmitted infection in US service women, though the incidence has declined over the last decade, from 364.4 per 10,000 woman-years in 2007 to 90.0 per 10,000 woman-years in 2016. Despite the Department of Defense (DoD) routine vaccination recommendation for eligible service members age 17-26 years and provision of the vaccine free of charge, coverage remains low. During the years 2006-2011, only 22.5% of eligible women initiated the 3-dose series of the quadrivalent HPV vaccine, and it is not known whether receipt of the vaccine varies by demographic, military-specific, or other. We evaluated receipt of the HPV vaccine in a large cohort of active duty service women over the period 2001-2015. The women are part of the Millennium Cohort Study, which comprises over 200,000 current and past service members and is the largest longitudinal cohort of service members in military history. Briefly, participants were first enrolled in 2001 and complete follow-up questionnaires approximately every 3 years. Information on military experiences, lifestyle factors, and physical and mental health are collected at each time point. Additionally, participants can be linked to medical encounter, pharmacy, and national death data. Women who were active duty and age 18-26 years at the time of enrollment were included in the analysis. Medical encounter data and the military’s central immunization database were used to identify women who had received at least one dose of the HPV (bivalent, quadrivalent, or nonavalent) vaccine. We used logistic regression to evaluate demographic, military, and health-related factors potentially related to receipt of the vaccine. There were n=14,591 women in our study cohort. Of these, n=4,867 (33.4%) had received at least one dose of the HPV vaccine. Women were less likely to be vaccinated if they were older (odds ratio [OR]=0.85, 95% confidence interval [95% CI]=0.77-0.93 for women age 25-26 years compared to women age 20-24 years), married at baseline (OR=0.79, 95% CI=0.73-0.86 compared to women who were never married), or smokers (OR=0.82, 95% CI=0.76-0.89). Women were more likely to be vaccinated if they were health care specialists (OR=1.43, 95% CI=1.30-1.57 compared to other occupations) or in the Air Force (OR=2.51, 95% CI=2.30-2.75 compared to Army). There were no differences by race, education, or military rank. In the general US population, non-white women are less likely to be vaccinated (41.5% of black, 44.7% of Hispanic or Latino, and 42.3% of Asian women compared to 52.2% in white women). However, in a setting where social determinants of health are in part addressed by equal access to vaccination, no racial differences were observed.


Background: Recent economic and social changes in low- and middle-income countries in Latin American have influenced the raise of noncommunicable diseases, including
POSTER SESSION C

cancer. Data from cancer registries are critical for surveilling disease trends during periods of epidemiologic transition. The aim of this study is to generate population estimates of cancer incidence rates in Costa Rica and to evaluate geographical differences.

Methods: The National Tumor Registry in Costa Rica was queried for cancer cases diagnosed between 2009-2014. Population data were used to calculate sex, country and region-specific age standardized rates (ASR) per 100,000 people using the World Health Organization’s 2000 standard population. Standardized incidence ratios (SIR) and 95% confidence intervals (CI) were calculated to assess the effect of sex and geographic regions.

Results: The overall cancer incidence rate in Costa Rica was 219.24 cases per 100,000. Females had a higher cancer rates relative to males (SIR: 1.1, 95% CI: 1.08-1.11, p < .001). The leading cancers were prostate (ASR: 53.09, 95% CI: 51.75-54.46), female breast (ASR: 48.73; 95% CI: 47.54-49.94), cervical (ASR: 30.78; 95% CI: 29.77-31.62), stomach (ASR: 17.45; 95% CI: 16.93-17.99), colorectal (ASR: 12.96; 95% CI: 12.54-13.40) and thyroid (ASR: 12.96; 95% CI: 12.54-13.40) cancers. San Jose had the highest breast and colon cancers whereas, Cartago had the highest rates for gastric and thyroid cancers.

Conclusion: Costa Rica has a growing cancer burden involving preventable cancers. Continued monitoring of trends in incidence rates is needed to implement cancer control actions. Further involvement to create cancer prevention strategies and programs aimed to reduce cancer burden is warranted.

C057 Whole-exome sequencing of DNA from Palestinian women undergoing surgical evaluation for breast cancer.

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Background: A Palestinian woman with breast cancer only has 50% chance of being alive at five years. Lack of access to medical care is further complicated by political strife, checkpoints, and the need to file a permit for traveling even a short distance. Preliminary studies of Palestinian women under 40 with breast cancer show a low frequency of BRCA1/BRCA2 mutations. These studies suggest that there may be unique genetic, epigenetic, and environmental drivers of aggressive cancers in Palestinian women. Here we have developed the Palestinian infrastructure to start to investigate these drivers. We report our efforts to build infrastructure and our initial findings.

Methods: To build capacity, we first trained 2 Palestinians in genetic counseling using the City of Hope Distance Learning Program. We engaged a group of Palestinian breast surgeons from the cities of Ramallah, Jerusalem, Nablus, and Hebron. Together we built the infrastructure for blood and tissue collection/preservation. Our protocol was first approved by the Palestinian Ministry of Health and Palestinian Helsinki Committee. To date we have enrolled 65 Palestinian women from throughout Palestine and collected matched breast cancer tissue and matched white blood cells (WBC) DNA. On WBC DNA we performed whole-exome sequencing (WES) to search for germline mutations. Exomes were enriched using Agilent SureSelectHumanAllExonV6+COSMIC V2 kit, which covers 66 MB of the genome. Any deleterious mutation will be formally verified by MyriadTM United States CAP-CLIA-approved testing.

Results: The average age of the 65 women was 44 (range 18-78). Women were tested for mutations in 20 genes known to be associated with DNA repair and breast cancer. Of these 65 women, none had a family history of breast cancer; to date, no known pathogenic variants have been identified in these women. Parallel studies in a second group of Palestinian women with a history of familial breast cancer had pathogenic mutations in 11 different genes: BRCA1, BRCA2, TP53, ATM, CHEK2, BARD1, BRIPI, PALB2, MRE11A, PTEN and XRCC2. The single most frequent mutation was TP53 p.R18C, which was significantly enriched in the discovery series compared to controls (p<0.01) and was responsible for 15% of breast cancers among young onset or familial patients.

Conclusions: The genetic and possibly epigenetic origins of breast cancer in Palestinian women may be distinct from non-Hispanic White Women. We have formed a Palestinian Coalition to ethically obtain matched WBC and tumor tissue from Palestinian women with breast cancer. Our studies show that in accordance with Helsinki Principles, we have developed the infrastructure to return testing results to the referring physicians.
C058 Research on prostate cancer in men of African ancestry: Defining the roles of genetics, tumor markers, and social stress. Ann S. Hamilton, Scarlett Gomez, Xiao-Cheng Wu, Kevin Ward, Melissa Bondy, Rosemary Cress, Jennifer Beebe-Dimmer, Karen Pawlish, Jong Park, Iona Cheng, Antoinette Stroupi, Thomas Sellers, Susan Gundell, Angelo Demarzo, Denise Modjeski, Stephen Chancok, Salma Shariff-Marco, Mindy DeRouen, John Carpten, Franklin Huang, Karen Sfanos, Tamara Lotan, David Conti, Christopher Haiman. 1University of Southern California, Los Angeles, CA, 2University of California, San Francisco, San Francisco, CA, 3Louisiana State University Health Science Center, New Orleans, LA, 4Emory University, Atlanta, GA, 5Baylor College of Medicine, Houston, TX, 6Cancer Registry of Greater California, Sacramento, CA, 7Wayne State University, Detroit, MI, 8New Jersey Department of Health, Trenton, NJ, 9Moffitt Cancer Center, Tampa, FL, 10Rutgers University, The State University of New Jersey, New Brunswick, NJ, 11John Hopkins University, Baltimore, MD, 12National Cancer Institute, Division of Cancer Epidemiology & Genetics, Rockville, MD, 13Dana-Farber Cancer Institute, Boston, MA.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR06) of the Conference Proceedings.


Background: Racial/ethnic minority groups, including Hispanic Americans (HAs) and Native Americans (NAs), have a heavier burden of kidney cancer with a higher incidence and mortality than European Americans (EAs). However, HAs and NAs are under-represented in clinical and molecular genomic studies of renal cell carcinoma (RCC), the most common type of kidney cancer, and clinical and molecular characteristics of RCC among them are also unknown. We investigated variations in clinical and molecular characteristics of RCC patients.

Methods: A total of 284 patients, including 90 HAs (31.6%) and 22 NAs (7.7%), who were diagnosed with RCC and without prior diagnosis of cancer were included to understand the patients’ clinical characteristics. A subset of 51 samples were selected to screen for somatic mutations on the VHL gene, and 33 samples were selected for whole-transcriptome sequencing analysis.

Results: Compared to EAs, HA and NA patients were diagnosed with RCC at younger ages (P<0.001). HA had about 5 years younger average age at diagnosis than EAs (55.2 vs. 60.6) and an over 2-fold increased odds of diagnosis before age 60 years (OR 2.50, 95% CI: 1.36-4.60). Mean age of diagnosis among NAs was 48.9, and NAs had more than 4-fold higher odds of diagnosis at a younger age (OR 4.12, 95% CI: 1.31-12.95). NA patients had higher body mass index than EA patients with 77.3% of NA obese patients. Diabetes was more common in HA (45.6%) and NA (50.0%) patients compared to EA (19.6%) patients. An RCC histologic subtype, clear cell RCC (ccRCC), was more common in HAs and NAs than EAs. Over 90% of HA patients had ccRCC, while only 77.6% of EA patients had ccRCC. HAs had increased odds of diagnosis with ccRCC compared to EAs (OR 2.39, 95% CI:1.01-5.67). Among HAs, older patients were more likely to have advanced-stage RCC diagnosis (OR 7.06, 95% CI:1.46-34.11). HAs who used Spanish as their primary language were more likely to have radical nephrectomy rather than partial nephrectomy (OR 5.13, 95% CI: 1.23-21.33). We detected pathogenic somatic mutations on the VHL gene, which is known to cause von Hippel-Lindau syndrome, in 4 patients, and these patients were younger than the patients without these mutations (45.5 vs. 57.1). We were able to assign 32 out of 33 patients into molecular subtypes (cca and ccb). Molecular subtype could not be assigned to one HA patient with high-grade and advanced-stage ccRCC. Molecular subtype, cca, was more common in HAs than EAs (64.3% vs. 41.2%), but this difference was not statistically significant. One gene, HABP2, showed evidence of differential expression between HA and EA tumors (P <0.05) and was downregulated in HA tumors with log2 fold change < -2.0.

Conclusion: HA and NA RCC patients had different clinical and molecular characteristics from EA patients.

Impact: As we move toward a precision medicine approach for RCC care, it is necessary to better understand the clinical and molecular characteristics of these underserved HA and NA populations with high kidney cancer burden.

C060 The spectrum of germline mutation carriers in a cohort of breast and ovarian cancer patients in the Caribbean. Sophia H.L. George, Talia Donenberg, Cheryl Alexis, Vincent DeGennaro, Hedda Dyer, Sook Yin, Priscila Barreto-Coelho, Simonette Thompson, Raleigh Butler, Gillian Wharfe, Jameel Ali, Theodore Turnquest, DuVaughn Curling, Mohammad Akbari, Steven Narod, Judith Hurley. 1Leonard Miller School of Medicine, Miami, FL, 2University of West Indies-Cave Hill, Wanstead, Barbados, 3Innovating Health International, Port-au-Prince, Haiti, 4Ross University.
School of Medicine, Portsmouth, Dominica, 3Cancer Society of Cayman Islands, Grand Cayman, Cayman Islands, 4University of West Indies-Bahamas, Nassau, The Bahamas, 5University of West Indies-Mona, Kingston, Jamaica, 6St. James Medical, Port-of-Spain, Trinidad and Tobago, 7Princess Margaret Hospital, Nassau, The Bahamas, 8Women’s College Hospital, Toronto, ON, Canada.

The Caribbean population is predominantly of African descent with an admixture of Indigenous, East Asian, Indian subcontinent, Western European and Middle Eastern descendants. This region has one of the highest burdens of cancer in the world, and breast cancer is the leading cause of cancer death in Caribbean women. We established a cohort of 1,019 people diagnosed with breast and ovarian cancer across 7 Caribbean countries (Cayman Islands, Bahamas, Barbados, Dominica, Haiti, Jamaica, Trinidad and Tobago)—Caribbean Women’s Cancer Study (CWCS). The primary objective was to identify deleterious mutations in the breast cancer genes in a cohort of Caribbean people with breast and/or ovarian cancer.

Methods: The study was conducted between 2004-2015 in the Bahamas, Cayman Islands, Jamaica, Barbados, Dominica, Trinidad and Tobago and Haiti. Following IRB approval, 1,019 women and men diagnosed with breast or ovarian cancer were identified through outpatient oncology clinics, treating physicians and cancer societies on the islands. In addition, participants were recruited through radio, newspaper and TV advertisements. Inclusion criteria were pathologic diagnosis of breast (male or female) and/or ovarian cancer, at least 1 grandparent born in one of the participating countries and ability to provide saliva. NGS and MPLA (BRCA1/2) were performed on a panel of 31 genes. The most prevalent mutations in the cohort were FLT3 (29%) (with FLT3-TKD over-represented in 21% of the total cohort vs. 10% for FLT3-ITD and 6% harboring simultaneous ITD and TKD mutations), followed by CEBPA (2%), TET2 (19%), DNMT3A (19%), RUNX1 (15%) and NPM1 (12%). Fusion genes

Results: The mean age of the mutation carriers was 45 (20-70) years and mean BMI was 29.0. 70% of the mutation carriers self-identified as Afro-Caribbean. 75% identified their cancer by palpation. The Bahamas has the highest incidence of hereditary breast cancer in the world due to founder mutations in the BRCA1 and BRCA2 genes (23% of unselected breast cancer). In Trinidad and Tobago 12% of women with breast cancer had a mutation in BRCA1/2, PALB2, RAD51C or CHEK2. Jamaica had 4.9% incidence of BRCA1/2, STK11, NBN and PALB2 mutations and 6.9% (5/94) of Haitian women have deleterious mutations in BRCA1/2, PALB2. In Barbados 17.9% (16/89) have deleterious mutations in BRCA1/2, PALB2. In Dominica (4/57) 8.8% of the cohort had BRCA2 or PALB2 deleterious mutations and 6.3% (4/63) in the Cayman Islands had a deleterious mutation in ATM, BRCA1/2. 64% of mutations carriers had a frameshift, nonsense, or large deletion in BRCA1, 23% in BRCA2 and 9% in PALB2. There were 29 unique mutations in BRCA1 in 92 individuals (64%) and 23 unique mutations in BRCA2 with recurring (founder) mutations predominantly in the Bahamas. 11 distinct mutations in PALB2 were seen in 13 individuals across 5 countries.

Conclusion: This initial Caribbean population-based study demonstrates that genetic causes of breast cancer are common in the Caribbean population.

C061 Molecular landscape of acute myeloid leukemia in Mexico. Alexandra Gomez-Arteaga1, Nuria Mencia-Trinchant2, Adolfo Martinez Tovar3, Irma Olarte Carrillo2, Anel Garcia Laguna2, Etta Rozen Fuller2, Christian Ramos Penafiel2, Monica L. Guzman1, Duane C. Hassane1, Weill Cornell Medicine, New York, NY, 2Hospital General de Mexico, Mexico City, Mexico.

The understanding of the somatic driver mutations and genetic abnormalities in acute myeloid leukemia (AML) has enabled the discovery of actionable mutations and improved risk stratification; however, it is unclear how the distribution of molecular defined subsets varies within different populations. The median age of AML diagnosis in Mexico is younger than for other international cohorts; however, no mutational analysis has been performed to date. We thus sought to ascertain differences in somatic mutations in this population.

Methods: We created a collaborative research initiative to evaluate the frequency of recurrently mutated genes in 48 Mexican AML patients using a combination of whole-exome and targeted next-generation sequencing. We compared the prevalence to other reported Hispanic cohorts in the US and large international cohorts.

Results: The median age of diagnosis was 38 year (15-86). Somatic mutations were detected in 96% of patients, with a median of 2 mutated genes per patient (range 0-6). The most prevalent mutations in the cohort were FLT3 (29%) (with FLT3-TKD over-represented in 21% of the total cohort vs. 10% for FLT3-ITD and 6% harboring simultaneous ITD and TKD mutations), followed by CEBPA (2%), TET2 (19%), DNMT3A (19%), RUNX1 (15%) and NPM1 (12%). Fusion genes
POSTER SESSION C

were detected in 21% of patients, with t(8;21)(AML-ETO) being the most commonly found (13%), followed by MLL rearrangements (4%) and inv(16)(CBFB-MYH11) (2%). When compared to international cohorts, CEBPA, RUNX1 GATA2, TET2, AML1-ETO, U2AF1, ASXL1 and KIT were found to be enriched in our cohort. In contrast, mutations in FLT3-ITD, DNMT3A, NPM1 and IDH2 were under-represented in the Mexican cohort. There was an over-representation of CEBPA mutated AML, with a characteristic mutational distribution and variant allele frequencies (VAF) in the 50% range that could be indicative of a greater incidence of germline predisposition in this population. The median overall survival for the cohort was 9 months. Adjustment for prognostic variables that tend to have better prognosis, such as lower age, higher prevalence of CEBPA and lower FLT3-ITD prevalence, did not attenuate the disparities in disease outcomes.

Conclusion: Mexican AML patients show a distinct genetic repertoire compared with other international cohorts that point to differences in host genetic susceptibility and environmental factors. Interestingly, some of the detected variants are targetable mutations that could influence management decisions. Despite some better prognostic risk groups such as younger age, lower FLT3-ITD and higher CEBPA, the outcomes for the cohort were overall poor, which correlates to reports of Hispanic minorities in the SEER database. Based on these findings, it is important to further investigate the true incidence of germline mutations in Mexican patients and other Hispanic patients and determine if there is a genetic susceptibility to develop AML that could explain some of the difference in age of onset and molecular findings.

C062 Racial differences in genome-wide DNA methylation profiles by county poverty levels among women residing in Arkansas. Ping-Ching Hsu1, Susan Kladubar1, Daniel Acheampong2, Lora Rogers1, Gail Runnells1, Pearl McElfish1, Mario Schootman3, L. Joseph Su1, 1University of Arkansas for Medical Sciences, Little Rock, AR, 2University of Arkansas at Little Rock, Little Rock, AR, 3Saint Louis University, St. Louis, MO.

Introduction and Purpose: DNA methylation is a potential biomarker of cellular stress and biologic aging, above that of chronologic age. Aberrant DNA methylation patterns have been associated with overall health and life expectancies and can be susceptible to biologic and environmental influences and stressors. DNA methylation has been shown to be modified by adverse living conditions in urban neighborhoods, but there is little knowledge of how adverse rural environments impact these biomarkers. An algorithm has been developed and validated that quantifies epigenetic age, and this measure has been strongly associated with health and life expectancy but has not been explored in rural and rural minority populations who have documented overall health disparities. The goal of this pilot study is to examine the impact of adverse rural neighborhoods on biomarkers of DNA methylation and epigenetic aging.

Methods: Genome-wide DNA methylation was assessed using the Illumina 850K EPIC Beadchip, and the DNA methylation age estimation was derived using the algorithms Horvath developed based on the DNA methylation levels. Percent poverty rate at the census level was obtained according to their zip code data by ArcGIS. Ten women of self-reported African American (AA) descent each from counties with high poverty rates (>20% of the population) and those with low poverty rates (<10%) were randomly selected based on the 2008-2012 US Census American Community Survey, as well as ten women each of European American (EA) descent from counties with high or low poverty rates. Ingenuity Pathway Analysis (IPA) was performed to identify biologic pathways that were differentially methylated between residents of counties with high or low poverty rates and by race.

Results: Among AA women, hypermethylation was more common in AA residents of counties with low compared to high poverty rates (70% vs 30%). The top canonical pathways impacted by differential methylation were related to glucocorticoid receptor, p53, and estrogen-dependent breast cancer signaling in AA women. EA women living in low-poverty counties exhibited less hypermethylation of CpGs than those living in high-poverty counties (27% vs. 73%). The top canonical pathways were related to hereditary breast cancer, glucocorticoid receptor, androgen and PI3K/AKT signaling. Epigenetic age of the 39 women in the study was highly correlated with their chronologic age (r=0.82, p=1.71e-10). When epigenetic age acceleration was considered, however, no significant differences by race and/or poverty levels were apparent.

Conclusions: The finding of this pilot study suggests that living in adverse neighborhoods may impact DNA methylation patterns in breast cancer-related pathways when compared to living in affluent ones, and the pattern appears to be different on race. Larger studies should confirm our findings.
**C063 Associations of leptin and leptin receptor protein and gene expression with breast cancer clinicopathologic features.**

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The adipokine, leptin (LEP) and its receptor (leptin receptor, LEPR), are hypothesized to play a role in breast cancer (BrCa) outcomes disparities. The objective of this study was to address the gaps in knowledge regarding the epidemiologic associations of LEP and LEPR protein and gene expression with breast cancer clinicopathologic features (namely, estrogen receptor [ER] status, and tumor grade, stage, size, and subtype). In the Women’s Circle of Health Study, we used immunohistochemistry to assess protein expression in breast tumor tissue microarrays among a sample of 711 early stage BrCa cases. LEP and LEPR protein expression was scored semiquantitatively by a board-certified pathologist and we used NanoString digital, multiplexed assays to quantitatively assess gene expression of these biomarkers. Multivariable-adjusted logistic regression models were used to examine the associations of interest. Compared to ER+, LEP protein expression was lower (OR 0.54, 95% CI 0.30, 1.00), and LEPR protein (OR 3.95, 95% CI 2.02, 7.71) and gene expression (OR 1.003, 95% CI 1.001, 1.005) were higher among ER- BrCa cases. Compared to well/moderately differentiated tumors, LEPR protein (OR 2.46, 95% CI 1.40, 4.31) and gene expression (OR 1.002, 95% CI 1.000, 1.003) were higher among poorly differentiated tumors. Compared to luminal A, LEP protein expression was higher among non-luminal HER2-expressing (OR 3.34, 95% CI 1.20, 9.32) and TNBC subtypes (OR 2.02, 95% CI 1.00, 4.08), LEPR protein expression was lower among non-luminal HER2-expressing (OR 0.39, 95% CI 0.16, 0.94) and TNBC (OR 0.28, 95% CI 0.13, 0.57), and LEPR gene expression was lower in TNBC (OR 0.997, 95% CI 0.995, 0.999). LEP gene expression and LEPR protein and gene expression were inversely associated with tumor size (P-values<0.05). No major associations were observed between LEP and LEPR expression profiles and tumor stage. These findings suggest that LEP and LEPR protein and gene expression in the breast tumor microenvironment may serve as biomarkers contributing to interindividual differences in BrCa prognostic indicators and are important for understanding tumor heterogeneity and outcomes disparities.

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**C064 Hormone-related risk factors and breast cancer subtype in African American women.**

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**Purpose:** To investigate the association between hormone-related risk factors and breast cancer subtype in African American women. We hypothesized that African American women with triple-negative breast cancer (TNBC) would have a lower prevalence of hormone-related risk factors than women with other breast cancer subtypes (1) hormone receptor [HR +/-] and human epidermal growth factor receptor 2 [HER2-] or (2) HR +/- and HER2+.

**Methods:** African American women ages 25-75 years diagnosed with primary invasive breast cancer in 2009-2013 in Tennessee, South Carolina, and Georgia were eligible for the study. A total of 629 women (premenopausal n=175; postmenopausal n=454) provided information on hormone-related risk factors and breast cancer subtype in African American women. We hypothesized that African American women with triple-negative breast cancer (TNBC) would have a lower prevalence of hormone-related risk factors than women with other breast cancer subtypes (1) hormone receptor [HR +/-] and human epidermal growth factor receptor 2 [HER2-] or (2) HR +/- and HER2+.

**Results:** Although not significantly different, pre- and postmenopausal women with TNBC were more likely to have early age at menarche than women with other subtypes. Obesity was higher among pre- and postmenopausal women with HR+/- HER2+ disease and intermediate among women with TNBC relative to women with HR+/- HER2- disease. Oral contraceptive use was less likely among women with TNBC, significantly so for postmenopausal women (odds ratio=0.70, 95% confidence interval=0.53-0.91) than women with other subtypes.

**Conclusions:** Histologic subtyping is currently being performed on collected tissue to confirm the reported breast...
cancer subtypes in the pathology reports. The large number of African American women participating in our study can further our understanding of hormone-related risk factors and their relationship with breast cancer subtypes in this population.

**C065 Breast cancer risk in U.S.-born Latina women: potential role of reactive electrophiles.** Silvia J. Serrano-Gómez¹, Courtney Schiffman², Hasmik Grigoryan³, Henrik Carlsson⁴, Sandrine Dudoit⁵, Esther M. John⁶, Stephen M. Rappaport¹, Laura Fejerman⁷, ¹Grupo de investigación en biología del cáncer, Instituto Nacional de Cancerología, Bogotá, Colombia, ²Division of Biostatistics, School of Public Health, University of California, Berkeley, Berkeley, CA, ³Division of Environmental Health Sciences, School of Public Health, University of California, Berkeley, Berkeley, CA, ⁴Division of Biostatistics, School of Public Health, University of California, Berkeley, Berkeley, CA, ⁵Division of Biostatistics, School of Public Health, University of California, Berkeley, Berkeley, CA, ⁶Department of Statistics, University of California, Berkeley, Berkeley, CA, ⁷Division of Oncology, Department of Medicine and Stanford Cancer Institute, Stanford University School of Medicine, Stanford, CA, ⁸Division of General Internal Medicine, Department of Medicine, Institute of Human Genetics, University of California, San Francisco, San Francisco, CA.

**Background:** Breast cancer incidence is lower in foreign-born Latina women compared to U.S.-born Latinas, and the risk increases with younger age at migration. It is only partially known what factors contribute to these risk patterns. Several explanations have been proposed (e.g., changes in reproductive factors, diet, or environmental pollutants), but risk remains higher in U.S.-born Latinas after adjusting for established breast cancer risk factors. The goal of the present study was to find new risk factors that could explain how the migration experience, with its concomitant environmental and lifestyle-changes, affects the risk of breast cancer. Small reactive molecules have long been suspected of causing cancer by binding DNA and causing mutations. Protein adducts result from the presence of these reactive molecules and their relationship with breast cancer subtypes in this population.

**Methods:** We measured levels of a panel of 23 human serum albumin (HSA)-Cys34 adducts by high-resolution mass spectrometric methods in selected samples of Latina women from the San Francisco Bay Area Breast Cancer Study for whom serum was available (146 controls and 146 cases, 45% foreign-born). Genetic ancestry was estimated from genome-wide genotypes. To identify adducts that were predictive of foreign-born status and breast cancer diagnosis, we used bootstrapped regularized logistic regression and random forest to rank all adducts and additional covariates such as percent of Indigenous American (IA) ancestry in terms of prediction importance, and then selected variables with higher prediction importance. As a measure of the prediction accuracy of selected variables for the binary outcomes, we calculated a cross-validated area under the receiver operating curve (AUC) estimate using the set of selected adducts and covariates, as well as a corresponding 95% confidence intervals.

**Results and Conclusions:** In a model that included foreign-born status as the dependent variable, all adducts and demographic variables, two adducts were selected as predictors: mass to charge ratio (m/z)=849.07 (addition of S2O3H) and m/z=847.10 (S-methylsulfonylation). Adduct 849.07 had an associated random forest variable importance that was considerably greater than that of any other adduct. This adduct had lower levels in foreign-born Latinas and in Latinas with high IA ancestry. Additionally, adduct 849.07 was the top-ranking variable when breast cancer status was analyzed as the dependent variable. Other variables, including body mass index (BMI), African and IA ancestry, were also selected by the regularized regression as predictive, and together all five variables had a cross-validated AUC estimate of 0.61, 95% CI=(0.55,0.68) when predicting foreign-born status. Our results suggest that adduct 849.07 may be associated with the increased risk of breast cancer observed in U.S.-born vs. foreign-born Latinas. More studies are needed to replicate our findings and identify the precursor molecule(s) for this adduct.

**C066 Epigenetics and inflammatory environment may contribute to racial disparities in colorectal cancer.** Y.M. Ma¹, S.K. Roy², R.K. Srivastava³, S. Shankar¹, ¹Kansas City VA Medical Center, Kansas City, MO, ²Louisiana State University Health Sciences Center, New Orleans, LA.

Colorectal cancer (CRC) mortality rates dropped by half in the past three decades, but CRC continues to demonstrate racial disparities in incidence and survival. It is believed that unfavorable socioeconomic conditions may lead to an inflammatory phenotype. Furthermore, epigenetic events play a major role in regulating inflammatory genes that have been linked to CRC health disparities. The objective of the study was to identify gene(s) that are dysregulated in CRC using The Cancer Genome Atlas (TCGA) database, and, furthermore, to characterize those genetic event(s) that are associated with CRC health disparities. The Engrailed-2 (En2) gene encodes for a homeobox-containing transcription factor...
regulating embryonic brain development. The data indicate that Nanog, IL-8, and EN2 were upregulated in colorectal cancer. EN2 was highly expressed in CRC stem cells and cell lines but its expression was very low or absent in normal cells. EN2 gene was highly expressed in CRC tissues derived from African American patients compared to those from Caucasian Americans. The expression of EN2 significantly increased with patients’ age. There was no difference in EN2 expression between males and females of CRC patients. Higher expression of EN2 was correlated with poor survival of CRC patients with greater IL-8 expression. EN2 may act as a novel prognostic biomarker for CRC. Our data indicate that CRC disparities may be associated with epigenetic factors regulating the inflammatory environment.

C067 Do segregated neighborhoods buffer the stressful effects of low income among Black breast cancer survivors?  
Jesse J. Plascak1, Laxmi Chavali, Adana A.M. Llanos-Wilson1, Bonnie Qin1, Kitaw Demissie1, Chi-Chen Hong2, Elisa V. Bandera1, Rutgers, The State University of New Jersey, Piscataway, NJ, 1Roswell Park Cancer Institute, Buffalo, NY.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR15) of the Conference Proceedings.

C068 Census tract-level income inequality and colorectal cancer survival.  
Kelsey A. Chun1, Jamaica R. Robinson1, Candace H. Kroenke2, Dorothy S. Lane3, Giselle Corbie-Smith4, Theresa Hastert5, Shawnita Sealy-Jefferson6, Manali I. Patel7, Kathy Pan8, Shirley A.A. Beresford9, Polly A. Newcomb1, 1Fred Hutchinson Cancer Research Center, Seattle, WA, 2Kaiser Permanente Division of Research, Oakland, CA, 3Stony Brook University, Stony Brook, NY, 4UNC School of Medicine, Chapel Hill, NC, 5Wayne State University School of Medicine, Detroit, MI, 6The Ohio State University, Columbus, OH, 7Stanford Cancer Institute, Palo Alto, CA, 8Harbor-UCLA Medical Center, Torrance, CA.

Background: Income inequality has been associated with greater mortality and lower life expectancy in many ecologic studies, particularly at the national level. At the neighborhood level, the influence of income inequality on individual health is less clear. Colorectal cancer (CRC) is the second leading cause of cancer death in the United States. Recent studies suggest that neighborhood social and built environments are associated with outcomes across the CRC continuum, including screening, risk, and survival. Few studies of neighborhood factors have examined income inequality in relation to CRC survival.

Methods: We examined the association of census tract-level income inequality with survival among women who participated in the Women’s Health Initiative (WHI) and were diagnosed with incident invasive CRC between 1994-2014 (N=2,595). Based on geocoded residence at diagnosis and year of diagnosis, we linked each participant to census tract-level data from the US Census and American Community Survey (ACS). Within each tract, income inequality was assessed using the ratio of the 95th and 20th percentiles for household income. Quartiles for 95/20 ratio were constructed from the distribution of 95/20 ratios across all U.S. census tracts with more than 50 households. We used Cox proportional hazards regression models to estimate hazard ratios (HR) and 95% confidence intervals (CI) for overall and disease-specific survival. Models were adjusted for age at diagnosis, year of diagnosis, individual household income, and tract-level percent of households in poverty; subsequent models also adjusted for tumor stage at diagnosis. To explore whether the relationship between income inequality and survival differed by individual or tract-level sociodemographic characteristics, we conducted analyses stratified by race/ethnicity, individual household income, and tract-level poverty.

Results: Compared to women residing in low-income-inequality census tracts, women living in tracts with the highest income inequality had modestly poorer overall survival (HR=1.24, 95% CI: 1.01-1.51, comparing highest and lowest quartiles). However, this association was not significant after adjustment for stage at diagnosis. No associations were detected for disease-specific survival. The associations between income inequality and overall or disease-specific survival were not modified by tract-level poverty, individual household income, or race/ethnicity.

Conclusion: There was no association between census tract-level income inequality and CRC survival in our study. Our results suggest that the association may be confounded or even mediated by disparities in stage at diagnosis.

C069 All-cancer and cancer-specific mortality is associated with black race segregation in the United States: Mortality Disparities in American Communities data.  
Cara L. Frankenfeld1, Jahn K. Hakes2, Timothy F. Leslie1, George Mason University, Fairfax, VA, 1United States Census, Suitland, MD.

The objective was to evaluate all-cancer and cancer-specific mortality in relation to residential racial segregation in all individuals and specifically for black individuals. The Mortality Disparities in American Communities (MDAC) study is a record linkage of the nationally representative American Community Survey (ACS) with the National Death
POSTER SESSION C

Index (NDI). Census county-level segregation estimates were calculated for exposure (isolation and interaction) and evenness (dissimilarity) for black race as minority and non-Hispanic white as majority populations. Age-adjusted mortality rates (per 100,000) were calculated for quintiles, and p-trend was calculated using quintile as continuous covariate in parametric survival regression models. Due to small numbers (black deaths<400) in other cancers, only colon, rectum, and anus (ICD C18-C21); pancreas (ICD C25); respiratory (trachea, lung, and bronchus) (ICD C33-C34); breast (ICD C50); and prostate (ICD C61) were evaluated. There were >4,300,000 individuals, representing 31,400,000 days at-risk. In all individuals, there were >69,500 deaths from all malignant neoplasms (ICD C00-C97) (age-adjusted mortality rate in all: 159.6; in black individuals: 181.9). In all individuals, mortality from all malignant neoplasms was significantly associated with interaction (Q1: 168.5 to Q5: 154.1, p<0.01) and isolation (Q1: 137.9 to Q5: 172.7, p<0.001). In black individuals, similar associations were observed for interaction (Q1: 199.0 to Q5: 142.1, p<0.05) and isolation (Q1: 127.8 to Q5: 199.5, p<0.001), and dissimilarity was also significantly associated (Q1: 174.3 to Q5: 205.5, p<0.01).

In cancer-specific analyses, dissimilarity was positively associated with pancreatic cancer mortality in all individuals (p<0.05) and respiratory cancer mortality in black individuals (p<0.01). Interaction was inversely associated with mortality from pancreatic cancer (p<0.01), respiratory (p<0.001), and breast cancer (p<0.05) in all individuals, but not associated with specific cancers in black individuals. Isolation was positively associated with mortality from pancreatic cancer (p<0.001); respiratory (p<0.05); and, breast cancer (p<0.001) in all individuals, and positively associated with respiratory (p<0.05) in black individuals. Small numbers of cancer-specific deaths and not having the ability to adjust for key health behaviors were limitations. However, a strength was the ability to look at the role of individual-level race and geographic-level segregation, and results suggest that residential segregation measures are associated with cancer mortality, and impact on black individuals shares some similarity to the overall population associations, but dissimilarity may have more adverse associations for black individuals. Additional work is needed to evaluate other dimensions of residential segregation, evaluate other races, and understand the cancer-related characteristics of these geographic areas to help inform mechanisms.

C070 Social determinants of health disparities in triple-negative breast cancer in Louisiana. Fokhunl Hossain1, Denise Danos1, Aubrey Gilliland2, Claudia Leonardi2, Tekeda Ferguson2, Neal Simonsen1, Qingzhao Yu2, Om Prakesh1.

Richard Scribner2, Lucio Miele1, 1Louisiana State University Health Sciences Center (LSUHSC), and Louisiana Cancer Research Center (LCRC), New Orleans, LA, 2LSUHSC, School of Public Health, New Orleans, LA.

Introduction: Triple-negative breast cancer (TNBC) is an aggressive, heterogeneous subtype of breast cancer. TNBC patients have generally high risk of recurrence and metastasis, and treatment options remain limited, as there are no effective targeted therapies available. In USA, TNBC is diagnosed disproportionately more frequently in African American (AA) women than in European American (EA) women. We set out to investigate the role of social determinants in racial disparities in TNBC.

Methods: TNBC patients diagnosed in Louisiana from 2010-2012 were identified from the Louisiana Tumor Registry. Patients were geocoded to census tract of residence at time of diagnosis. Census tract population and socioeconomic measures were obtained from the US Census American Community Survey. We used multilevel statistical models to analyze the role of neighborhood concentrated disadvantage index (CDI), a robust measure of physical and social environment, in racial disparities in TNBC incidence, stage at diagnosis, and stage-specific survival for the study population. CDI scores were calculated according to the PhenX Toolkit protocol.

Results: We identified 1,216 women with TNBC for the study. Controlling for age, we found that AA women had a 2.21-fold risk of TNBC incidence compared to EA in Louisiana. Results from multivariate analyses indicated that the incidence of TNBC was independent of neighborhood CDI, as was the racial disparity. However, CDI did explain existing racial disparities in both stage at diagnosis and stage-specific survival. The odds of diagnosis at later stages were 42% higher for black women. A single standard deviation increase in CDI increased the hazard of breast cancer-related death by 19%. Overall, our results suggest that the increased incidence of TNBC in black women is independent of CDI, while neighborhood environment has a greater impact than race on the promotion and progression of the disease. The socioeconomic disadvantage experienced by black women coupled with increased biologic risk for TNBC contribute to the large racial disparity in breast cancer mortality in Louisiana. Further research is needed to determine the mechanisms through which social determinants affect the promotion and progression of this disease and guide efforts to improve overall survival.

Purpose: Renal cell carcinoma (RCC) is a rare but severe and aggressive pediatric malignancy. While incidence is uncommon, survival is relatively low with respect to acute lymphocytic leukemia and Wilms’ tumor. The incidence of RCC and mortality vary by health variance indicators, namely sex, race, and age. However, data are unavailable on some RCC determinants, such as area of residence. We aimed to assess the temporal trends and survival in pediatric RCC (pRCC).

Methods: A retrospective cohort design was utilized to examine the event-free survival of children (0-19 years) with RCC using the Surveillance Epidemiology and End Result Data, 1973-2015. While the time-dependent variable, namely survival in months, was utilized, we assessed the predictors of survival, namely sex, age at diagnosis, education, insurance status, income, and tumor grade. In examining the joint effect of area of residence and race, as an exposure function with time, we used the Cox proportional hazard model, while the annual percent change was assessed using a generalized linear model.

Results: Between 1973-2015, there were 174 cases of pRCC, of whom 49 died (28.2%). RCC cumulative incidence tends to increase with advancing age and males (10-14) indicating a 1.6% change between 2000-2015. With respect to area of residence, mortality was higher in urban (46.7%) relative to metropolitan (26.4%). Relative to whites (17.2%), mortality was higher among blacks (47.0%). A sizable survival difference was observed with blacks relative to whites. Compared to whites, blacks were almost three times as likely to die, Hazard Ratio (HR) = 2.90, 95% Confidence Interval (CI) = 1.56-5.31. Survival was associated with sex, with males 21% more likely to die (HR = 1.21, 95% CI 0.69-2.11). Similarly, there was a nexus with age at tumor diagnosis and survival. Although imprecise, children ages 1-4, 5-9, and 10-14 were 72%, 50%, and 21%, respectively, less likely to die compared to children ages 15-19. Tumor grade, education, and income were prognostic in survival, although imprecise. The conjoint effect of area of residence and race illustrated excess risk of dying in urban relative to metropolitan areas. In the metropolitan area, the risk of dying was almost 3 times higher for blacks compared to whites (HR = 2.78, 95% CI 1.45-5.43); in urban areas there was more black survival disadvantage, HR = 4.18, 95% CI 0.84-20.80. After controlling for age, sex, education, and insurance, the risk of dying increased among blacks with RCC in metropolitan areas, a-HR = 3.37, 99% CI 1.35-8.44. Similarly, in the urban areas, after adjustment for age, sex, and insurance, there was an increased risk of dying for blacks compared to whites, a-HR = 8.87, 99% CI 2.77-281.0.

Conclusion: Pediatric RCC indicated an increased trend in males and age of diagnosis between 10-14, as well as survival disadvantage of black children. Additionally, area of residence significantly influenced racial differences in mortality.


Background: Breast cancer is the most commonly diagnosed noncutaneous cancer and the second leading cause of death from cancer among women in the United States. Breast cancer is a heterogeneous disease and subtypes defined by hormone-receptor (HR) and HER2Neu status have distinct etiologic and prognostic profiles. African American women are more likely than White women to be diagnosed with HR-/HER2-, or triple-negative, breast cancer (TNBC), which is more aggressive and has a higher fatality rate than HR+ subtypes, including Luminal A. Determinants of racial disparities in breast cancer subtype are poorly understood. African Americans have historically been, and continue to be, subjected to institutionalized discrimination. Such discrimination, including housing discrimination, may contribute to breast cancer disparities, particularly, higher rates of TNBC among African American women. The aim of this study was to characterize the association between racial bias in mortgage lending and race- and subtype-specific breast cancer incidence rates in California.

Methods: We merged data from the California Cancer Registry on all women aged 20+ diagnosed with primary breast cancer between 2006-2015 with census tract characteristics where cases reside at time of diagnosis, including a new racial bias index, generated using data from the Home Mortgage Disclosure Act, 2007-2013. Racial bias was operationalized as the odds of a mortgage application denial for a Black applicant as compared to a White applicant, adjusting for individual sex, and the ratio
POSTER SESSION C

of the loan amount to the applicant's gross annual income. We classified census tracts with an average Black-White mortgage denial OR>2.5 as "high anti-Black bias." Using Poisson regression with generalized estimating equations, we estimated the association between anti-Black bias and race-, age-, and subtype-specific breast cancer case counts, with population size as offset, and adjusting for census tract average age, socioeconomic status, racial composition, and residential stability.

Results: We identified n=104,716 cases of Luminal A breast cancer and n=14,238 cases of TNBC over the study period. Among White—but not African American—women, living in a census tract with high anti-Black bias was positively associated with incidence of Luminal A breast cancer (IRR=1.05, 95% CI=1.03, 1.07). This association was only slightly attenuated after adjusting for tract-level demographics (IRR=1.02, 95% CI=1.01, 1.04). No association was found between anti-Black bias and TNBC among either racial group (White IRR=1.00, 95% CI=0.96, 1.03; Black IRR=1.00, 95% CI=0.93, 1.01).

Conclusion: Among White women, living in communities with high levels of anti-Black housing discrimination may be associated with increased risk of Luminal A breast cancer. Future research into the psychosocial and/or material mechanisms underpinning this association is warranted.

C073 Do Latinas with breast cancer who live in ethnic enclaves have better or worse survival? Analysis of cancer registry data from California and Texas. Salma Shariff-Marco1, Scarlett Lin Gomez2, Alison Canchola3, Hannah Fullington1, Amy E. Hughes4, Sandi L. Pruitt5. 1University of California San Francisco, San Francisco, CA, 2University of Texas Southwestern Medical Center, Dallas, TX.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR14) of the Conference Proceedings.

C074 Areca (betel) nut chewing and metabolic conditions. Yvette C. Paulino1, Alisha N. Yamanaka1, Patrick F.P. Sotto1, Grazyna Badowski1, Lynne R. Wilkens2, Brenda Y. Hernandez2, 1University of Guam, Mangilao, Guam, 2University of Hawaii Cancer Center, Honolulu, HI.

Oral cancer is the most widely studied health outcome linked to areca (betel) nut chewing, or mastication of the Areca catechu fruit or seed often combined with slaked lime, tobacco, and the Piper betle (leaf). A growing area of research is the influence of betel nut chewing on metabolic conditions. To investigate betel nut chewing and metabolic conditions, including obesity and related health characteristics, a cross-sectional study of 122 adults was conducted in Guam between July 2013 and October 2014. Information on demographics, medical history, dietary intake and betel nut use was collected. Height and weight measurements were collected to calculate body mass index or BMI (weight in kg/height in m²) as an indicator of weight status. Waist was also measured to calculate waist-to-height ratio as an indicator of health risk status. Health characteristics were compared across the three chewing groups: 64 current betel nut chewers, 37 former betel nut chewers, and 21 non-betel nut chewers. Strong evidence of differences by betel nut exposure were seen by ethnicity (predominantly Chamorros across all chewing groups), BMI (predominantly obese among former betel nut chewers), waist-to-height ratio (predominantly high risk among current and former betel nut chewers), history of self-reported stroke (predominant among former betel nut chewers), and alcohol consumption (highest number of drinks among current betel nut chewers). The evidence of poor metabolic conditions seen among current betel nut chewers supports the need for a comprehensive approach to betel nut prevention strategies, to include the prevention of oral cancer and metabolic conditions. The evidence of poor metabolic conditions seen among former betel nut chewers warrants additional advanced study designs to rule out temporal ambiguity, and to further investigate any health implications of betel nut cessation.

C075 Indoor radon exposure and thyroid cancer incidence among Guam residents. Candice S. Arceo1, Grazyna Badowsk1i, Gary R.W. Denton1, Renata Bordallo2. 1University of Guam, Mangilao, Guam, 2Guam Cancer Research Center, Mangilao, Guam.

The natural radioactive decay of radon (²²²Rn) gas gives rise to many products that release ionizing radiation, proven to be harmful to human health. Perhaps the best-known source of radiation that has been linked to thyroid cancer (TC) is the chronic inhalation of radon gas. Indoor ²²²Rn levels in Guam have been documented to be as high as 220 picocuries per liter (pCi/L), exponentially higher than the United States Environmental Protection Agency (USEPA) baseline standard of just 4 pCi/L. Thyroid cancer is the fifth common cancer in women on Guam and Filipinos had the highest thyroid cancer incidence rates compared to other ethnic groups in Guam. The objective of this study is to determine whether there is
an association between thyroid cancer incidence, geographic location (village/zone), ethnicity, and amount of indoor radon exposure in Guam. The data sets used in this ecological study came from three major independent data collecting sources: Guam Environmental Protection Agency (GEPA) indoor $^{222}$Rn data (2002-2009), Guam Cancer Registry thyroid cancer incidence data (1998-2013), and Guam Census 2000 and 2010 demographic data. Simple linear regression analysis was performed to determine the relationship between mean indoor $^{222}$Rn levels and thyroid cancer incidence in Guam villages. Multiple regression analysis was conducted to account for the confounding effects of ethnicity (% Filipino), and zone. Results indicated that radon in Guam was found to be highest in Zone 1, the geographic villages situated atop a limestone plateau in the northern region where approximately 66% of Guam residents and over 90% of Filipinos live. In both univariate and ethnicity-adjusted regression analysis, a significant positive association was found between mean $^{222}$Rn level and thyroid cancer incidence ($P = .024$, and $P = .048$, respectively). When univariate and multiple regression analysis was conducted on the two GEPA $^{222}$Rn zone strata (Zone 1 and Zone 2/3), the relationship remained positive but not statistically significant. The positive correlation between mean $^{222}$Rn levels and thyroid cancer incidence suggested that more exposed individuals have increased susceptibility to cancer and possibly explained higher rate among Filipinos.


Purpose: Hepatocellular carcinoma (HCC) is an aggressive tumor with a median survival of 6-20 months at diagnosis. There is significant racial/ethnic variation in the incidence of HCC in the United States with highest incidence in Asians or Pacific Islanders (7.8 per 100,000 persons), followed by African Americans (4.2 per 100,000), Native Americans (3.2 per 100,000), and whites (2.6 per 100,000). However, racial/ethnic variations in clinical presentation, surgical procedures and treatment outcomes among HCC patients is unknown. Hence, we examined racial/ethnic disparities in pretreatment, treatment and post-treatment stages of hospitalized HCC patients in the United States using National Inpatient Sample (NIS).

Methods: This study was a cross-sectional analysis of NIS 2010-2014. Multivariate logistic regression analyses were used to examine the risk adjusted association between race/ethnicity and the pretreatment, treatment and post-treatment stages. Pretreatment outcomes were stage of disease (metastatic versus nonmetastatic) and Elixhauser comorbidity index ($\leq 4$ versus $> 4$). Treatments included surgical procedures (surgery done versus not done) like major hepatectomy, hepatic wedge resection, liver ablation, and liver transplantation. Post-treatment outcomes were postoperative complications (yes versus no) and in-hospital mortality (died versus did not die). All outcomes were identified using ICD-9-CM diagnosis and procedure codes.

Results: A total of 71,739 weighted HCC hospitalizations were reported during the period 2010-2014. Majority of the participants were whites (57.9), followed by African Americans (17%), Hispanic (15.7%), Asian or Pacific Islanders (8.7%) and Native Americans (0.6%). Compared to whites, African Americans (adjusted odds ratio [aOR], 1.26; 95% confidence interval [CI], 1.13-1.42), Hispanic (aOR, 1.12; 95% CI, 1.01-1.27), and Native Americans (aOR, 1.82; 95% CI, 1.16-2.86) were more likely to have comorbidities. There were no significant association between race/ethnicity and stage of the disease. Compared to whites, African Americans (aOR, 0.63; 95% CI, 0.54-0.73), Hispanic (aOR, 0.70; 95% CI, 0.59-0.83), and Native Americans (aOR, 0.47; 95% CI, 0.24-0.93) were less likely to receive surgical procedures. Compared to whites, African-Americans were more likely to develop postoperative complications (aOR, 1.67; 95% CI, 1.52-1.88) and in-hospital mortality (aOR, 1.22; 95% CI, 1.03-1.43). Asian or Pacific Islander were more likely to have in-hospital mortality (aOR, 1.24; 95% CI, 1.01-1.52).

Conclusions: Our study found that, after controlling for potential confounders, there were significant racial/ethnic disparities in pretreatment presentation, surgical procedure allocation, and post-treatment outcomes among patients with HCC. Further studies are needed to find the underlying factors for these disparities and interventions to reduce these gaps.

C077 The association between diabetes, plasma fructosamine, and risk of mortality after invasive breast cancer among Hispanic and non-Hispanic white women. Avonne E. Connor1, Kala Visvanathan1, Stephanie D. Boone2, Kathy B. Baumgartner1, Richard N. Baumgartner1, Johns Hopkins Bloomberg School of Public Health and Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD, 1University of Louisville and the James Graham Brown Cancer Center, Louisville, KY.
**Background:** Epidemiologic studies primarily conducted in non-Hispanic white (NHW) women have found that elevated insulin levels, hyperinsulinemia, and chronic hyperglycemia (measured by hemoglobin Alc) are associated with poor prognosis in women diagnosed with breast cancer (BC). Only one study to date has included US Hispanic women, in whom diabetes is highly prevalent.

**Objective:** We examined the associations between plasma fructosamine, a biomarker of hyperglycemia and glycemic control, self-reported diabetes, and risk of BC-specific and all-cause mortality among Hispanic and NHW women diagnosed with BC (stages I-IIla) from the New Mexico Health, Eating, Activity, and Lifestyle (HEAL) Study.

**Methods:** A total of 399 BC survivors (96 Hispanic, 303 NHW) contributed baseline data and plasma samples. Hazard ratios (HR) and 95% confidence intervals (CI) were calculated using multivariable Cox proportional hazards regression models. Models were adjusted for age at diagnosis, ethnicity, body size, education, BC stage and treatment.

**Results:** After a median follow-up time of 13 years from baseline interview to death, a total of 134 deaths occurred, of which 56 deaths were attributed to BC. Approximately 38% of women with diabetes had clinically high fructosamine (> 285 µmol/L). While more Hispanic women had diabetes (11.5%) compared to NHW women (7.6%), significant differences by ethnicity for fructosamine levels were not observed (Hispanic mean= 236 µmol/L; NHW mean=238 µmol/L). Hispanics, however, had larger body size measures at baseline interview compared to NHW survivors. Diabetes was associated with increased BC mortality (HR, 2.89; 95% CI 1.27-6.60) and all-cause mortality (HR, 2.10; 95% CI 1.24-3.55). As a continuous measure, fructosamine was positively associated with BC-specific mortality (p=0.01) and with all-cause mortality, independent of diabetes history (p=0.001). Associations were strongest among women with clinically high fructosamine levels (BC: HR, 4.25; 95% CI 1.67-10.80; all-cause: HR, 2.32; 95% CI 1.30-4.14) compared to women with normal levels (≤285 µmol/L). Significant statistical interactions for associations by ethnicity were not observed.

**Conclusions:** Our findings suggest that diabetes and fructosamine are significantly associated with increased risk of BC-specific and all-cause mortality among Hispanic and NHW women with invasive BC, even >10 years post diagnosis. Interventions to reduce BC mortality among ethnically diverse BC survivors should also consider methods to improve glycemic control among women with diabetes.

**C078 Relations between sleep and inflammation in African American and White young adults: Testing mediating and moderating mechanisms.** Stacey N. Doan, Thomas E. Fuller-Rowell, Daniel B. Schmolze, Victoria Seewaldt. 'City of Hope Medical Center and Claremont McKenna College, Claremont, CA, 'Auburn University, Auburn, AL, 'City of Hope Medical Center, Duarte, CA.

In this study, we examined the relations between sleep and inflammation in a sample of African American (AA) and White young adults. Immune activity has a broad impact on tumor initiation, growth and progression, which are thought to be mediated by proinflammatory cytokines, among which the protumorigenic function of interleukin 6 (II-6) is well established (Grivennikov & Karin, 2011). A range of health behaviors is associated with increased II-6 levels (Duivis et al., 2011). Of particular interest is the association between sleep and IL-6 levels in AAs and Whites, given recent work suggesting that racial differences in sleep may contribute to disparities in health (Curtis et al., 2017). Research examining ethnic health disparities has suggested the possibility that stigmatized minority groups may be more susceptible to the consequences of biologic dysregulation and accelerated physiologic aging due to differential exposure to adversity (Hogue, 2002). A few studies have investigated this Weathering Hypothesis by studying the associations among inflammatory biomarkers and a range of psychological and health factors (Geronimus, Hicken, Keen & Bound, 2006), with some studies demonstrating relations between inflammatory biomarkers and outcomes in AAs, but not Whites (Blair, Porter, Lebleicioglu, & Christian, 2015; Slopen, Lewis, Gruenewald, Mujahid, Ryff, Albert & Williams, 2010; Christian, Glaser, Porter and Iams, 2013). Another alternative model is that disparities in specific health behaviors may lead to potential group differences in IL-6 levels. The analytic sample for this study comprised 133 college students (mean age 18.8 years, SD 0.9; 41% AA, 57% female). IL-6 was assessed by enzyme-linked immunosorbent assay with a detection range of 0.16 to 10.0 pg/ml. Participants reported on sleep using the Pittsburgh Sleep Inventory. We tested both mediation and moderation models. Results suggest significant group differences in sleep, but not in IL-6 levels. AAs reported significantly worse sleep (M = 4.3, SD = 3.6) as compared to Whites (M = 3.6, SD = 1.88). Additionally, results were consistent with our hypothesis that poor sleep would be associated with higher levels of IL-6 for AAs, but not for Whites. Specifically, using bootstrapping to test for moderation, we found that the interaction between sleep and race was significant (B = .08, SE = .02, p = .001, CI [.13, .38]). In particular, for AAs, elevated IL-6 was associated with more sleep problems (B = .05, SE = .02, p = .003, CI [.02, .09]).
substantive finding held even after controlling for a range of demographic variables and health behaviors. Our results provide support for the idea that AAs are more susceptible to the consequences of behavioral dysregulation.

**C079 The burden of cancer among homeless adults in the Mountain West: A Utah statewide population-based study.**  
Andrea A. Holowaty1, Lisa M. Pappas2, Kimberly Herget1, Macy Barrios2, Caroline Himbert1, Marjorie Carter2, Jennifer A. Doherty4, Carol Sweeney1, Cornelia M. Ulrich1. 1Huntsman Cancer Institute, University of Utah, Salt Lake City, UT, 2Huntsman Cancer Institute, Salt Lake City, UT, 3Utah Cancer Registry, University of Utah, Salt Lake City, UT, 4Huntsman Cancer Institute, Utah Cancer Registry, University of Utah, Salt Lake City, UT.

**Background:** The population of homeless individuals is at high risk of death from various causes due to lifestyle and behaviors. We and others have previously shown that cancer is a leading cause of death among homeless individuals in metropolitan Detroit, Philadelphia, and Boston. However, the burden of cancer among homeless adults has not been investigated in the Mountain West region of the United States. We assessed the epidemiology of cancer among adults who were homeless at cancer diagnosis in the state of Utah.

**Patients and Methods:** Using data from the Utah Cancer Registry, a population-based cancer registry and founding member of the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) program, homeless adults (aged 20+ years) were identified through Utah address at cancer diagnosis listed as a homeless shelter, hospital, city park, or supplemental field indicating homelessness between 1973 and 2015. Clinicopathologic, demographic, and geographic characteristics were examined. Age-adjusted, sex-specific proportional incidence ratios (PIRs) compared site-specific cancer incidence in homeless adults to cancer incidence in the entire adult Utah (referent) population. Examination of disparities in overall survival among homeless persons compared to a propensity-score matched referent group, and by Utah geographical regions (rural vs urban areas), is currently under way.

**Results:** 241 individuals were identified as homeless at first primary cancer diagnosis. Homeless individuals were diagnosed with cancer in 14 Utah counties state-wide, with over one-third (34.9%) of cases diagnosed outside of the largest urban county, Salt Lake County. Based on death certificate information, 61.0% of deaths among homeless adults with cancer were coded as disease specific. Homeless men showed an excess of 158% in incidence of respiratory system cancers compared to men in the referent population with cancer (PIR 2.58, 95% CI 1.93-3.45). Proportionally, an excess of 300% in melanoma incidence (PIR 4.00, 95% CI 2.95-5.42) was noted among homeless women compared to the referent female population diagnosed with cancer.

**Conclusions:** Our study is the first to conduct a statewide investigation to define the presentation of cancer and patterns of cancer incidence among homeless adults in Utah. The statistically significant increase in proportional incidence of cancers of the respiratory system among homeless men may be partially attributed to the culture of tobacco use and increased smoking uptake around homeless shelters. A higher proportion of melanoma among homeless women compared to the referent female population may be partly accounted for by known skin cancer risk factors, including excess sun exposure and high elevation. The leading cause of death among homeless cancer patients in Utah was reported as disease related. Together, these insights emphasize the importance of establishing prevention and intervention strategies to improve the health of homeless persons.

**C080 Contributors to breast and lung cancer disparities in Wisconsin: Results from statewide focus groups and interviews.**  
Jose Salazar2, Jessica Olson2, Tobi Cawthra2, Melinda Stolley2, Sandra Milton-Underwood2, Kirsten Beyer2, David Fraser2, Lyle Ignace2, Laura Pinsoneault2, Alonzo Walker2, Carol Williams2, Cheryl Maurana3. 1Sixteenth Street Community Health Centers, Milwaukee, WI, 2Medical College of Wisconsin, Milwaukee, WI, 3Advancing a Healthier Wisconsin Endowment, Milwaukee, WI, 4University of Wisconsin-Madison, Madison, WI, 5University of Wisconsin-Madison, Madison, WI, 6Gerald L. Ignace Indian Health Center, Milwaukee, WI, 7Spark Policy Institute, Denver, CO.

**Background:** Despite advances in breast and lung cancer research, racial and geographic disparities persist in Wisconsin. The Wisconsin Cancer Reporting System indicates that disparities in lung cancer mortality rates, as well as breast cancer incidence and mortality between black and white populations, have significantly worsened in the past decade. Root causes for these cancer-related health disparities are complex and multifactorial and require innovative approaches to be resolved. A comprehensive understanding of the unique contributors to breast and lung cancer disparities in the state of Wisconsin is required.
POSTER SESSION C

C081 Results from a cross-sector collaboration: Understanding contributors to breast and lung cancer disparities and creating novel approaches to reduce impact.

Melinda R. Stolley1, Tobi Anne Cawthra2, Jessica Olson1, Sandra Millon-Underwood4, Kirsten Beyer1, David Fraser4, Lyle Ignace2, Laura Pinsoneault4, Jose Salazar2, Alonzo Walker1, Carol Williams6, Cheryl Maurana4, 1Medical College of Wisconsin, Milwaukee, WI, 2Advancing a Healthier Wisconsin Endowment, Milwaukee, WI, 3University of Wisconsin-Milwaukee, Milwaukee, WI, 4Center for Urban Population Health, Milwaukee, WI, 5Gerald L. Ignace Indian Health Center, Milwaukee, WI, 6Spark Policy Institute, Denver, CO, 7Sixteenth Street Community Health Center, Milwaukee, WI.

Background: Advances in prevention, detection, and treatment of breast and lung cancer have decreased incidence and mortality rates but have not benefited all populations equally. In Wisconsin, the disparity in lung cancer mortality rates between Black and White residents is the second largest in the nation, and disparities in breast cancer incidence have significantly worsened in the past decade. To address the complex etiology behind these disparities, the Advancing a Healthier Wisconsin Endowment assembled a racially and ethnically diverse multidisciplinary team to inform efforts to reduce cancer disparities in Wisconsin.

Methods: Our panel of eight experts, along with a program facilitator, met biweekly for 15 months. Members had broad expertise in diverse communities, public health, behavioral science, health geography, molecular biology and clinical care. The team had not previously collaborated together. The team’s objectives were to (1) gain a contextualized understanding of the molecular, genetic, socioeconomic, and behavioral factors contributing to cancer disparities, as well as barriers and promoters to these discoveries; (2) identify relevant issues on which to focus future efforts; and (3) facilitate the creation of collaborative work groups to develop and implement innovative strategies to address cancer disparities statewide.

Results: At the conclusion, team efforts included: (1) creating statewide maps reflecting breast and lung cancer incidence, late-stage diagnosis, and mortality, as well as potential socioeconomic contributors to disparities; (2) reviewing literature on efforts reducing cancer disparities; (3) completing a root cause analysis of cultural, socioeconomic, and genetic contributors; (4) identifying and assessing focused topics for further study; and (5) designing a comprehensive framework to guide the work of collaborative, cross-sector teams on prioritized topics. An additional and notable result was feedback from team members that participation in the group challenged them to reimagine cross-disciplinary collaboration and consider how to engage diverse backgrounds and perspectives in future cancer-disparities work.

Conclusions and Future Directions: The resulting topics and framework will direct the funding and formation of collaborative, cross-sector work groups to (1) think beyond their expertise; (2) create, adapt, or adopt collaborative strategies for addressing complex health problems; and (3)
POSTER SESSION C

develop, test, and evaluate initiatives to address breast and lung cancer disparities in incidence, late-stage diagnosis, and mortality.

C082 Prenatal exposure to polycyclic aromatic hydrocarbons and altered DNA methylation in breast cancer-related genes. Nur Zeinomar1, Hui-Chen Wu1, Xinran Ma1, Julie B. Herbstman1, Frederica P. Perera2, Rachel L. Miller2, Mary Beth Terry2, 1Columbia University Mailman School of Public Health, New York, NY, 2Columbia University, New York, NY.

Background/Purpose: Minority populations, particularly young African American women, bear a disproportionate burden of more aggressive breast cancer subtypes. These racial/ethnic disparities can be partially explained by the distribution of risk factors, including urban environmental exposures. Polycyclic aromatic hydrocarbons (PAH) are widespread carcinogenic and hormonally active environmental contaminants with disproportionately high exposure in urban low income and/or communities of racial and ethnic minorities. In our Columbia’s Children Center for Environmental Health (CCCEH) birth cohort, prenatal PAH exposure has been associated with lower global DNA methylation in umbilical cord white blood cells (WBC). We extend this work to examine whether prenatal PAH exposure is associated with altered WBC DNA methylation in genes associated with breast cancer risk, including DNA repair, growth, and age at menarche.

Methods: CCCEH enrolled nonsmoking African-American and Dominican pregnant women in New York City between 1998 and 2006 and followed their children through 9 years of age. We measured levels of PAH exposure through two primary sources: 1) prospective maternal personal air monitoring in the third trimester of pregnancy, and 2) PAH-DNA adducts measured in maternal blood at delivery and umbilical cord blood. We examined differences in WBC DNA methylation of 21 candidate genes in 223 girls ages 7-9 years by prenatal PAH exposure using targeted massively parallel bisulfite sequencing. For each amplicon, we used multivariable linear regression models to assess the association of DNA methylation and the three measures of prenatal PAH exposure. We adjusted all models for age and race/ethnicity and tested for confounding by socioeconomic and reproductive variables and having a smoker in the house prenatally and at year 7 or 9. The sum levels of airborne PAH were analyzed as a log-transformed continuous variable (n=223). PAH-DNA adducts in maternal (n=185) and cord blood (n=115) were categorized as below the limit of detection (reference), and above and below the median in those with detectible adducts.

Results: We found significantly different methylation levels by ethnicity in five candidate genes; we did not observe varied methylation by girls’ age or BMI at the time of blood collection. We observed evidence of decreased methylation in DNA repair gene BRCA1 (∆ = -2.3, p-value 0.06) with increasing airborne PAH levels. For cord blood PAH-DNA adducts, compared to those with non-detectable adducts, we observed decreased methylation in an imprinted gene associated with breast cancer and body weight regulation, H19 (∆ = -6.5, p-value 0.001) in girls with the highest level of detectable adducts (above the median in those with detectible adducts).

Conclusions: Preliminary findings from this urban cohort suggest that measures of prenatal exposure to PAH may result in altered methylation in genes related to breast cancer risk and body weight in young girls.

C083 Investigating the determinants of racial disparities in ovarian cancer incidence: The OCWAA consortium. Veronica Wendy Setiawan1, Lauren Peres2, Lynn Rosenberg3, Traci Bethea1, Patricia Moorman4, Evan Myers5, Anna Wu6, Charlotte Josi6n, Elisa Bandera7, Deanna Chyn1, Fabian Camacho2, Joellen Schildkraut2, 1University of Southern California, Los Angeles, CA, 2University of Virginia, Charlottesville, VA, 3Boston University, Boston, MA, 4Duke University Medical Center, Durham, NC, 5Duke University School of Medicine, Durham, NC, 6University of Illinois at Chicago, Chicago, IL, 7Rutgers Cancer Institute of New Jersey, New Brunswick, NJ.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR16) of the Conference Proceedings.

C084 Cancer mortality patterns across three generations of Latinos in the US: The Multiethnic Cohort. Veronica Wendy Setiawan1, Mariana Stern1, Unhee Lim2, David Conti3, Christopher Haiman4, Kristine Monroe5, 1University of Southern California, Los Angeles, CA, 2University of Hawaii Cancer Center, Honolulu, HI.

Background: Latinos are the largest minority group in the United States. To provide better understanding of the influence of acculturation and environmental factors on cancer risks in Latinos, we examined cancer mortality patterns across 1st-generation (1°) immigrants, and 2nd (2nd)
and 3rd-generation (3rd) US-born Mexican Americans in the Multiethnic Cohort Study (MEC).

Methods: A total of 29,308 Latinos of Mexican origin aged 45-74 at cohort entry (1993-1996) were included in this analysis. Latino generations included 41% 1st Mexico-born immigrants, 28% 2nd US-born with both parents Mexico-born, 14% 2nd US-born with one parent US-born and one parent Mexico-born, and 17% 3rd US-born with both parents US-born. Age-adjusted death rates were estimated across Latino generation. Cox models were used to estimate the relative risk (RR) and 95% confidence intervals (CI) for cancer mortality associated with generation, adjusted for risk factors for cancer mortality (e.g., obesity, smoking history, alcohol intake) at cohort baseline.

Results: During an average follow up of 17.7 years, 2,915 cancer deaths were identified. The highest cancer death rate (per 100,000) was observed among 3rd US-born (age-adjusted rate=537), followed by 2nd with one parent US-born (526), 2nd with both parents Mexico-born (481) and lowest among 1st immigrants (381). After adjusting for education, lifestyle factors and preexisting illnesses, Latino generation was associated with cancer mortality risk (P trend=0.0001). The risk for 3rd US-born, 2nd one parent US-born, and 2nd both parents Mexico-born was significantly higher compared to 1st immigrants (RR=1.37 (95% CI: 1.21-1.54), 1.27 (1.12-1.44), and 1.20 (1.08-1.33), respectively). Restricting analyses to the MEC-Medicare enrollees, for whom we have data indicating they are living in the US and eligible for national health insurance coverage, yielded similar results. In specific cancer site analyses, there were associations between generation with lung (P trend=0.014), colorectal (P trend=0.004), liver (P trend=0.006) and possibly breast cancer (P trend=0.053). The risks of lung (RR=1.46 (1.09-1.97)), colorectal (RR=1.95 (1.28-2.95)) and liver cancer (RR=1.87 (1.22-2.85)) deaths were significantly higher among the 3rd US-born compared to 1st Mexico-born immigrants. The risks of prostate, stomach, and pancreatic cancers were similar across generations.

Conclusions: In the MEC, Latinos experience an increase in lung, colorectal, liver, and possibly breast cancer mortality with increasing generation, indicating acculturation and environmental influences on these cancers. Identification of the contributing risk factors is important to reverse the trends of increasing mortality across offspring generations of Latinos living in the US.


Background: Pancreatic cancer is a leading cause of cancer death in the United States. Racial/ethnic disparities in pancreatic cancer incidence exist, with African Americans experiencing the highest incidence. Little is known about incidence and temporal trends in other minorities, especially in Asian Americans, heterogeneous populations that are the fastest-growing minority in US. To better understand pancreatic cancer burden, we examined pancreatic cancer incidence patterns and temporal trends among detailed racial/ethnic populations, including Asian-American subgroups.

Methods: We identified a total of 97,665 invasive pancreatic cancer cases (ICD-O-3: C25.0-C25.9) using the California Cancer Registry diagnoses between 1988 and 2015. Cases were grouped into mutually exclusive major racial/ethnic groups of non-Hispanic (NH) white, NH black, Hispanic, NH Asian/Pacific Islander (API), and NH American Indian/Alaska Native (AIAN). Asians were further identified by ethnicity of Chinese, Filipino, Japanese, Korean, Vietnamese, other Southeast Asian, and South Asian. Age-adjusted incidence rates (AAIRs per 100,000) by race/ethnicity and time period were calculated. The average annual percent changes (AAPC) in incidence rates between 1988 and 2015 were estimated using Joinpoint Regression.

Results: The AAIRs of pancreatic cancer varied significantly across the aggregated racial/ethnic groups. The AAIRs ranged from the highest of 16.0 (95% CI: 15.6 to 16.4) in NH blacks to 11.5 (95% CI: 11.5 to 11.6) in NH whites, 10.7 (95% CI: 10.5 to 10.8) in Hispanics, 9.2 (95% CI: 9.0 to 9.4) in NH APIs, and to the lowest of 8.0 (95% CI: 7.2 to 8.9) in NH AIAN. Despite the relatively low rate in the NH APIs, the rates across Asian subgroups varied significantly, with rates as high as NH whites observed in Japanese (AAIR: 11.5; 95% CI: 10.9 to 12.1) and Korean (AAIR: 11.0; 95% CI: 10.3 to 11.7) to the low rate in South Asians (AAIR: 6.6; 95% CI: 5.9 to 7.4). A small but significant decline in pancreatic cancer incidence rates was observed among NH blacks (AAPC: -0.5; 95% CI: -0.8 to -0.2). NH AIANs experienced the most sizable and significant surge in pancreatic cancer incidence (AAPC: 4.5; 95% CI: 2.4 to 6.6), followed by South Asians (AAPC: 2.4; 95% CI: 0.3 to 4.5), Koreans (AAPC: 1.6; 95% CI: 0.5 to 2.7), and NH whites (AAPC: 0.4; 95% CI: 0.2 to 0.6).
Conclusions: Our findings provide the most updated trends in pancreatic cancer incidence across multiple and disaggregated racial/ethnic groups in California. We showed significant heterogeneity of pancreatic cancer incidence in Asian Americans, with high-risk Japanese and Korean populations. These results fill a gap regarding pancreatic cancer burden in Asian Americans and underscore the importance of disaggregating ethnic populations in cancer research.

C086 Racial disparities in clinical characteristics and outcomes of patients with pancreatic neoplasms: An eleven-year analysis of the National Cancer Database (NCDB). Hussein Assi, Michael Machiorlatti, Sara Vesely, Vipul Pareek, Hassan Hatoum, Sarbajit Mukherjee. University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Background: Pancreatic neoplasms consist of exocrine, endocrine and benign tumors. Exocrine pancreatic cancer is the fourth leading cause of cancer-related death in the US. Racial disparities in incidence, diagnosis, treatment, and outcomes have been evaluated in different types of tumors, but the data on pancreatic neoplasms is lacking. Our aim is to evaluate the racial disparities in clinical characteristics and survival of patients with pancreatic neoplasms.

Methods: Using the National Cancer Database (NCDB), we identified 340,780 patients diagnosed with a pancreatic neoplasm between 2004 and 2015. Simple descriptive statistics were created for all covariates. Chi-square analysis was used to examine the distribution of demographic and clinicopathologic variables among different races. Survival analysis was done on patients with either death dates or follow-up dates, totaling 305,576 patients. Kaplan Meier survival analysis was used for unadjusted results, and Cox proportional hazards model was used for multivariable analysis. Races were grouped into White, Black, Hispanic, and others. The objective of the study is to assess racial disparities in clinical presentation, and to evaluate whether this influences the outcomes in patients with pancreatic neoplasms.

Results: The median age at diagnosis was 69 (range 18-90) years and 50.6% were males. Carcinoma was the most common histology (81.3%), followed by other histology (9.6%), benign (5.4%) and neuroendocrine (3.7%) tumors. The percent of White, Black, Hispanic, and other race was 74.5, 11.3, 5.0, and 9.1%. Whites presented at more advanced ages compared to Blacks, Hispanics, and others (78.3, 68.6, 69.3, 76.3% were ≥60 years at diagnosis; p<0.0001). Blacks and Hispanics presented more frequently with advanced stage (III and IV) of the disease compared to Whites (54.7, 52.8, 50.9%; p<0.0001). Uninsured patients had a higher risk of death compared to those with insurance, HR=1.11 [95% CI 1.09-1.14]. Patients with lower annual income had a higher hazard of death (one example: <$38,000 vs >$63,000 HR=1.20 [95% CI 1.19-1.22]). Unadjusted analysis showed Blacks had a marginally higher hazard of death than Whites, HR=1.02 [95% CI 1.01-1.03]. However, after adjustment for age, sex, histology, grade, comorbidity score, income, education, and year of diagnosis, Blacks and Hispanics had a slightly better overall survival than Whites, HR=0.96 [95% CI 0.94-0.97] and 0.85 [95% CI 0.84-0.87]. Among patients with treatment information, time to first treatment was significantly longer among Blacks and Hispanics compared to Whites (4.4 and 3.2 days longer on average, p<0.0001).

Conclusion: Our study provides evidence that various disparities exist across different races in pancreatic neoplasms. However, they did not lead to inferior outcomes in minorities. Our findings should be examined in other cohorts where more data about treatment are available.


Background: Estrogen receptor-negative (ERN) breast cancer is an early-stage, more aggressive breast cancer subtype. ERN breast cancer incidence is highest in African American women compared with other races, as well as in southern US regions. However, recent studies have shown that ERN breast cancer incidence is declining for women overall. We sought to understand whether ERN breast cancer is declining similarly in all races, age groups, and SEER registries.

Methods: Data from Surveillance, Epidemiology, and End-Results (SEER) Program 13 registries from 1990-2014, as well as the remaining five SEER 18 registries from 2000-2014, were used to observe ERN breast cancer incidence rates among non-Hispanic white (NHW) and non-Hispanic black (NHB) women by age group (30-39, 40-49, 50-69, 70-84 years). Age-period-cohort modeling was used and extended, allowing for regional heterogeneity by population (i.e. SEER registry), to estimate differences in longitudinal age trends and net drifts by race and SEER registry.
Results: Among all age groups within all SEER 18 registries, ERN breast cancer incidence rates were higher for NHB compared to NHW women. Furthermore, ERN rates have been decreasing for both NHW and NHB women. For the entire SEER population, women ages 40-49 years compared to other age groups demonstrated the fastest declines in ERN breast cancer incidence, with a net drift of -3.5%/year (95% CI: -4.0, -3.1) for NHW women, and -3.1%/year (-3.8, -2.2) for NHB women. Among the youngest women (30-39 years), ERN rates have declined faster in NHB compared to NHW women, with net drifts of -2.7%/year (-3.5, -1.8) and -1.7%/year (-2.2, -1.2), respectively; for all other age groups, rates have declined faster for NHW compared to NHB women. For NHW women of all age groups, there was relatively little between-registry variability in trends, with net drift standard deviations of 0.5%/year (0.02, 1.3) for 30-39 years, 0.8%/year (0.4, 1.2) for 40-49 years, 0.6%/year (0.4, 0.9) for 50-69 years, and 0.7%/year (0.4, 1.1) for 70-84 years. For NHB women, rates have also decreased similarly across registries in the youngest age group (30-39 years), with between-registry net drift standard deviation of 0.4%/year (0.01, 1.5); however, for NHB of all other age groups, there was more between-registry variability with net drift standard deviations of 1.0%/year (0.1, 2.1) for 40-49 years, 1.0%/year (0.4, 1.8) for 50-59 years, and 1.2%/year (0.4, 2.4) for 70-84 years. These standard deviations reflect that ERN rates have been declining more slowly in southern registries (i.e., Greater Georgia, Atlanta, Rural Georgia, and Louisiana) for older NHB women.

Conclusion: Among NHW women, decreases in ERN breast cancer incidence have been similar across age groups and SEER registries. Among NHB women, ERN rates have also been decreasing; however, these decreases vary by age and SEER registry, which may offer etiologic clues. Further investigation is needed to understand which factors are contributing to these trends.


Background: Several studies have suggested that vitamin D may have antiproliferative and anticarcinogenic properties and a protective effect against breast cancer. Alaskan Natives have demonstrated high rates of vitamin D deficiency, particularly in young individuals. Hence, high breast density has been associated with increased breast cancer risk. Therefore, we examined the association between serum vitamin D levels and mammographic breast density in a population of Alaskan Native women.

Methods: Patients seen in the Mayo Clinic-Alaska Native Medical Center telemedicine program from December 2014 to December 2017 were offered to enroll in the study. Consent was obtained by a study coordinator in Minnesota using a telemedicine platform. Participants were asked to complete the Breast Cancer Risk Questionnaire, which includes questions on hormonal, lifestyle factors and family history. Serum vitamin D levels (25-hydroxyvitamin D2 and D3) were obtained and later correlated with mammographic breast density (percent density). Data were summarized with frequencies and percentages or medians and interquartile ranges (IQR), as appropriate. Pearson correlation was used to estimate the association between breast density and vitamin D levels.

Results: 33 women were included; median age was 53 years (IQR 45-58), 70% self-identified as American Indian/Alaskan Native, 12% as White, 6% as Native Hawaiian/Pacific islander and 12% as other. Median BMI was 31 kg/m² (IQR 26.4-34.3), menarche was at age 12 or older for 23 (70%) of the participants and 20 women were postmenopausal at the time enrollment. 10 participants had a hysterectomy, of whom 60% also had oophorectomy. 76% reported history of hormonal birth control use and 23% postmenopausal hormonal supplementation. Median number of pregnancies was 3 (IQR 2-5), and 20 women reported breastfeeding. Fifteen women were current or former smokers (>100 cigarettes) and 19 reported none or low alcohol consumption. Median serum vitamin D level was 39 ng/mL (IQR 30-52) and 9 (27%) women had low vitamin D levels. In regard to breast density, median percentage (average of images) was 15% (IQR 7.5-24.9) with a median dense area of 21.8 cm² (IQR 16.4-24.9). Median time from blood draw to mammogram was 110 days (IQR 41-172) and 19 (58%) participants were taking vitamin D supplementation at the time of study enrollment; doses ranged from 400 to 50,000 units. No correlation was identified between breast density and serum vitamin D levels (correlation=0.02).

Conclusion: In this cohort, no association between serum vitamin D levels and breast density was observed. More than half of the participants were on vitamin D supplementation and this could have obscured our observations. Larger studies controlling for vitamin supplementation are needed, as this association could potentially impact breast cancer rates in populations at risk for vitamin D deficiency.
C089 Racial/ethnic differences in smoking-related cancers in metropolitan Detroit. Juliana E. Fucinari1, Julie J. Ruterbusch1, Katie M. Zarins1, Laura S. Rozek1, Kendra L. Schwartz2. 1University of Michigan, Ann Arbor, MI, 2Wayne State University, Detroit, MI.

Metropolitan Detroit has a unique population structure, home to one of the highest concentrations of Arab Americans. Due to differences in prevalence of smoking between ethnic groups, we calculated incidence of smoking-related cancers among Arab Americans, Hispanics, non-Hispanic Whites and non-Hispanic Blacks in the metropolitan Detroit area. All first primary lung/bronchus, urinary bladder, and head and neck cancer cases diagnosed 2004-2015 were obtained from the Detroit Surveillance, Epidemiology, and End Results (SEER) Program from 2004-2015. Arab/Chaldean surname cases were identified using a validated name algorithm resulting in five different racial/ethnic categories: non-Arab non-Hispanic Whites (NANHW), non-Arab non-Hispanic Blacks (NANHB), Arab American (ArA), Hispanics, and Other Ethnicities. Frequency tables were created to analyze distribution of stage, cancer site, age group, and sex between ethnic groups. Using Integrated Public Use Microdata Series (IPUMS), population estimates for the 11-year period were generated for each ethnic group. Age-standardized incidence rates were calculated using the 2000 US Standard Million for each group of cancer sites (lung/bronchus, head/neck [HNC], and bladder) for each ethnic group. Rate ratios (RR) and 95% confidence intervals were calculated using International Association for Research on Cancer (IARC) Statistical methods for registries and NANHW as the reference group. From 2004-2015, there were 60,366 cases of smoking-related cancer reported to SEER, 1,346 of which were diagnosed in ArA. Among males, NANHB were more likely to be diagnosed with lung cancer over this time period (NANHB vs NANHW RR=1.23 95% CI (1.17, 1.30)). ArA and Hispanic males had significantly lower rates than NANHW (RR=0.81 95% CI (0.72, 0.90) and 0.66 (0.58, 0.76), respectively). NANHW, NANHB, and Hispanic males had similar HNC rates (Hispanic RR=0.84 95% CI (0.63, 1.12) and NANHB RR=1.15 (1.03, 1.29) vs NANHW). Arab males had a significantly lower rate of HNC compared to NANHW (RR=0.67 95% CI (0.53, 0.83)). NANHW and Arab males had similar rates of bladder cancer (RR=1.13 95% CI (0.98, 1.31)). NANH and Hispanic males had significantly lower rates of bladder cancer compared to NANHW (RR=0.49 95% CI (0.45, 0.52) and 0.51 (0.43, 0.61), respectively). Similar patterns emerged among females for both lung and bladder cancers. Females also had similar rates of HNC comparing NANHW and NANHB (RR=1.09 95% CI (0.89, 1.32)), but in contrast to males, Arab women had a marginally lower rate of HNC (RR=0.75 CI (0.49, 1.17)), and Hispanic women had a significantly lower rate of HNC (RR=0.55 95% CI (0.35, 0.86)). We report previously observed differences in lung and bladder cancer and identify novel differences in HNC among subgroups in metropolitan Detroit. Our future analyses will expand to other registries in the US with significant ArA populations. Analyses should be attentive to ArA as a population subgroup, which will define research questions specific to this unique population.

C090 Association between hypertension and prostate cancer risk in black and white men in the Atherosclerosis Risk in Communities (ARIC) study. Wanmei Wang1, Eldrin Bhanat1, Kenneth R. Butler1, Corinne E. Joshu2, Thomas H. Mosley1, Elizabeth A. Platz2, Christian R. Gomez1. 1University of Mississippi Medical Center, Jackson, MS, 2Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Jackson, MS.

Background: A diagnosis of hypertension (HTN) has been reported to be associated with an increased risk of total and aggressive prostate cancer (PCa) in some studies. In this study, we evaluated the association between HTN and total and lethal PCa in African-American (AA) and Caucasian-American (CA) men. Given that AA men are disproportionately burdened by both HTN and PCa, especially aggressive disease, we hypothesized that the positive association between HTN and total and lethal PCa is stronger in AA than CA men. We alternatively hypothesized that the positive association between HTN and PCa is the same in AA and CA men, but the higher HTN prevalence in AA men results in a greater PCa burden in AA men.

Methods: We studied 1,590 AA men and 5,094 CA men from the Atherosclerosis Risk in Communities (ARIC) study without a history of cancer at the first study visit (1987-1989) and who were followed through 2012. HTN was defined based on clinic-measured systolic and diastolic blood pressure and self-reported use of antihypertensive drugs at Visit 1. First primary total PCa (N=266 in AA men, 565 in CA men) and lethal PCa (metastatic at baseline or progressed to death from prostate cancer, N=39 in AA men, 59 in CA men) were ascertained by cancer registry linkage, medical records, and death certificates. We used Cox proportional hazards regression to estimate the hazard ratios (HRs) and 95% confidence intervals (CIs) of total and lethal PCa comparing CA men with HTN, AA men without HTN, and AA men with HTN to CA men without HTN. We adjusted for age, education, and purported risk factors including body mass index, waist to hip ratio, smoking, physical activity, diabetes, cholesterol-lowering medication use, and aspirin use.
Results: AA men had a higher prevalence of HTN (54.6%) than CA men (28.6%) at baseline. Compared with CA men without HTN, CA men with HTN had a higher risk of total PCa (HR=1.23, 95% CI=1.01-1.49, p=0.040), and as expected, AA men without HTN had an elevated PCa risk (HR=2.41, 95% CI=1.94-3.01, p<0.001), but AA men with HTN had a similarly elevated PCa risk (HR=2.41, 95% CI=1.93-3.01, p<0.001). Patterns were similar for lethal PCa (versus CA men without HTN, CA men with HTN - HR=1.48, 95% CI=0.83-2.63, p=0.183, AA men without HTN - HR=3.27, 95% CI=1.79-5.95, p<0.001, AA men with HTN - HR=2.49, 95% CI=1.31-4.73, p=0.005).

Conclusions: Our prospective findings support some prior studies that HTN is associated with an increased risk of total and possibly lethal PCa in CA men. Counter to our hypothesis, HTN was not associated with total or lethal PCa in AA men.

Support: NHLBI, NCI, NPCR, UMMC Office of Research.

C091 Racial disparities in pancreatic cancer pancreatic cancer patients in Florida and an investigation into a possible role of cancer cachexia. Patrick Underwood, Miles Cameron, Ashley Clark Daly, Tracey Barnett, Clement Gwede, Anthony Magliocco, Barbara Centeno, Dung-Tsa Chen, Jung Choi, Daniel Jeong, Robert Gillies, Mokenge Malafa, Andrew Judge, Nipun Merchant, Jennifer Permutth, Jose Trevino, University of Florida, Gainesville, FL, Moffitt Cancer Center, Tampa, FL, University of Miami, Miami, FL.

Background: Five-year survival for pancreatic cancer remains low at 8%. While pancreatic cancer health disparities exist among different racial groups, these disparities have not been well investigated in the State of Florida. We aimed to investigate these disparities and hypothesized that cancer cachexia may play a role.

Methods: A retrospective review of data from the Florida Cancer Data System and Florida Agency for Healthcare administration was performed to assess for PC disparities between racial groups in the State of Florida. A cohort of patients at a single center was analyzed for differences in cachexia indicators such as psoas muscle index (PSI) and albumin at presentation.

Results: African Americans (AA) had significantly higher mean age-adjusted PC incidence (12.5/100,000) and mortality rates (10.97/100,000) than NHW (incidence=11.2/100,000; mortality=10.3/100,000) and Hispanics (incidence=9.6/100,000; mortality=8.7/100,000). Of the 67 counties in the State of Florida, 43 (64.2%) observed higher PC incidence rates in AA than NHW and Hispanics. AA are often diagnosed with PC at a younger age than NHW. AA and Hispanics are more likely to be insured by Medicaid compared to NHW (16% and 14% vs 7%, respectively) and less likely to undergo surgical treatment for their condition (31% vs. 37%). AA present with significantly lower serum albumin levels (3.2 vs. 3.7 g/dL). Serum albumin levels < 3.5 correlated with significantly lower survival. When compared to healthy controls presenting for cholecystectomy, AA patients present with a more significant reduction in psoas muscle index compared to Caucasians.

Conclusion: African-Americans with PC have higher incidence rates and mortality than their NHW and Hispanics counterparts. AA are also younger at age of diagnosis, more likely to be insured by Medicaid, and less likely to undergo potential curative surgical treatment for PC. We demonstrated that AA had significantly lower albumin levels and that this correlated with worse survival. AA also present with a significantly greater reduction in psoas muscle index when compared to healthy controls. Further investigation into potential reasons for this disparity in cancer cachexia is warranted.

C092 Immune characteristics of triple-negative breast cancer (TNBC) in Latin American women from Colombia. Valentina A. Zavala, Laura C. Carrasquilla, Silvia J. Serrano-Gomez, Maria C. Sanabria-Salas, Melody C. Baddoo, Jone Garai, Jovanny Zabaleta, Laura Fejerman, University of California San Francisco, San Francisco, CA, Louisiana State University Health Sciences Center, New Orleans, LA, Instituto Nacional de Cancerologia, Bogota, Colombia, Tulane University Cancer Center, New Orleans, LA.

Background: Triple-negative breast cancer (TNBC) is an aggressive form of the disease with limited treatment options and poor survival. A series of retrospective studies established the presence of tumor-infiltrating lymphocytes (TILs) in most primary breast cancers, the number of which affect the response rate to chemotherapy in both neoadjuvant and adjuvant treatment contexts. A subset of TNBC is highly immunogenic, and recent studies have shown that understanding the specific immune profiles of tumors has implications both for treatment and prognosis. Most studies have been conducted in samples of women of European origin, and little is known about the immune profile of TNBCs in Hispanic/Latinas. The specific goal of our study was to test the association between immune characteristics of TNBC from Colombian patients and genetic ancestry proportions, to determine if genetic ancestry could be a
POSTER SESSION C

relevant factor in defining the immune characteristics of TNBC.

Methods: We obtained 41 TNBC tissues through collaboration with the National Cancer Institute in Colombia along with demographic and clinical information. Genetic ancestry was estimated with a panel of 106 ancestry informative markers and the program STRUCTURE. RNA was extracted from FFPE tissues, qualified using Agilent chips, and used for sequencing at the Translational Genomics Core at the Stanley S. Scott Cancer Center. Using the TNBCTYPE program we confirmed 33 samples as TNBC. The program xCell was used for cell-signature identification based on RNAseq data. We explored associations between genetic ancestry and scores obtained for different immune cell-types and an overall immune score using linear regression. We analyzed the association for the following specific cells: Th1 cells, Th2 cells, Treg, CD4 T cells, CD4 TEM, CD4 memory T cells, CD8 T cells, CD8 TCM, CD8 TEM, CD8 naive T cells, macrophages, macrophages M1, macrophages M2, and mast cells.

Results: The overall immune score was positively associated with the proportion of African ancestry (p=0.049). Interestingly, we observed that Indigenous American ancestry was inversely associated with the Treg cell score while African ancestry was positively associated with it. Levels of these regulatory cells have been correlated with prognosis in ER- and triple-negative disease. We also found that CD4 T cell and CD4 memory T-cell scores were positively associated with African ancestry (P=0.006 and P=0.049 respectively).

Conclusions: Our results suggest that genetic ancestry among Latina women from Colombia is associated with certain immune characteristics of breast cancer. We need to further test these associations in a larger sample to confirm the findings, obtain additional insights, and understand their implications for TNBC treatment and prognosis among Latin American women.

C093 An interactive resource to probe ancestry in cancer cell lines. Zhihua Chen1, Alvaro N. Monteiro1, Jamie K. Teen1, Steven Eschrich1, Julie Dutill2, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL, 1Ponce Research Institute, Ponce Health Sciences University, Ponce, PR.

Recent work has pointed to a lack of diversity in genomics studies from genome-wide association studies to somatic (tumor) genome analyses. Yet, population-specific variation has been shown to contribute to health disparities in cancer risk and prognosis. Immortalized cancer cell lines have been widely used for various aspects of cancer research from mechanistic studies to drug screening. More recently, larger collections of cancer cell lines have been developed with the objective of better representing the genomic heterogeneity found in primary tumors. The genetic ancestral origin of cancer cell line models is rarely acknowledged and often unknown. Genome-wide genotyping data (Affymetrix SNP6.0 array) was obtained for 1,393 cancer cell lines from the Catalogue of Somatic Mutations in Cancer (COSMIC) and Cancer Cell Line Encyclopedia (CCLE) collections. Clustering of the cell lines in relation to reference populations of the 1000 Genomes project was visualized using t-Distributed Stochastic Neighbor Embedding (t-SNE) plots. Ancestry proportions constituting each cell line were estimated using the program Admixture. For over 46% of the cell lines analyzed, ethnicity has not been reported in public databases. The ancestral origins of the cell lines, as measured by genetic markers, were distributed as follows: European 58.1%, East Asian 28.8%, African 1.4%, South Asian <1%, mixed ancestry 11.4%. We also noticed several inaccuracies when comparing reported ethnicity to the ancestry observed from genomic data. Of the 44 cell lines reported as African or Black, 27.0% showed diverse degrees of admixture, with a European component reaching up to 37.5%. Inversely, a proportion of the cell lines reported as Caucasian or white did include admixed cell lines with strong African genetic contribution (up to 86.8%), while others showed patterns of admixture similar to Hispanic populations. Furthermore, we present an interactive online tool, Cell Line Estimated Ancestry Resource (CLEAR), where ancestry can be visualized in relation to reference populations of the 1000 Genomes project. Our data indicate that the collection of cell lines commonly used in cancer research is not representative of the diverse ancestry and admixture characterizing human populations. In addition, we demonstrate that the reported information on ethnicity contains inaccuracies and rarely acknowledges the mixed origins of their genetic background. These observations are likely to impact the reproducibility of studies relying on those models and the relevance of the findings to diverse populations.

C094 The mediating role of unmet social support needs on the racial/ethnic disparity in psychosocial stress among breast cancer patients. Carola T. Sánchez Díaz, Garth H. Rauscher, Yamile Molina. University of Illinois at Chicago, Chicago, IL.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR17) of the Conference Proceedings.
C095 A quality review and content analysis of mobile applications for smoking cessation. *Jeoma Ibe*1, Antonio Laracuente1, Samantha Joseph2, Jinhai Huo1, Ramzi Salloum1. 1University of Florida, Gainesville, FL, 2Florida Agricultural and Mechanical University, Gainesville, FL.

**Introduction:** Mobile applications (apps) for smoking cessation promise to increase access to and uptake of smoking cessation services. However, limited information exists on the quality and content of available apps in this category. The purpose of this review was to evaluate the quality and content of free smoking-cessation mobile apps and examine whether they adhered to US Public Health Service Guideline for treating tobacco use and dependence.

**Methods:** A purposive sample of 180 apps was downloaded from the App Store (Apple) and the Google Play Store in January 2018. The top-ranking 30 apps were retrieved for 3 smoking cessation-related search terms (“smoking cessation,” “quit smoking,” “stop smoking”) from the App Store and Google Play. Two reviewers independently coded each app. The technical quality of the included apps was rated using the Mobile Application Rating Scale (MARS), which includes five domains: Engagement (fun, interesting, customizable), Functionality (easy to learn, navigation), Aesthetics (graphic design, overall visual appeal), and Information (e.g., text, feedback, measures, references). Apps were also reviewed for other technical characteristics (e.g., allows sharing, app community, and password protection), behavioral change strategies (e.g., assessment, feedback) and whether they adhered to the US Public Health Service’s 5As (i.e., Ask, Advise, Assess, Assist, and Arrange).

**Results:** After removing duplicates and apps that were not free to download, 69 apps were identified for full review (41 from the App Store and 28 from the Google Play Store). Across these apps, the average score for MARS was 14.0/19, distributed as follows: Engagement (2.8/5), Functionality (4/5), Aesthetics (4/5), and Information (3/5). Among the 69 included apps, 45 allowed sharing, 15 allowed for an app community, and 6 required a password. The following features were included as follows: assessment (52), feedback (44), information/education (46), monitoring (52), and goal setting (28). The 5As features were included as follows: Ask (44), Advise (2), Assess (2), Assist (2), and Arrange (0).

**Conclusions:** Given the growing availability of smoking-cession apps as potential cessation aides, future efforts should focus on improving the technical quality of these apps and the adherence to evidence-based guidelines for treating tobacco use and dependence.

C096 Ethnic differences of chronic obstructive pulmonary disease (COPD) in the Multiethnic Cohort study. *Sunghim L. Park*1, Iona Cheng2, Anna H. Wu2, Jackie Porcel2, Lynne R. Wilkens3, Loic Le Marchand3, V. Wendy Setiawan1. 1University of Southern California, Los Angeles, CA, 2University of California, San Francisco, San Francisco, CA, 3University of Hawaii Cancer Center, Honolulu, HI.

**Background:** We have reported previously in the Multiethnic Cohort study (MEC) that the incidence of lung cancer varies across races/ethnicities. Compared to whites, for the same number of cigarettes smoke, African Americans and Native Hawaiians have a higher risk of lung cancer, whereas Latinos and Japanese Americans have a lower risk of disease. Chronic obstructive pulmonary disease (COPD) is a well-established risk factor for lung cancer. The differences in COPD risk across populations while accounting for known risk factors have not been evaluated.

**Methods:** Using data from the MEC, restricted to participants enrolled in Medicare fee-for-service program (n=120,607), we investigated the association of known risk factors with risk of COPD across five racial/ethnic populations, including age, sex, education, BMI, physical activity, marital status, asthma, smoking history, ethnic-specific smoking cessation rates, and occupational exposures, mutually adjusting for the other variables. Stratified analyses were conducted by smoking status.

**Results:** A total of 24,730 COPD cases were identified in the MEC between 1999 and 2014. Compared to whites, African Americans and Native Hawaiians had an 8% lower risk of COPD risk (RRs=0.92; 95% CI: 0.87-0.97 for African Americans and 95% CI: 0.86-0.97 for Native Hawaiians). Risk was found to be even lower in Latinos (RR=0.85; 95% CI: 0.79-0.88) and Japanese Americans (RR=0.68; 95% CI: 0.65-0.70). While the overall order of risk correlated with self-reported quantity of cigarettes smoked, disaggregation by smoking status revealed underlying ethnic disparities (p-heterogeneity<0.001). In current smokers (n=4,610), after adjusting for age, sex, education, BMI, physical activity, marital status, asthma, and occupational exposures, COPD risk was lower in Native Hawaiians (RR=0.78; 95% CI: 0.7-0.88), Japanese Americans (RR=0.63; 95% CI: 0.58-0.69) and Latinos (RR=0.69; 95% CI: 0.62-0.77) compared to whites and no difference was found in African Americans (RR=0.96; 95% CI: 0.86-1.06). Among former smokers (n=8,715), after adjusting for the same variables, compared to whites, African Americans (RR=0.89; 95% CI: 0.82-0.96), Japanese Americans (RR=0.69; 95% CI: 0.65-0.73) and Latinos (RR=0.83; 95% CI: 0.77-0.89) had a lower risk of COPD; no difference in risk was found for Native Hawaiians (RR=0.97; Heterogeneity p<0.001).
POSTER SESSION C

95% CI: 0.89-1.07). Among never smokers (n=6,972), when compared to whites, only Japanese Americans had a lower risk of disease (RR=0.71; 95% CI: 0.66-0.76). African Americans (RR=0.93; 95% CI: 0.84-1.01), Native Hawaiians (RR=0.96; 95% CI: 0.86-1.08) and Latinos (RR=0.95; 95% CI: 0.87-1.03) were all found to have a similar COPD risk as whites.

Conclusions: Our findings demonstrate that the racial/ethnic patterns for COPD risk are not consistent with those observed with lung cancer risk. Reasons for these differences are being investigated. Also, our findings suggest that the disparities in COPD risk may be different by smoking status.


The transsexual, transgender, and gender nonbinary population has unique cancer prevention and care needs. How are we addressing this population’s needs at present? How can we do better? Are we adequately screening for prostate cancer in this population? Are we adequately screening for ovarian and uterine cancer in this population? How about breast cancer? This poster will present the results of a survey of care happening at present, along with suggestions on how to do better from the patient perspective.


Background: BCL-2 is an antiapoptotic protein that regulates apoptosis and has been associated with poor prognosis for many cancer sites. Despite a function that encourages tumorigenesis, increased BCL-2 expression has been associated with improved clinical outcomes in ER+ breast cancers, with mixed results observed for ER/PR- cancers. BCL-2 has been hypothesized to be an indicator of intact and fully functioning hormone receptor pathways and has also been hypothesized to facilitate cell death after treatment through mitochondrial priming. BCL-2 expression correlates strongly with hormone receptor expression; therefore, its association with better prognosis may be due to the strong effect ER/PR status has on survival, or due to its own biologic mechanism. To date, no studies have been conducted on racial differences in BCL-2 expression. We characterized racial/ethnic differences in BCL-2 expression and the association of BCL-2 expression with breast cancer specific survival among participants in the Breast Cancer Care in Chicago Study (BCCC).

Methods: The BCCC was a cross-sectional study of 989 recently diagnosed non-Latina (nL) White, nL Black and Latina breast cancer patients diagnosed with a first primary breast cancer aged 30-79 in Chicago from 2005-2008. Tumor tissue was available for BCL-2 immunohistochemical staining for 264 patients. BCL-2 staining scores of 0 were classified as negative and all positive scores (1D, 1H, 2D, 2H, and 3) were classified as positive. Cox proportional hazards models were conducted to estimate the association of BCL-2 expression with breast cancer-specific death.

Results: Roughly three-fourths of tumors (77%) stained positive for BCL. The prevalence of positive BCL staining varied by race/ethnicity (p=0.007), being highest for nL Whites (87%) and lowest for nL Blacks (68%); variability in BCL staining appeared to be limited to ER/PR-negative tumors (N=53), for which prevalence of positive BCL staining appeared to be much higher for nL whites than for minority patients (44% vs. 16%, p=0.054). BCL-2 expression was associated with a strong protective effect on BC survival in age and race-adjusted models (HR=0.40, 95% CI: 0.19, 0.84) and BCL-2 expression remained strongly positively associated with protection from breast cancer death with additional adjustment for ER/PR status (HR=0.33, 95% CI: 0.12, 0.89). Within subgroups defined by ER/PR status, BCL2 expression was qualitatively associated with better survival for both ER/PR positive and ER/PR negative subtypes, although sample size was insufficient to conduct a formal stratified analysis.

Conclusions: BCL-2 appears to be an independent predictor of improved prognosis for breast cancer even after controlling for ER/PR status. The apparently higher prevalence of BCL2 expression for nL White vs. nL Black patients may provide etiologic clues regarding disparities in BC survival.

C099 Assessment of black/white differences in all-cause mortality among patients with triple-negative breast cancer. Adrienne Cobb, Abigail Silva, Shelly Lo, Alexandrina Balaneanu, Department of Surgery, Loyola University Medical Center, Maywood, IL, Department of Public Health Sciences, Loyola University Chicago, Maywood, IL, Stritch School of Medicine, Loyola University Chicago, Maywood, IL.

Roughly three-fourths of tumors (77%) stained positive for BCL. The prevalence of positive BCL staining varied by race/ethnicity (p=0.007), being highest for nL Whites (87%) and lowest for nL Blacks (68%); variability in BCL staining appeared to be limited to ER/PR-negative tumors (N=53), for which prevalence of positive BCL staining appeared to be much higher for nL whites than for minority patients (44% vs. 16%, p=0.054). BCL-2 expression was associated with a strong protective effect on BC survival in age and race-adjusted models (HR=0.40, 95% CI: 0.19, 0.84) and BCL-2 expression remained strongly positively associated with protection from breast cancer death with additional adjustment for ER/PR status (HR=0.33, 95% CI: 0.12, 0.89). Within subgroups defined by ER/PR status, BCL2 expression was qualitatively associated with better survival for both ER/PR positive and ER/PR negative subtypes, although sample size was insufficient to conduct a formal stratified analysis.

Conclusions: BCL-2 appears to be an independent predictor of improved prognosis for breast cancer even after controlling for ER/PR status. The apparently higher prevalence of BCL2 expression for nL White vs. nL Black patients may provide etiologic clues regarding disparities in BC survival.
C100 Identification and functional characterization of a novel GLI1 splice variant in breast cancer. Maria S. Dixon1, Lhoucine Chdid2, David R. Lamson1, Michael T. Tarpley1, Helen O. Oladapo1, Jodie M. Fleming1, Jennifer A. Freedman2, Gayathri R. Devi1, Kevin P. Williams1. North Carolina Central University, Durham, NC, 1Duke University, Durham, NC.

The purpose of this study is to investigate the biologic significance of novel GLI1 splice variants in breast cancer. African American (AA) women suffer a disproportionately high burden of basal-like breast cancer, an aggressive subtype that has not targeted therapy (1). About 15-20% of breast cancers are triple-negative/basal-like, are associated with poor clinical outcomes and show disproportionately higher prevalence in younger women of African descent (2-4). The Hedgehog (Hh)/GLI1 developmental pathway has emerged as a therapeutic target in many cancers, including breast cancer studies from our lab (5, 6). Overexpression of the main Hh transcriptional mediator GLI1, correlates with poor patient prognosis and relapse. The human GLI1 transcript undergoes alternative splicing producing two shorter isoforms, an N-terminal deletion variant (GLI1ΔN) (7) and a truncated GLI1 (tGLI1) (8), which have been reported to have different patterns of tissue expression and function. tGLI1 has been identified as being highly expressed in several cancers, including in breast cancer (9). We performed in silico analysis of the NCBI database for evidence of additional human GLI1 transcripts and identified a novel GLI1 splice variant, GLI1-X2, that has an in-frame deletion of the entire exon 10-zinc finger 5 domain of the GLI1 gene. Our preliminary data show that GLI1-X2 is expressed in basal-like breast cancers at substantially higher levels than GLI1, tGLI1, or GLI1ΔN. To our knowledge, we are the first to demonstrate expression of GLI1-X2 in any model and our findings expand the GLI1 family of zinc finger transcription factors. Our objectives are to examine the expression differences of the GLI1 splice variants in basal-like and luminal breast cancer cell models, AA and White patient samples and to investigate the biologic function of GLI1-X2 in breast cancer. Previous studies report that GLI1ΔN and tGLI1 proteins retain intact functional zinc finger domains. Thus, we hypothesize that the loss of zinc-finger 5 is critical for GLI1-X2's functional role and regulation of downstream target genes in breast cancer. As the biologic significance of GLI1-X2 in normal and cancer biology is unknown, this proposed work is the first to characterize its function and potential role in cancer.
Background: Racial disparities in breast cancer outcomes appear to be widening in the US despite multiple advancements in breast cancer (BC) management. Although BC incidence rates are similar between European-American (EA) and African American (AA) women in the US, striking differences exist in age-adjusted mortality rates. Moreover, AAs only represent 5-10% of BC clinical trials is the US, and there is a dearth of studies that stratify outcomes by race. Unfortunately, there is no reliable way to identify AA BC patients at high risk of poor outcomes, which would require more aggressive treatment. In this study, we aimed to develop a prognostic model for AA women that will allow for a deeper segmentation and an accurate patient stratification into high and low risk subgroups to aid clinical decision making.

Methods: We obtained protein data from The Cancer Proteome Atlas (TCPA) dataset, which consists of reverse phase protein array (RPPA) expression levels of 224 proteins measured from BC TCGA cohort. Protein expression information were available for a total of 754 BC patients (134 AA and 620 EA). Sequential forward selection alongside cross-validation was used to select proteins, fit into a random forest model, based on their combined accuracy in predicting patient prognosis. Models were evaluated on the combined cross-validation test sets either univariately through the Kaplan-Meier log-rank test or via multivariate analysis after adjusting for stage, age, and positive lymph nodes through Cox regression model.

Results: The selection process resulted in combination of four proteins that optimized prognostic prediction: bcl2-like protein (BAX), Inositol polyphosphate-4-phosphatase, type II (INPP4B), X-ray repair cross-complementing protein I (XRCC1) and Cleaved Poly (ADP-ribose) polymerase (c-PARP). Alone, these proteins did not have significant prognostic value in AA BC patients (BAX (HR=0.676, p=0.6276), INPP4B (HR=0.9935, p=0.9772), XRCC1(HR=0.2613, p=0.1455), c-PARP (HR=0.6375, p=0.6186)); within random forest, these variables were able to stratify high-risk group patients with 86% accuracy and Hazard Ratio (HR) of 5 (p <0.001). The model retained its significant prognostic ability (HR=10.741, p=0.0006) when controlling for clinicopathologic variables like stage, age, and positive lymph nodes. Finally, we retrained our model to risk stratify BC patients in the EA cohort; the magnitude of risk stratification was very low (HR=1.33) compared to AA cohort, confirming its prognostic role specifically in AA BC patients.

Conclusions: Based on statistical modeling and ML-based approaches, our data show that assessment of expression of a quartet of biomarkers—BAX, XRCC1, INPP4B and c-PARP—can be used to robustly stratify AA BC patients into high- and low-risk categories. We believe our model plays an important prognostic role in AA BC patients and could inform clinicians to prioritize AA patients for appropriate clinical trials and also help patients make decisions about enrolling in such trials.

C102 Prognostic role of androgen receptor in triple-negative breast cancer: A global multi-institutional experience. Shristi Bhattarai1, Sergey Klimov1, Karuna Mittal1, Uma Krishnamurthi2, Xiaoxian Bill Li3, Deepika Walli4, Ceyda Sonmez Wetherill5, Ansa Riaz5, Mohammad A. Aleskandarany6, Andrew R. Green7, Ian O. Ellis8, Meenakshi Gupta9, Lauren E. McCullough10, Upender Manne11, Johnson Agboola12, Brett Baskovich13, Emiel A. Janssens13, Grace Callagy14, Anuraq Mehta15, Tanuja Shet16, Rakha A. Emad17, Padmeshree C.G. Rida1, Ritu Aneja1. 1Department of Biology, Georgia State University, Atlanta, GA, 2Department of Pathology, Emory University School of Medicine, Atlanta, GA, 3Department of Pathology and Laboratory Medicine, Emory University School of Medicine, Atlanta, GA, 4Division of Cancer and Stem Cells, School of Medicine, University of Nottingham and Nottingham University Hospitals NHS Trust, City Hospital Campus, Nottingham, United Kingdom, 5Department of Pathology, West Georgia Medical Center, LaGrange, GA, 6Department of Epidemiology, Rollins School of Public Health, Emory University, Atlanta, GA, 7University of Alabama at Birmingham, Birmingham, AL, 8Obalisi Onabanjo University, Sagamu, Nigeria, 9University of South Alabama College of Medicine, Mobile, AL, 10Stavanger University Hospital, Stavanger, Norway, 11NUI Galway, Clinical Science Institute, Galway, Ireland, 12Rajiv Gandhi Cancer Institute and Research Centre, Delhi, India, 13Tata Memorial Hospital, Mumbai, India.

This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR18) of the Conference Proceedings.


Triple-negative breast cancer (TNBC)—defined as estrogen
receptor- (ER), progesterone receptor- (PR), and human epidermal growth factor receptor 2- (HER2) negative—is a highly aggressive form of breast cancer prevalent in African-American (AA) women. Current treatment strategies rely on cytotoxic chemotherapy because ER- and HER2-targeted therapies are ineffective in TNBC, leaving a tremendous need for new effective therapies with less toxicity. Nuclear receptors are highly druggable targets. Classical examples include ligand-regulated receptors like ER, but there is opportunity for orphan nuclear receptors (ONR) to be studied as potential targets for cancer therapy. Our lab has published that increased mRNA expression of ONR estrogen-related receptor beta (ERRβ, gene symbol ESRRB) correlates with better recurrence- and distant metastasis-free survival in women with TNBC/basal-like breast cancer. We also showed that treatment with a small-molecule agonist ligand for ERRβ (DY131) has growth-inhibitory and antimitotic activity in TNBC cell lines. The goal of our current work is to comprehensively characterize ERRβ copy number, mRNA, protein expression, and ERRβ function in TNBC.

ESRRB copy number was determined in 106 primary breast tumors (TNBC n=56, nonTNBC n=50) by Agilent SurePrint G3 Human CGH Microarray in a cohort AA and Caucasian (CA) women. ESRRB mRNA expression was determined in The Cancer Genome Atlas (TCGA) Breast Cancer RNAseq data. Association of ESRRB mRNA with overall survival was determined in Illumina gene expression array data from METABRIC. ERR protein expression is being assessed by immunohistochemistry (IHC) in a tissue microarray of 150 primary breast tumors (50 TNBC, 50 ER+, 50 HER2+). Ongoing studies are focusing on genetic modification of cell lines, specifically the overexpression of ERRβ in nontransformed mammary epithelial and TNBC cell lines.

DNA: In both TNBC and nonTNBC, AA patients had a markedly higher frequency of ESRRB copy number loss than CA patients (2 * p=0.012 for TNBC, p=0.052 for nonTNBC).

RNA: In TCGA breast cancer patients by PAM50 subtype, TNBC/basal-like patients have significantly lower ESRRB mRNA expression than Luminal A patients (*p=0.0015). Among systemically untreated patients in the METABRIC dataset, low ESRRB mRNA is significantly associated with poor overall survival in TNBC (hazard ratio 0.24, 95% confidence interval 0.07-0.85, *p=0.016).

Protein: Analysis of ERR protein expression by IHC is ongoing.

Function: Focusing on overexpression of ERRβ in cell lines, we aim to analyze multiple phenotypes including cell proliferation, cell invasion and migration, and differential gene expression.

Conclusions: Breast tumors from AA women are significantly more likely to have reduced ESRRB copy number vs. CA women. TNBC patients have lower ESRRB mRNA expression and low ESRRB mRNA expression predicts for poor overall survival in TNBC. These data suggest that ERRβ expression has prognostic value in breast cancer, particularly in TNBC.


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Background: The majority of women with breast cancer from low-income countries, including Ethiopia, present with advanced clinical stage, resulting in limited and difficult therapeutic options and high mortality rates. In Ethiopia 70% of breast cancer cases are hormone receptor (HR) positive. Endocrine therapy is highly recommended as treatment; however, the use and adherence of this therapy is low. Recommendations on interventions to improve the adherence of therapy exist from high-resource settings. One recommendation is to utilize a nurse navigator. Our cluster randomized intervention trial aims to evaluate the effectiveness of placing a trained nurse navigator to administer and organize follow-up visits of patients on tamoxifen in 4 rural hospitals over 12 months (n=60).

Method: A cluster randomized intervention trial is carried out to assess patient adherence, perception of illness and therapy, willingness to initiate therapy, and belief in therapy, comparing 4 interventions to 4 control rural hospitals (each n=60 patients) without intervention. Prior to intervention, all patients in the hospitals will be provided tamoxifen therapy free of charge. The hormone receptor status of the breast cancer specimen will be validated prior to the initiation or throughout therapy. The primary outcome is adherence of endocrine therapy. In addition, a facility-based survey will be conducted to assess patients’ belief and perception of treatment and illness among patients and
providers in the hospitals, to determine the knowledge, lived experience and decision-making processes involved in the initiation of endocrine treatment. The patients’ knowledge of breast cancer, endocrine treatment and their extent of social support will be assessed. The data will be collected retrospectively, survey based and prospective repeated measure based with quantitative and qualitative approach. Analysis will be based on an intention-to-treat principle.

Discussion/Results: The trial aims to answer: Does the nursing intervention improve treatment adherence of endocrine therapy compared to those receiving usual care services? What are the factors associated with adherence to endocrine treatment? What is the patients’ perception of breast cancer, their willingness to initiate therapy, and the extent of social support?

Discussion: These data are essential to maximize the impact of nurse-based intervention on the adherence, knowledge and belief of therapy among breast cancer patients.

Conclusion: The nurse intervention may reduce disparities in health care services and improve outcomes in breast cancer treatment.

Trial registration: Under process of registration.

C105 Late-stage diagnosis of breast cancer and associated factors at rural hospitals in Ethiopia: A mixed-method study. Aragaw Tesfaw1, Sefonias Getachew2, Lesley Taylor1, Eva Johanna Kantelhardt1, Adamu Addisie1. 1Debre Tabor University, Department of Public Health, Debre Tabor, Ethiopia, 2Addis Ababa University, College of Health Sciences, School of Public Health, Addis Ababa, Ethiopia; Institute of Epidemiology, Biometry, and Informatics, Martin-Luther-University, Halle, Germany. 1City of Hope National Cancer Center, Duarte, CA, 4Institute of Epidemiology, Biometry, and Informatics, Martin- Luther-University, Halle, Germany, 6Addis Ababa University, College of Health Sciences, School of Public Health, Addis Ababa, Ethiopia.

Background: A key factor for beneficial breast cancer (BC) outcome is detection at early stage; however, late-stage diagnosis of BC is a common problem in Africa. In Ethiopia the causes for late-stage presentation are not well studied, particularly in rural settings. Thus, the main aim of this study was to assess the magnitude of late-stage diagnosis of BC and its associated factors at six selected public hospitals in south and southwestern Ethiopia, where 80.6% of the population inhabits rural areas.

Methods: A hospital-based retrospective cross-sectional study was conducted from January 2013 to December 2017. A total of 426 BC patients’ records were reviewed. Qualitative data were collected by in-depth interview from purposely selected health care providers and patients. Multiple logistic regression was used to identify factors associated with late-stage diagnosis of BC. P-value <0.05 was used to determine level of significance.

Result: Of the 426 BC patients, 72.5% presented with late-stage disease (stage III and IV). The median age was 42.8 years (+/- 13.4 years). 93.4% of the cases were female. 73% (331/426) patients had longer than 3 months’ delay to treatment. 89.9% of the patients presented with a palpable mass and 42.3% presented with an active wound. Among all, 34.3% were referred to the regional centers by private and public health facilities, thus indicating a previous point of contact with a health care provider. Almost one third (33.8 percent) were diagnosed with Grade III disease. Independent risk factors for late stage of presentation and diagnosis were the patient’s own delay to care (AOR=1.87, 95% CI; 1.04, 3.38); living in a rural area (AOR=2.97, 95%CI; 1.66, 5.34); and delays within the health care system to refer (AOR=2.03, 95%CI; 1.09, 3.78). Females were at more risk than males (AOR=3.75 95%CI; 1.33, 10.54). Patients with breast masses (AOR=4.09, 95%CI; 1.66, 10.11), wounds (AOR=0.41, 95%CI 0.24, 0.72), and Grade III tumor (AOR=2.45, 95%CI; 1.27, 4.73) were also associated to late stage at presentation. The In-depth interview revealed that lack of awareness and knowledge to BC, use of traditional therapy, considering symptoms as “not serious,” and long waiting times to receive care at referred health facilities were the main reasons for late-stage presentation and diagnosis.

Conclusion: The study found that patient delay, rural residence, breast lump and wound, tumor grade, sex and a referral history were factors related to the high proportion of late stage at diagnosis. Hence, there is a need to increase patients’ awareness to prevent delays in diagnosis and to strengthen the capacity of early detection, diagnosis and referrals within the health care system.

C106 Racial/ethnic disparities in inflammatory breast cancer survival in the Michigan Cancer Surveillance Program. Abdi T. Gudina1, Glenn Copeland2, Amr Soliman1, Kelly A. Hirko4. 1Kent State University, Kent, MI, 2Michigan Cancer Surveillance Program, Lansing, MI, 3Medical School of the City University of New York, New York, NY, 4Michigan State University, East Lansing, MI.
**Background:** Inflammatory breast cancer (IBC) is the most aggressive form of breast cancer, largely due to its strong metastatic potential. The lack of a standard case definition for IBC over time, coupled with the fact that IBC is a relatively rare disease, has severely limited our understanding of the disease. While racial disparities in IBC incidence are fairly well documented, with black women having significantly higher IBC rates compared to white women, less is known about whether IBC prognosis differs by race/ethnicity. Therefore, the objective of this study was to utilize a comprehensive case definition of IBC to assess racial/ethnic disparities in survival in the Michigan Cancer Surveillance Program (MCSP) from 1998 to 2014.

**Methods:** Using a comprehensive case definition of IBC, 1,324 IBC patients were identified from women diagnosed with invasive breast cancer in the MCSP between 1998 and 2014 with information on survival time and race/ethnicity (non-Hispanic Black (NHB)=227; non-Hispanic White (NHW)=984; Hispanic =86; other =27). We examined the frequency and percentage of breast cancer cases coded to the various IBC codes in the MCSP registry over the study period. We used age-adjusted and multivariable Cox proportional hazard regression models with age as the underlying time metric to estimate hazard ratios (HR) and 95% confidence interval (CI) for associations of race/ethnicity with all-cause mortality, using NHW women as the reference group.

**Results:** The percentage of all breast cancer cases defined as IBC in the MCSP registry differs considerably across registry codes from 0.03% to 1.2%. We observed significantly higher risk of death among NHB compared with NHW (HR (95% CI), 1.21 (1.01-1.45)), while no significant survival differences were observed between NHW and Hispanics or other racial/ethnic minorities.

**Conclusions:** A comprehensive case definition should be utilized to avoid underestimation of IBC and to better understand this aggressive disease. Further research is needed to identify underlying causes and develop effective interventions to reduce survival disparities in IBC.

**C107 [Advocate Abstract] Intermittent fasting for cancer patients.** Nicole Stromer, Mt. Sinai Breast Cancer and Breast Cancer Options, New York, NY.

When lab mice received chemotherapy and a fasted diet, the immune system was better able to target cancer cells. There is evidence from research that intermittent fasting in any form could slow cancer tumor growth, reduce treatment side effects, boost the immune system and increase survival rates. Intermittent fasting refers to cycles of alternating eating and refraining from eating, or fasting. Some of the different types of intermittent fasting include:

- **24 Fasting......** This type of fasting means not eating at all for 24 hours. This is typically done once or twice a week.
- **The 5:2 Diet......** The 5:2 strategy modifies 24-hour fasting. It involves restricting calories for two 24-hour periods per week. On those two days women eat 500 calories and men 600 calories.
- **The 16/8 Fast......** This strategy involves not eating for 16 hours every day. Most people do this by skipping breakfast, and not eating between 8:00 at night and noon the next day.
- **Calorie Restriction......** Calorie restriction involves reducing calorie intake by 20 to 40% every day for an extended period of time. A guideline would be 1,200 calories per day for women and 1,400 calories per day for men.

**C108 Race and risk of subsequent aggressive breast cancer in women with ductal carcinoma in situ.** Ying Liu, Graham Colditz. Washington University School of Medicine, St. Louis, MO.

**Background:** Ductal carcinoma in situ (DCIS) is a heterogeneous group of preinvasive neoplastic lesions in the breast. Black women with DCIS are more likely than White counterparts to subsequently develop invasive cancer in either breast. We examined the association between race and the risk of developing aggressive invasive breast cancer, characterized with hormone receptor (HR) negativity (both estrogen receptor and progesterone receptor negative) or intermediate-to-high risk Oncotype scores (>18) in HR-positive subtypes, in women with DCIS.

**Methods:** Using the Surveillance, Epidemiology, and End Results (SEER) data, we identified 133,705 women with DCIS diagnosed between 1990 and 2015, and 12.9% were black. Cox proportional hazards regression was used to estimate relative risks (RRs) of subtypes of subsequent invasive breast cancer in either breast and metastatic breast cancer.

**Results:** During a median follow-up of 90 months, 6889 women developed invasive breast cancer and 6384 had HR status available. The risks of HR-defined (P heterogeneity=0.0004) and Oncotype score-defined (P heterogeneity=0.0046) invasive breast cancer subtypes after initial DCIS significantly varied...
POSTER SESSION C

by race. The RR of HR-negative invasive breast cancer was 1.86 (95% CI 1.57-2.20) and the RR of subsequent invasive subtypes with intermediate-to-high Oncotype scores was 1.29 (95% CI 1.00-1.67) in Black women with DCIS, which was independent of age, pathologic features and treatment. In women who had data on HR status in both primary DCIS and subsequent invasive breast cancer, the HR discordant rate was higher in Black patients than in White patients (21.2% versus 18.9%, P=0.003), which was largely driven by HR loss (15.4% versus 9.5%). Black race was more strongly associated with HR loss (RR=1.92, 95% CI 1.41-2.61, P<0.001) than HR concordance (RR=1.24, 95% CI 1.09-1.41) and HR gain (RR=1.04, 95% CI 0.67-1.62).

Conclusions: Black women with DCIS had higher risks of developing aggressive invasive breast cancer compared with White counterparts, which may contribute to their worse survival. Future studies examining biologic differences in the progression of DCIS for Black patients are warranted.

C109 Modulation of HDAC activity in subtypes of triple-negative breast cancer: Effects of vorinostat on HDAC 7 expression and cancer stem cells progression. Fatemeh Nouri Emamzadeh1, Anfernee Hawkins2, Gustavo Miranda-Carboni2, Rhonda Moore4, Beverly Word1, Beverly Lyn-Cook1, 1National Center for Toxicological Research, Jefferson, AR, 2University of Arkansas at Pine Bluff, Pine Bluff, AR, 4University of Tennessee Health Science Center, Memphis, TN, 3Office of Science, Center for Tobacco Products, White Oak, MD.

Epigenetic drugs, such as histone deacetylase inhibitors (HDACi), are continuing to emerge as promising therapies for various cancers. These drugs, including FDA-approved vorinostat, are capable of multiple actions and considered to be multifunctional. Histone deacetylases (HDAC) are chromatin-modifying enzymes that are involved in various cellular events, such as tissue differentiation, autophagy, apoptosis, migration, mitosis and angiogenesis. High levels of HDACs have been detected in several cancers. Early studies in our laboratory showed different effects by vorinostat on HDAC 7 activity in several triple-negative breast cancer (TNBC) subtypes. This study focused on HDAC 7, which has been associated with increases in cancer stem cells and poor prognosis. Cancer stem cells play an important role in cancer resistance to therapy. Histone deacetylase inhibitors are emerging as therapy for triple-negative breast cancer, which is currently an unmet need in women’s health due to the lack of targeted therapies. This study investigated the effects of vorinostat on apoptosis and the modulation of HDAC 7 expression in two subtypes of triple-negative breast cancers, MB231(MLSL) and HCC70 (BL-2). Using caspase 3/7 assays vorinostat induced apoptosis. Additionally, flow cytometry and immunostaining were conducted to determine vorinostat’s effects on expression of two cancer stem cell (CSC) markers, CD44 and CD24. Western blot and real-time PCR showed a significant decrease (10-fold) in the expression of HDAC 7 by vorinostat in HCC70 cells. A modest decrease (3-fold) was also observed in MB231 cells. CD44 expression was deceased by vorinostat in MB231 cells. This study demonstrated that vorinostat exerts its anticancer effects through several mechanisms, such as inducing apoptosis, downregulating HDAC 7 and decreasing cancer stem cells. This therapy could be beneficial for subtypes of TNBC, such as HCC70, an aggressive basal-like 2 cell line from an African American.

C110 Applications of patient-derived triple-negative breast cancer xenografts that represent understudied patients in Louisiana in targeted therapeutic research. Margarite D. Matossian1, Steven Elliott1, Hope E. Burks1, Meryl Wright1, Rachel A. Sabol1, Van T. Hoang1, Deniz A. Ucar2, Alex Alfortish3, Jovanny Zabaleta3, Fokhrul Hossain3, Tiffany Chang3, Henri Wathieu3, Nicholas Pashos3, Bruce Bunnell3, Krzysztof Moroz3, Arnold Zea3, Adam Riker3, Steven D. Jones1, Elizabeth C. Martin4, Lucio Miele4, Bridgette M. Collins-Burrow4, Matthew E. Burow4, Tulane University School of Medicine, New Orleans, LA, 1Louisiana State University Health Sciences Center, New Orleans, LA, 2Louisiana Cancer Research Center, New Orleans, LA, 3Louisiana State University, New Orleans, LA.

Triple-negative breast cancers (TNBCs) constitute approximately 12% of all breast cancer cases and are approximately twice as prevalent in African-American populations. Louisiana has a high proportion of African-American residents (32.3% in 2017), and New Orleans has among the highest incidences of TNBC in the country. Louisiana patients also have a high incidence of co-morbidities that affect breast cancer biology and outcomes, including type 2 diabetes and obesity. TNBCs have an aggressive clinical presentation due to high rates of metastasis, recurrence and chemoresistance. There are currently no clinically approved targeted therapies for TNBC; cytotoxic chemotherapy is the first-line treatment for TNBC, and recurrent, chemoresistant cancers are usually fatal. TNBCs are molecularly heterogeneous, consisting of at least four molecular subgroups, and immunologically heterogeneous. Both molecular and immunologic properties are associated with clinical outcomes and are seriously understudied in patients under-represented in biomedical research. Patient-derived xenografts (PDXs),
as well as patient-derived organoids (PDO), are currently the best model for translational oncology therapeutic research because they accurately recapitulate the complex architecture and heterogenous genetic and molecular composition of solid cancers. To date, the majority of TNBC research has been based on Caucasian patients, although incidence rates of TNBC are higher in African-American cohorts. Our collaborative team aims to overcome this obstacle by establishing and characterizing TNBC PDX models that represent this understudied cohort. We currently have ten TNBC PDX models representing different patient ethnicities, responsiveness to chemotherapies, as well as different TNBC molecular subtypes and metastatic behavior. We dissect and evaluate the various individual components (tumor cell biology, stroma, immune, extracellular matrix) of TNBC tumors. We utilize these models in vivo, ex vivo and in vitro to examine how unique kinases and targeted inhibitors affect the distinct tumor characteristics. In addition to in vivo treatment studies, we generated cell lines and PDOs and we utilize novel techniques such as tissue decellularization to examine extracellular matrix components. We also analyze mechanistically relevant transcript (qRT-PCR) and protein (Western blot, immunohistochemistry) expression patterns that are unique to each PDX model to evaluate the effects of targeted therapies. We work with surrounding laboratories in the greater New Orleans area (Tulane, LSU, Xavier) that are also focused on therapeutic discovery of TNBC in a collaborative effort to provide translational models for their projects. Our aim is to leverage novel PDX models from understudied patients with a range of clinical and molecular presentations to guide the selection of therapeutically targetable pathways and therapeutic agents in specific molecular subtypes of TNBC.

C111 Biologic and self-reported stress levels among Latina breast cancer survivors: The Nuevo Amanecer Rural Trial.
Cathy Samayoa1, Jasmine Santoyo-Olsson2, Leticia Márquez-Magaña1, Anna M. Nápoles1. 1San Francisco State University, San Francisco, CA; 2University of California San Francisco, San Francisco, CA; 3National Institute on Minority Health and Health Disparities, Bethesda, MD.

Among Latinas, breast cancer is the primary cause of cancer-associated mortality. Latinas experience breast cancer health disparities in disease-free survival, health-related quality of life, pain, fatigue, and anxiety, which may be a result of experiences of chronic stress. Chronic stress can impact the hypothalamic pituitary adrenal (HPA) axis, leading to changes in the tumor microenvironment and subsequently facilitate cancer progression. Little is known about the role of stress in cancer health disparities among Latinas. Our aim was to assess the feasibility of biospecimen collection and describe biologic and self-reported levels of stress using baseline data from a randomized controlled trial of a stress-management intervention among Spanish-speaking rural Latina breast cancer survivors (LBCS). We used community-based participatory research (CBPR) methods to recruit women, conduct interviews, and obtain saliva and hair samples. Recruiters were bilingual-bicultural women from local communities working in the community organizations that were research partners. Videos and print materials with graphics were developed in low-literacy Spanish to demonstrate biospecimen collection procedures. Recruiters provided instruction and demonstrations on sample collection and collected self-reported stress and depressive symptoms via in-person interviews in Spanish. Self-reported measures of stress and depressive symptoms consisted of the Perceived Stress Scale (PSS-10) and Personal Health Questionnaire (PHQ-8). Biologic stress was measured using hair (1 sample) and salivary cortisol (3 samples/day for 3 days). Mean hair cortisol concentration (HCC) in pc/mg units was used to assess chronic stress. The cortisol awakening response (CAR) measure assessed the activity of the HPA axis; curves that demonstrate a cortisol peak 30 minutes after awakening and a cortisol dip bedtime were considered normal. We recruited 103 participants from the Central Valley and Imperial County, California. Eighty-six percent provided saliva samples for CAR analysis, and 53% provided hair samples for HCC. Participants' mean age was 56 years (SD=10.6) and mean time since breast cancer diagnosis was 3.2 years (SD=3.2). Participants reported moderate (PSS mean score = 14.5; SD 7.5) stress levels and mild depression (PHQ-8 mean score = 6.3; SD 5.5). Biologic stress measurements demonstrated that 37% of participants had an abnormal CAR at baseline, and elevated HCC (mean HCC = 362.9 pg/mg). Bivariate models showed no relationship between self-reported and biologic markers of stress. Using CBPR methods leads to successful recruitment of Latinas to clinical research involving biospecimen collection. Although self-reported stress and depression were moderate or mild, biologic stress levels were high and abnormal in over 1/3 of participants, suggesting that chronic stress, and its subsequent integration into the biologic stress pathways, may help explain ethnic disparities in cancer outcomes of LBCS.

The results of a breast cancer education program directed towards men will be presented. The result indicate that men before the education program were unaware than breast cancer can be diagnosed in men. Furthermore, before the education program, men who were surveyed were unlikely to seek medical attention if they found a lump in the breast. The post-education survey results will be presented at the conference.

C113 Antibody microarray analysis of signaling networks regulated by the CCR9/CCL25 axis in African American and Caucasian American triple-negative breast cancer. Jeronay King Thomas, Neeraj Kapur, Hina Mir, Dominique N. Gales, James W. Lillard, Jr., Shailesh Singh. Morehouse School of Medicine, Atlanta, GA.

Therapeutic outcome of breast cancer (BrCa) is impeded due to the intratumor heterogeneity, as well as differences among cancer-bearing individuals. Triple-negative breast cancer (TNBC) is a highly aggressive subtype that disproportionately affects African-American (AA) women. However, the molecular basis of racial disparity in therapeutic response and clinical outcome of TNBC in AA compared to Caucasian American (CA) patients is still obscure. Our group was the first to show the involvement of CCR9 and its natural ligand, CCL25 in cancer progression and therapeutic response, including BrCa. In this study, using proteomic and bioinformatics approach we have quantified the race-specific differences in biologic pathways modulated by the CCR9/CCL25 in TNBC cells. The difference in signaling cascades following CCR9 activation by CCL25 in BrCa cell derived from AA and CA were determined using cancer signaling phospho-protein antibody microarray, which featured 269 antibodies. A heat map was generated to visualize differences in phosphorylation status among cell line derived from AA and CA patients, as well as differences between the cell lines after CCL25 treatment. Graphics of biologic functions and oncogenic signaling networks, which were altered by CCR9/CCL25 axis, were produced using GeneMANIA and Ingenuity Pathway Analysis (IPA) software. Cells derived from AA (MDA-MB-468), show activation/phosphorylation of GSK3α, Elk-1, p70S6K, BCL-2, MEK2, NFkB and STAT3 involved in cell survival and migration. However, cells derived from CA (MDA-MB-231) show activation/phosphorylation of VEGFR2, CTNNB1, FAK, and SHC, suggesting involvement of distinct pathway supporting cell survival following CCR9 activation. Hence, our data suggest that CCR9/CCL25 contributes to the race-specific difference in signaling pathways and these race-specific differences in the biology of TNBC could be the reasons for the disparity in disease and therapeutic outcome.

C114 Lymph circulating tumor cells are phenotypically different from tumor cells circulating in the blood. Odalys J. Torres-Luquis, Sulma I. Mohammed. Purdue University, West Lafayette, IN.

Breast cancer is the most common cancer in women. However, metastasis is the leading cause of death. When the tumor cell migrates from the primary tumor, it can disseminate into the blood circulation or lymphatic system. It has been proven that 80% of malignant carcinoma choose the lymphatic system over the vascular system. Despite the importance of sentinel lymph node (SLN) metastasis as a staging marker, lymphatically disseminated tumor cells (LCTCs) in transit from the primary tumor to the SLN have never been captured, characterized and compared to blood-borne tumor cells (BCTCs) in the same host. Here we use a microsurgical technique to collect draining lymph in situ from a growing tumor prior to its entry in SLN in syngeneic animals and patients with breast cancer. Unlike BCTC, LCTCs are found in clusters that exhibit a hybrid epithelial-mesenchymal phenotype, display a cancer stem cell CD44hi, CD24lo, ALDHA1hi signature, grow as mammospheres and are highly tumorigenic. We also showed that the lymph is enriched in tumor-derived exosome proteins and EGF growth factor. Characterization of LCTCs vs. BCTCs and the compilation of tumor-derived factors en route to the SLN can provide insights into the metastatic process and has relevance to cancer immunotherapy.


According to the NIH website, “Members of minority racial/ethnic groups in the United States are more likely to be poor and medically underserved (that is, to have little or no access to effective health care) than whites, and limited access to quality health care is a major contributor to disparities. For example, regardless of their racial/ethnic background, the poor and medically underserved are less likely to have recommended cancer screening tests than those who are medically well served. They are also more likely to be diagnosed with late-stage cancer that might have been
POSTER SESSION C

treated more effectively if diagnosed earlier.” Currently referred to as “financial toxicity,” many individuals are suffering from the high cost of treating cancer. Particularly in the minority (African American) community, this problem is even greater. People often overlook health care treatment due to concerns of affordability and trying to take care of their daily living needs such as housing, food and travel.


This abstract is being presented as a short talk in the scientific program. A full abstract is printed in the Proffered Abstracts section (PR11) of the Conference Proceedings.


I am a stage 3 colon cancer survivor and patient advocate. My poster is a reflection of my experience with cancer and journey as a survivor. My life was spared so that that I could become a change agent in my community. Every time I share my story, I create pathways to saving lives by connecting people with doctors, information and health care services. African-Americans are affected at the highest rate and have the highest mortality rate as it relates to GI cancers. My poster shares my personal story, my advocacy efforts and how I am changing the narrative in my community by joining forces with the medical community to reduce the number of people being affected by cancer.

C118 Tumor immune response in colon cancer African American patients and its role in cancer disparities. Jenny E. Paredes1, Ping Ji2, Jone Garai3, Marzia Spagnardi1, Maria Munoz-Sagastibelza1, Sayed Imtiaz1, Gayle Mendez1, Mubarak Akadri2, Raavi Gupta1, Mohamed Alishai4, Maksim Agaronov4, Henry Talus1, Ellen Li2, Jovanny Zabaleta3, Laura Martello-Rooney2, Jennie Williams2. 1SUNY Downstate Medical Center, Brooklyn, NY, 2Stony Brook University, Stony Brook, NY, 3Louisiana State University Health Sciences Center, New Orleans, LA, 4Kings County Hospital, Brooklyn, NY.

**Introduction:** Colorectal cancer (CRC) is the third most common cancer among African Americans (AA) and when compared to Caucasian Americans (CA), they present more advanced CRC disease and lower survival rates. Our previous findings suggest that this may be related to the differential expression in genes linked to cell recruitment and immune response. Therefore, we aimed to investigate the cellular antitumor activity and mutational profile of colon tumors from AAs. We also examined the secretion of cytokines characteristic of immune responses by different effector T helper cells (Th) subsets in AA and CA patients, as well as cell lines, to see if these differences play a role in the health disparities observed between these populations. Lastly, we observed the expression of the Program Death Ligand 1 (PD-L1) in response to the cytokines IL-17A and TNF-α in a microsatellite-unstable (MSI) AA and a microsatellite-stable (MSS) CA colon cancer cell line.

**Methods:** Using IHC, we evaluated the cell recruitment and activation of T and natural killer cells in AA tumors. For mutational analysis, we utilized the TruSight Tumor 170 RUO kit (Illumina). ELISA assays (RayBiotech) were used to examine the secretion of cytokines linked to Th subsets (Th1, Th2, Th17) and inflammation in plasma from the AA and CA CRC patients, as well as supernatants from the AA and CA colon cancer cell lines. Western blots were used to observe the expression of PD-L1 in the in vitro models.

**Results:** ELISAs of plasma of CA and AA patients revealed a differential Th cytokines production patterns between early-stages (I, II) and late-stage (III) disease. The MSI AA cell line showed an increase on PD-L1 protein expression in response to IL-17A and TNF-α with an additive effect when combined in equal concentrations. Lastly, the mutational sequencing allowed us to further investigate the potential alterations that are responsible for the differences that we observed in gene expression between AAs and CAs in our RNA and cytokine expression profiling.

**Conclusions:** Our results indicate that the immune profiles of AA patients differ from CA in terms of cytokines’ production; AAs expressed elevated IL-17A, whereas CA expressed elevated IFN-γ, the latter indicative of Th1 immunity that has a more favorable prognosis. As such, these differences could be used as biomarkers and to guide therapeutic strategy for these populations. The mutational sequencing will help us to elucidate the impaired tumor immune response in AAs with colon cancer when compared to CAs that we observed in terms of cell recruitment and cytokine secretion in our
previous findings. Importantly, our data indicate that IL-17A and TNF-α promote the protein production of PD-L1 in an MSI AA cell line, which may result in the impairment of T cells’ antitumor activity. Taken together, the differences in the immunologic profiles in AA when compared to CA suggest a deficiency of the appropriate immune defense mechanisms in this population that may contribute to the cancer health disparities among CRC patients.

C110 High-grade endometrial cancers: Persistent racial differences in survival. Michele L. Cote¹, Julie J. Ruterbusch², Tara Rangarajan³, Remonda Khalil³, Mohamed Elshaikh³, Rouba Ali-Fehmi³. Wayne State University and Karmanos Cancer Institute, Detroit, MI; Wayne State University, Detroit, MI; Henry Ford Health System, Detroit, MI.

Introduction: Endometrial cancer (EC) is the most common gynecologic cancer diagnosed in the United States, and high-grade cancers account for approximately 1/5 of the ECs diagnosed in non-Hispanic white (NHW) women, Hispanic women, and Asian women, but nearly 1/3 of those diagnosed in African American (AA) women. These high-grade cancers are associated with poorer outcomes, and AAs are consistently at highest risk of mortality in studies that fail to adjust adequately for potentially important treatment or comorbidity variables. Here we present survival analyses from a study of AA and NHW women with high grade EC at two academic hospitals.

Methods: High-grade cancers were identified through registries at each hospital and representative slides were re-reviewed by a single gynecologic pathologist to confirm high-grade disease and subtype. The following subtypes were included: clear cell, endometrioid, mixed, and serous. We identified 258 women (n=86 NHW, n=169 AA) who were diagnosed with high-grade cancers between 1998 and 2010. Utilizing medical records and the Surveillance, Epidemiology and End Results (SEER) registry, the following data were abstracted: height, weight, comorbid conditions, type of radiation, dose and fractions, type(s) of chemotherapy, number of cycles, recurrence, and vital status. Descriptive analyses utilized chi-square and t-tests to determine differences in clinical characteristics between AA and NHW women. Kaplan Meier survival analysis was performed to test for differences by race and subtype. To compare survival while considering competing risks of death, cause-specific hazard and cumulative incidence functions were compared using Gray’s test.

Results: The majority of the women had ECs classified as serous carcinomas (46.1%), followed by endometrioid (39.5%), clear cell carcinomas (9.7%) and mixed cell types (4.7%). AA women with endometrial cancer had slightly higher mean body mass index (BMI) compared to NHW women (34.6 and 32.2, respectively, p-value=0.06). NHW survived significantly longer after diagnosis compared to AA women (173 months versus 87 months, respectively, log-rank p-value=0.006). This difference remained after stratification by subtype, with similar findings for endometrioid cancers (log-rank p-value=0.06) and serous cancers (log-rank p-value=0.03). When examining survival considering competing risks (death due to EC versus other causes), AA women had a greater risk of death (HR: 1.84, 95% CI: 1.10-3.03) compared to their NHW counterparts; however, no difference was seen by race for other causes of death (HR: 1.29, 95% CI: 0.71-2.32). Further analyses, showing survival differences persist despite adjustments for BMI, comorbidities, and detailed treatment, will be presented.

Conclusions: AA women continue to experience greater mortality from high-grade EC despite adjustments for demographic, clinical and treatment data, warranting continued efforts to identify molecular and social factors associated with poorer survival.
**C121 Racial/ethnic differences of pediatric brain tumors in the development of orthotopic PDX models.** Lin Qi¹, Mari Kogiso², Yuchen Du¹, Yilun Huang¹, Huiyuan Zhang¹, Frank Braun², Holly Lindsay², Sibo Zhao³, Sarah Injac², Lazlo Perlaky⁴, Patricia Baxter², Wan-Yee Teo⁴, Zhigang Liu², Xiumei Zhao², Yujing Zhang³, Jack M.F. Su³, Xiao-Nan Li¹.¹Ann & Robert H. Lurie Children’s Hospital of Chicago of Northwestern University; Baylor College of Medicine, Chicago, IL, ²Texas Children’s Cancer Center; Pediatrics, Baylor College of Medicine, Houston, TX. ³Department of Neurosurgery, The First Affiliated Hospital, Soochow University Medical School, Suzhou, China, ⁴Cancer & Stem Cell Biology Program, Duke-NUS Medical School, Singapore, Singapore.

Brain tumor is leading cause of cancer-related death in children. While significant advances have been made in molecularly subgrouping tumors of same pathologic diagnosis, little is known about the biologic differences among racial/ethnic populations, and there is a lack of animal models that represent different racial/ethnic patients. Here, we report our analysis of tumorigenicity of a total of 215 pediatric brain tumors in SCID mice. All surgical tumor tissues were obtained from cryo lab and directly implanted into the anatomically matched locations in mouse brains, i.e., cerebral tumors (such as GBM) into mouse right cerebra, and cerebellar tumors (such as medulloblastoma) into mouse cerebella. The animals were closely monitored following institutional-approved animal protocols. Tumor formation was validated either through the harvesting of visible tumors or via histopathologic examination of paraffin-embedded whole mouse brains. From the 215 tumors, racial/ethnic information was validated in 180 tumors. Overall tumor formation was 41.2% (52/126) in white, 26.9% (7/26) in black, 50% (8/16) in more than one race and 20% (2/5) in Asian patients. When different tumor types were compared, children with medulloblastoma exhibited similar tumor take rate, ranging from 50% (3/6) in black to 54% (15/28) in whites and 67% (2/3) of American Indian or Alaska Native, whereas in GBM, it was 79% (11/14) in white, and 1/1 in other racial groups, (2/3) of American Indian or Alaska, and 1 each from more than one race and Asian). A novel panel of clinically relevant and racial-specific models to facilitate the biologic and preclinical studies on cancer disparities.

**C122 Ethnicity as a moderator of the effects of aerobic and resistance exercise on metabolic syndrome in breast cancer survivors.** Christina M. Dieli-Conwright¹, Frank C. Sweeney², Kerry S. Courneya³, Debu Tripathy¹, Nathalie Sami¹, Kyuwan Lee¹, Thomas A. Buchanan¹, Darcy Spicer¹, Leslie Bernstein⁴, Joanne E. Mortimer⁴, Wendy Demark-Wahnefried⁵.¹University of Southern California, Los Angeles, ²University of Alberta, Alberta, Canada, ³University of Texas MD Anderson Cancer Center, Houston, TX. ⁴City of Hope, Duarte, CA, ⁵University of Alabama, Birmingham, AL.

**Background and Purpose:** Metabolic syndrome (MSY) is associated with increased risk of cardiovascular disease, type 2 diabetes, and recurrence in breast cancer survivors (BCS). MSY is 1.5 times more common in Hispanic compared to non-Hispanic women. Hispanic women in the United States are more likely to be obese and physically inactive than matched non-Hispanic counterparts, raising risk for developing MSY. Exercise mitigates MSY in BCS; however, few studies have focused on minorities. The purpose of this secondary analysis was to examine ethnicity as a moderator of the effects of a 16-week combined aerobic and resistance clinical exercise intervention on MSY and related biomarkers in BCS.

**Experimental Design:** Sedentary, overweight or obese (BMI≥25.0 kg/m²) BCS (Stage I-II; n=100) were randomized to exercise (n=50) or usual care (n=50). The exercise intervention promoted supervised, progressive moderate-vigorous (65-85% heart rate maximum) aerobic and resistance exercise thrice weekly for 16 weeks. Aerobic exercise included cycling, walking, or jogging at 65-85% maximum heart rate. Resistance exercise was performed in circuit-fashion with 3 sets of 10-15 repetitions including upper and lower body exercises at 65-70% 1-repetition maximum. MSY variables (blood pressure, waist circumference, triglycerides, glucose, and high-density lipoprotein-cholesterol) and related biomarkers (insulin, insulin resistance HOMA-IR, C-reactive protein [CRP]) were measured at baseline and post-intervention (4 months). Differences in mean changes for outcomes by ethnicity were evaluated using linear mixed-models to assess effect modification.

**Summary of Results:** Fifty-seven Hispanic BCS and 43 non-Hispanic BCS with an average age of 53.5±10.4 years and...
BMI of 33.5±5.5 kg/m² were included. Hispanic BCS were younger, of greater adiposity, had higher-stage cancers, and had worse metabolic profiles at baseline compared to non-Hispanic BCS (p<0.001). Ethnicity was found to moderate the effects of exercise training on triglycerides (mean difference, -36.4; 95% confidence interval (95% CI), -62.1-18.3; p=0.04) and glucose (mean difference, -8.6; 95% CI, -18.7-3.1; p=0.05) with Hispanic BCS exhibiting larger improvements than non-Hispanic BCS. Ethnicity moderated the effect of exercise on insulin (P for interaction=0.09), HOMA-IR (P for interaction=0.06), and CRP (P for interaction=0.05).

Conclusions: Hispanic, as compared to non-Hispanic, BCS have poorer metabolic profiles, but may achieve better outcomes from exercise. To our knowledge, this is the first study to explore racial/ethnic disparities in MSY between Hispanic and non-Hispanic BCS and document differential response to exercise. Clinical exercise interventions may attenuate ethnic health disparities in BCS. Future trials should aim for diversity.

Experimental Design: Sedentary, overweight or obese (BMI>25.0 kg/m²) breast cancer survivors (Stage I-III; n=100) were randomized to exercise (n=50) or usual care (n=50). The exercise intervention promoted supervised, progressive moderate-vigorous (65-85% maximum heart rate [MHR]) aerobic and resistance exercise thrice weekly for 16 weeks. Markers of SOB and BCM, including appendicular skeletal muscle index (ASMI), BMI, % body fat and truncal fat were measured at baseline and post-intervention (4 months).

Differences in mean changes for outcomes by ethnicity were evaluated using linear mixed-models to assess effect modification.

Summary of Results: The study enrolled 57 HBCS and 43 NHBCS with an average age of 53.5±10.4 years and BMI of 33.5±5.5 kg/m². HBCS were diagnosed with more advanced cancers, were significantly more obese and less physically active compared to NHBCS (p<0.001); 96% of the HBCS and 92% of the NHBCS presented with SOb. Post-intervention, SOb and BCM indices were significantly improved in the exercise arm (both HBCS and NHBCS) as compared to baseline (p<0.001) and usual care (p<0.001). However, HBCS exhibited more favorable improvements compared to NHBCS, including an increase in ASMI (mean difference, -2.1; 95% confidence interval (95% CI), 4.0 to 5.1; p<0.001) and truncal fat (-4.4; 95% CI, -9.1 to -0.8; p<0.001). Ethnicity was found to moderate the effect of the exercise intervention on fat mass (P for interaction=0.09) and % body fat (P for interaction=0.09).

Conclusions: HBCS may achieve better outcomes with exercise in attenuating disparities related to SOb and BCM. To our knowledge, this is the first study to investigate ethnocentric differences between HBCS and NHBCS as they pertain to participation in physical activity and high-risk comorbidities related to poorer cancer prognosis and mortality. Exercise presents as a useful lifestyle modifiable intervention to attenuate ethnic health disparities in breast cancer survivors; future studies should aim to enroll diverse populations.

C123 Ethnocentric differences in sarcopenic obesity and body composition in response to an aerobic and resistance exercise intervention for breast cancer survivors. Frank C. Sweeney1, Wendy Demark-Wahnefried2, Kerry S. Courneya3, Debub Tripathi4, Nathalie Sami4, Kyuwan Lee5, Thomas A. Buchanan4, Darcy Spicer1, Leslie Bernstein5, Joanne E. Mortimer5, Christina M. Dieli-Conwright1, 1University of Southern California, Los Angeles, CA, 2University of Alabama, Birmingham, AL, 3University of Alberta, Alberta, Canada, 4University of Texas MD Anderson Cancer Center, Houston, TX, 5City of Hope, Duarte, CA.

Background and Purpose: Hispanic breast cancer survivors (HBCS) have a 1.1-1.5 greater risk of breast cancer mortality when compared to non-Hispanic breast cancer survivors (NHBCS). This disparity may result from modifiable lifestyle factors, as Hispanic women are more apt to be obese and sedentary than matched non-Hispanic counterparts, placing them at risk for obesity-related comorbidities. Also, gains in fat mass with declines in lean mass, known as sarcopenic obesity (SOb), often occur as a side effect of cancer treatment. Thus, participation in physical activity is paramount, as exercise is strongly associated with lowering the risk of cancer recurrence and premature mortality. The purpose of this analysis was to examine ethnicity as a moderator of the effects of a 16-week supervised aerobic and resistance exercise intervention on SOb and body composition (BCM) in overweight/obese breast cancer survivors.


Breast density is an established breast cancer risk factor. Metabolic disturbances and high adiposity also increase
C125 University of Guam/University of Hawaii Cancer Center partnership: Fifteen years of progress in addressing cancer health disparities in Pacific Islanders. Carl-Wilhelm Vogel1, David C. Ward2, Neal A. Palafox2, Hali R. Robinett2, Rachael T. Leon Guerrero2, John A. Peterson3, University of Hawaii Cancer Center, and Department of Pathology, John A. Burns School of Medicine, Honolulu, HI, 2University of Hawaii Cancer Center, Honolulu, HI, 3University of Guam, Mangilao, Guam.

breast cancer burden, but their relationships with breast density are not clearly defined, possibly due to the limitation of mammography density measurements in obese women. We are presently conducting a phase II double-blind, randomized, placebo-controlled clinical trial to study the effect of metformin on obesity-associated breast cancer risk in overweight and obese premenopausal women with metabolic disturbances. One hundred and fifty-one participants with a large waist (≥88 cm or ≥80 cm for Asian Americans and individuals with PCOS) and one other component of metabolic syndrome (elevated triglyceride, reduced HDL-C, elevated blood pressure, or elevated fasting glucose) were accrued and randomized (1:1) to receive metformin 850 mg BID or placebo for 12 months. The primary study endpoint is change in breast density. Secondary endpoints are changes in serum insulin, insulin-like growth factor axis, adipokines, waist circumference and body weight. Thirty-six percent of the accrued participants are Hispanics. The average body mass index, waist circumference and waist-to-hip ratio of the accrued participants are 37.8 ± 6.8 kg/m², 110.8 ± 12.4 cm and 0.90 ± 0.07, respectively. We expect to complete our clinical trial in December 2018. We performed cross-sectional analyses of the baseline data to determine the associations between metabolic disturbances and breast density parameters acquired by fat-water MRI on noncompressed breasts. This is especially relevant in our study cohort because the compressed breast thickness is greater in obese women, which results in decreased image contrast on mammogram. Potential differences by ethnicity were explored. We showed that percent density and absolute density were not related to anthropometric measurements of adiposity for the overall cohort, with similar results by ethnicity. Having elevated fasting glucose in women with a large waist was related to a lower percent density and absolute density for the overall cohort, and the association was only observed in Hispanics. Our work is the first to compare breast density assessed by fat-water MRI by ethnicity. Further research is required to confirm our findings. Due to the rising rates of obesity in the United States, we strongly believe that this trial will have an important impact in public health, especially in minority population.

The University of Guam (UOG)/University of Hawaii Cancer Center (UHCC) Partnership aims to grow cancer research capacity at UOG; develop cancer health disparities research at UHCC focusing on Pacific Islanders (PI); raise awareness of cancer and cancer prevention in Guam (GU), Hawaii (HI) and the US Associated Pacific Islands (USAPI); and increase the number of cancer and biomedical science researchers of PI ancestry in the United States. An infrastructure comprising 5 principal investigators, over 30 participating faculty, administrative staff, and external and internal reviewers, backed by institutional support and NCI sponsorship, has supported 15 years of research, training, and outreach designed to reduce cancer health disparities and advance health equity among PI in GU, HI, and the USAPI. Since 2009, the Partnership has funded 18 cancer research projects addressing cancer research priorities of global and regional relevance, including cervical cancer and betel nut chewing—a traditional practice associated with oral pre/carcinoma, affecting 600 million users worldwide. Approximately 75 manuscripts have been published, approximately 100 abstracts presented, and 16 grants secured. To address the under-representation of PI in biomedical sciences, the Partnership has supported 30 graduate fellows, including 8 doctoral students at UH. Two PhD graduates are now faculty members at UOG and engaged in cancer health disparities research. UOG’s Micronesian Studies Program now offers a cancer health disparities track, developed by the Partnership and tailored for the Pacific region. In addition, UOG/UHCC faculty, junior investigators, and pre/postdocs receive mentorship, career development, and summer research fellowships; to date, 8 UOG faculty have participated in the summer fellowship program at UHCC, and two have subsequently secured pilot funding. Outreach projects have explored community-based participatory approaches to youth tobacco use prevention and cessation in Guam, and the use of social networking to reduce tobacco-related cancer risk. Community-based participatory research has also led to landmark tobacco-control legislation in Guam, resulting in decreased tobacco use and increased tobacco taxes, a percentage of which supports cancer programs and patient services in Guam, including the Guam Cancer Registry. Current outreach efforts aim to increase cervical cancer screening among Micronesian migrants and build cancer-prevention knowledge and awareness among physicians who serve them in Guam and Hawaii. In conclusion, the Partnership has significantly increased research capacity at UOG and cultivated interest in cancer research among under-represented minority students at the partnering institutions. Supported by NCI grants U54CA143727 and U54CA143728.
Plant isolate dibenzyl trisulfide potently inhibits cytochrome P450 1 enzyme activity and the growth of breast cancer cells derived from African American patients.

Jonathan V. Wooten¹, Shaniece Wauchope², Nicole Mavingire¹, Petreena Campbell¹, JeAnn Watson², Maxine Gossell-Williams², Rupika Delgoda², Eileen Brantley¹. ¹Loma Linda University Health, Loma Linda, CA, ²University of the West Indies, Mona, Jamaica.

Triple-negative breast cancer (TNBC), characterized by tumors that lack expression of the estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2), carries a poor prognosis. African American women develop TNBC at disproportionately higher rates than women of other ethnic groups. Dibenzyl trisulfide (DTS), found expressed in the Jamaican plant Petiveria alliacea, has been shown to inhibit the growth of several cancer types. However, little is known about whether this plant isolate displays anticancer activity in TNBC cells from African American patients or modulates cytochrome P450 1 (CYP1) enzyme activity. This work, as part of an ongoing ethnopharmacology-based bioactivity screening, was designed to fill this deficit. African American TNBC (AA-TNBC) cells HCC1806 and MDA-MB-468 were treated with varying concentrations of DTS for 48 h and cell viability was assessed using the Alamar Blue assay. DTS potently inhibited the growth of HCC1806 and MDA-MB-468 cells, producing IC₅₀ values of 10.6 ± 1.2 µM and 10.3 ± 2.0 µM, respectively. Additionally, we discovered that DTS induced apoptosis in these cells. Furthermore, we investigated the ability DTS to impact the activities of the CYP1 family of enzymes, which are known to convert procarcinogens to carcinogens. The IC₅₀ values obtained for CYPs 1A1, 1A2 and 1B1 were 1.68 ± 0.3 µM, 1.9 ± 0.2 µM and 1.29 ± 0.3 µM, respectively. These data indicate DTS exhibits potent inhibition of the activities of these enzymes. In particular, DTS was able to bind to CYP1A2 in accordance with irreversible kinetics. In addition, DTS reduced CYP1 mRNA expression in both cell lines. Our findings provide a rationale for in vivo evaluations of DTS as a potential candidate for chemoprevention and for treating AA-TNBC patients.
## AUTHOR INDEX

### A

<table>
<thead>
<tr>
<th>Name</th>
<th>Suffix</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abd Elmageed, Zakaria Y</td>
<td></td>
<td>B045, C029</td>
</tr>
<tr>
<td>Abdul-Shafi, Omar</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Abebe, Tamrat</td>
<td></td>
<td>B103</td>
</tr>
<tr>
<td>Abrams, Alyssa</td>
<td></td>
<td>B105</td>
</tr>
<tr>
<td>Abras, Hanood</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Abshire, Camille</td>
<td></td>
<td>B082</td>
</tr>
<tr>
<td>Abu-Kishik, Ola</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Abu-Heibeih, Akram</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Achampong, Daniel</td>
<td></td>
<td>C062</td>
</tr>
<tr>
<td>Acosta, Jesús</td>
<td></td>
<td>A049</td>
</tr>
<tr>
<td>Adams, John</td>
<td></td>
<td>A067</td>
</tr>
<tr>
<td>Adams, Swann A</td>
<td></td>
<td>B075</td>
</tr>
<tr>
<td>Adams, Swann Arp</td>
<td></td>
<td>B008, B012, B016, C019</td>
</tr>
<tr>
<td>Addisie, Adamu</td>
<td></td>
<td>B103, C104, C105</td>
</tr>
<tr>
<td>Adebowo, Adebola</td>
<td></td>
<td>B097, B100</td>
</tr>
<tr>
<td>Adjei Boakye, Eric</td>
<td></td>
<td>B014</td>
</tr>
<tr>
<td>Adjei, Alex</td>
<td></td>
<td>A120</td>
</tr>
<tr>
<td>Adsit, Rob</td>
<td></td>
<td>A001</td>
</tr>
<tr>
<td>Adunlin, Georges</td>
<td></td>
<td>A076, B098, C005</td>
</tr>
<tr>
<td>Adunyah, Samuel E</td>
<td></td>
<td>A050</td>
</tr>
<tr>
<td>Agaronov, Maxim</td>
<td></td>
<td>B059, C118</td>
</tr>
<tr>
<td>Agarwal, Deepak</td>
<td></td>
<td>A107</td>
</tr>
<tr>
<td>Agb hallway, Ayodeji</td>
<td></td>
<td>C026</td>
</tr>
<tr>
<td>Agboola, Johnson</td>
<td></td>
<td>C102, PR18</td>
</tr>
<tr>
<td>Aguirre, Karen</td>
<td></td>
<td>A048</td>
</tr>
<tr>
<td>Aguito, Regina</td>
<td></td>
<td>B119</td>
</tr>
<tr>
<td>Agurs-Collins, Tanya</td>
<td></td>
<td>C027</td>
</tr>
<tr>
<td>Ahmed, Awad A</td>
<td></td>
<td>A075</td>
</tr>
<tr>
<td>Akadiri, Mubarak</td>
<td></td>
<td>B059, C118</td>
</tr>
<tr>
<td>Akbari, Mohammad</td>
<td></td>
<td>C069</td>
</tr>
<tr>
<td>Akhtar, A.</td>
<td></td>
<td>C039</td>
</tr>
<tr>
<td>Akintobi, Tabia</td>
<td></td>
<td>B090</td>
</tr>
<tr>
<td>Al Abo, Muthana</td>
<td></td>
<td>B050, B071</td>
</tr>
<tr>
<td>Al-Bayani, Majiyyah A</td>
<td></td>
<td>A050</td>
</tr>
<tr>
<td>Aldassamy, Srinivasan</td>
<td></td>
<td>C023</td>
</tr>
<tr>
<td>Alagiozian-Angelova, Victoria</td>
<td></td>
<td>IA26</td>
</tr>
<tr>
<td>Alba, Susana</td>
<td></td>
<td>A061</td>
</tr>
<tr>
<td>Alber, Anthony J</td>
<td></td>
<td>C044</td>
</tr>
<tr>
<td>Albrecht, Terrance</td>
<td></td>
<td>B035, C048, PR04</td>
</tr>
<tr>
<td>Albrecht, Terrance L</td>
<td></td>
<td>B032</td>
</tr>
<tr>
<td>Alcarras, Kassandra L</td>
<td></td>
<td>A090, PR02</td>
</tr>
<tr>
<td>Aleskandarany, Mohammad A</td>
<td></td>
<td>C102, PR18</td>
</tr>
<tr>
<td>Alexander, Jennifer</td>
<td></td>
<td>B070</td>
</tr>
<tr>
<td>Alexander, Joshua</td>
<td></td>
<td>A023</td>
</tr>
<tr>
<td>Alexeuff, Stacey</td>
<td></td>
<td>A079</td>
</tr>
<tr>
<td>Alexis, Cheryl</td>
<td></td>
<td>C060</td>
</tr>
<tr>
<td>Alfortish, Alex</td>
<td></td>
<td>C110</td>
</tr>
<tr>
<td>Algotar, Amit</td>
<td></td>
<td>C124</td>
</tr>
<tr>
<td>Ali, Hamed I</td>
<td></td>
<td>B045, C029</td>
</tr>
<tr>
<td>Ali, Amin</td>
<td></td>
<td>A111, C023</td>
</tr>
<tr>
<td>Ali, Hamdy EA</td>
<td></td>
<td>B045, C029</td>
</tr>
<tr>
<td>Ali, Haythem</td>
<td></td>
<td>B056, IA27</td>
</tr>
<tr>
<td>Ali, Jameel</td>
<td></td>
<td>C060</td>
</tr>
<tr>
<td>Ali, Thahmina</td>
<td></td>
<td>B068, PR09</td>
</tr>
<tr>
<td>Ali-Fehmi, Rouba</td>
<td></td>
<td>C120</td>
</tr>
<tr>
<td>Alim, Jibril M</td>
<td></td>
<td>C098</td>
</tr>
<tr>
<td>Aliyu, Muktar</td>
<td></td>
<td>C009</td>
</tr>
<tr>
<td>Allen, Caitlin G</td>
<td></td>
<td>B090</td>
</tr>
<tr>
<td>Allen, Laura</td>
<td></td>
<td>IA37</td>
</tr>
<tr>
<td>Allen, Whitney</td>
<td></td>
<td>A089</td>
</tr>
<tr>
<td>Albch, Maria</td>
<td></td>
<td>A124</td>
</tr>
<tr>
<td>Alva-Ornelas, Jackelyn A</td>
<td></td>
<td>A082, A083, A084, B109, B119</td>
</tr>
<tr>
<td>Alvarado, Christian</td>
<td></td>
<td>B016, B075</td>
</tr>
<tr>
<td>Alvarado, Christian R</td>
<td></td>
<td>B008, B012, C019</td>
</tr>
<tr>
<td>Alvarado, Jossette I</td>
<td></td>
<td>C034</td>
</tr>
<tr>
<td>Amador, Maria A</td>
<td></td>
<td>C041</td>
</tr>
<tr>
<td>Ambrosone, Christine</td>
<td></td>
<td>B040, C046, C063</td>
</tr>
<tr>
<td>Ambros, Stefan</td>
<td></td>
<td>B051, C024</td>
</tr>
<tr>
<td>Amessoudji, Amy</td>
<td></td>
<td>A019</td>
</tr>
<tr>
<td>Anberber, Endale</td>
<td></td>
<td>A118, B020, C031</td>
</tr>
<tr>
<td>Anderson, Janeane</td>
<td></td>
<td>A073</td>
</tr>
<tr>
<td>Anderson, Janeane N</td>
<td></td>
<td>A005</td>
</tr>
<tr>
<td>Anderson, Lisa</td>
<td></td>
<td>A061</td>
</tr>
<tr>
<td>Anderson, Roger</td>
<td></td>
<td>A068</td>
</tr>
<tr>
<td>Anderson, William F</td>
<td></td>
<td>C087</td>
</tr>
<tr>
<td>Andreas, Wienke</td>
<td></td>
<td>B033</td>
</tr>
<tr>
<td>Anjea, Rana</td>
<td></td>
<td>C053</td>
</tr>
<tr>
<td>Anjea, Ritu</td>
<td></td>
<td>B065, C026, C101, C102, PR18</td>
</tr>
<tr>
<td>Angajala, Anusha</td>
<td></td>
<td>B052</td>
</tr>
<tr>
<td>Angel, Peggi M</td>
<td></td>
<td>C032</td>
</tr>
<tr>
<td>Anjan, Shweta</td>
<td></td>
<td>B002</td>
</tr>
<tr>
<td>Ann, Klassen</td>
<td></td>
<td>A102</td>
</tr>
<tr>
<td>Antonia, Teresita</td>
<td></td>
<td>C034</td>
</tr>
<tr>
<td>Aponte-Soto, Lisa</td>
<td></td>
<td>B108</td>
</tr>
<tr>
<td>Arshel, Haifa</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Aqel, Rami</td>
<td></td>
<td>C057</td>
</tr>
<tr>
<td>Arana, Naysari</td>
<td></td>
<td>A063</td>
</tr>
<tr>
<td>Arayeslassie, Mahlet</td>
<td></td>
<td>A118, B020, C031</td>
</tr>
<tr>
<td>Arcoo, Candice S</td>
<td></td>
<td>C075</td>
</tr>
<tr>
<td>Aristizabal, Paula</td>
<td></td>
<td>A045, B121</td>
</tr>
<tr>
<td>Armand, Nicole</td>
<td></td>
<td>C076</td>
</tr>
<tr>
<td>Armens, Kent E</td>
<td></td>
<td>C024</td>
</tr>
<tr>
<td>Armstrong, Andrew J</td>
<td></td>
<td>A114</td>
</tr>
<tr>
<td>Arnold, Connie</td>
<td></td>
<td>IA07</td>
</tr>
<tr>
<td>Arnold, Connie L</td>
<td></td>
<td>B099, PR12</td>
</tr>
<tr>
<td>Arh, Aadeze</td>
<td></td>
<td>B097, B100</td>
</tr>
<tr>
<td>Arredondo, Elva M</td>
<td></td>
<td>B113</td>
</tr>
<tr>
<td>Arroyo, Juanita</td>
<td></td>
<td>A030</td>
</tr>
</tbody>
</table>
# AUTHOR INDEX

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthur-Lewis, Jennifer</td>
<td>B114</td>
</tr>
<tr>
<td>Asare, Matthew</td>
<td>B098</td>
</tr>
<tr>
<td>Ashigaw, Kimlin Tam</td>
<td>A087, B091</td>
</tr>
<tr>
<td>Ashktorab, Hassan</td>
<td>IA25</td>
</tr>
<tr>
<td>Assefa, Mathewos</td>
<td>A118, B020, C031</td>
</tr>
<tr>
<td>Assi, Hussein</td>
<td>C086</td>
</tr>
<tr>
<td>Aubidillo, Ivette</td>
<td>IA29</td>
</tr>
<tr>
<td>Atallah, Osama</td>
<td>C057</td>
</tr>
<tr>
<td>Atkinson, Katelyn</td>
<td>A064</td>
</tr>
<tr>
<td>Augustus, Gius</td>
<td>IA26</td>
</tr>
<tr>
<td>Austin, Dana</td>
<td>A023</td>
</tr>
<tr>
<td>Avita, Yesenia</td>
<td>B121</td>
</tr>
<tr>
<td>Awad, Aya</td>
<td>A057</td>
</tr>
<tr>
<td>Azzouqa, Abdel-Ghani</td>
<td>A120</td>
</tr>
<tr>
<td>Babatunde, Oluwole A</td>
<td>B008, B012, B016, C019</td>
</tr>
<tr>
<td>Babatunde, Oluwole</td>
<td>B075</td>
</tr>
<tr>
<td>Babbiit, Courtney</td>
<td>B062</td>
</tr>
<tr>
<td>Babcock, Kevin</td>
<td>C023</td>
</tr>
<tr>
<td>Baddoo, Melody C</td>
<td>C035, C092</td>
</tr>
<tr>
<td>Badowski, Grazya</td>
<td>C015, C074, C075</td>
</tr>
<tr>
<td>Baeker-Bispo, Jordan</td>
<td>C056</td>
</tr>
<tr>
<td>Baezconde-Garbanati, Lourdes</td>
<td>A013</td>
</tr>
<tr>
<td>Bahari, Balambal</td>
<td>B113</td>
</tr>
<tr>
<td>Bailey-Wilson, Joan E</td>
<td>C050</td>
</tr>
<tr>
<td>Baird, Tara</td>
<td>B032, C048, PR04</td>
</tr>
<tr>
<td>Baker, Angela S</td>
<td>C050</td>
</tr>
<tr>
<td>Baker, Stephanie</td>
<td>B025, B026</td>
</tr>
<tr>
<td>Bakke, Brian</td>
<td>A081</td>
</tr>
<tr>
<td>Balanean, Alexandrina</td>
<td>B076, C099</td>
</tr>
<tr>
<td>Balazy, Katy E</td>
<td>A091</td>
</tr>
<tr>
<td>Balise, Raymond R</td>
<td>C056</td>
</tr>
<tr>
<td>Balthazar, Catherine</td>
<td>A048</td>
</tr>
<tr>
<td>Bandera, Elisa V</td>
<td>C044, C046, C063, C067, C083, PR15, PR16</td>
</tr>
<tr>
<td>Banegas, Matthew P</td>
<td>B009</td>
</tr>
<tr>
<td>Banerjee, Sreedatta</td>
<td>A111</td>
</tr>
<tr>
<td>Banks, Landan</td>
<td>A022</td>
</tr>
<tr>
<td>Bao, Bin</td>
<td>B053</td>
</tr>
<tr>
<td>Bao, Ting</td>
<td>A100, PR03</td>
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## AUTHOR INDEX

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### AUTHOR INDEX

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<tr>
<td>Comer-HaGans, DeLswana</td>
<td>A048</td>
</tr>
<tr>
<td>Comiford, Ashley L</td>
<td>A004, PR01</td>
</tr>
<tr>
<td>Cong, Lei</td>
<td>C063</td>
</tr>
<tr>
<td>Connor, Avonne E</td>
<td>C077</td>
</tr>
<tr>
<td>Connors, Shahnjayla K</td>
<td>B018</td>
</tr>
<tr>
<td>Conroy, Shannon M</td>
<td>A119</td>
</tr>
<tr>
<td>Conto, Isobel</td>
<td>A034</td>
</tr>
<tr>
<td>Conti, David</td>
<td>C058, PR06, C084</td>
</tr>
<tr>
<td>Cook, Michael B</td>
<td>C016</td>
</tr>
<tr>
<td>Cooper, Dexter</td>
<td>A039</td>
</tr>
<tr>
<td>Cooper, Dexter L</td>
<td>A007, A008</td>
</tr>
<tr>
<td>Cooperberg, Matthew R</td>
<td>B063</td>
</tr>
<tr>
<td>Copeland, Glenn</td>
<td>C106</td>
</tr>
<tr>
<td>Copeland, Robert L</td>
<td>B030</td>
</tr>
<tr>
<td>Corbie-Smith, Giselle</td>
<td>C068</td>
</tr>
<tr>
<td>Coronado, Nora</td>
<td>A030</td>
</tr>
<tr>
<td>Correa, Pelayo</td>
<td>IA06</td>
</tr>
<tr>
<td>Cote, Michele L</td>
<td>C044, C120</td>
</tr>
<tr>
<td>Cottoms, Naomi</td>
<td>A002</td>
</tr>
<tr>
<td>Coupland, Victoria H</td>
<td>C016</td>
</tr>
<tr>
<td>Cournaya, Kerry S</td>
<td>C122, C123</td>
</tr>
<tr>
<td>Crawford, Jeffrey</td>
<td>B071</td>
</tr>
<tr>
<td>Creighton, Jennifer</td>
<td>A039</td>
</tr>
<tr>
<td>Cress, Doug</td>
<td>C034</td>
</tr>
<tr>
<td>Cress, Rosemary</td>
<td>C058, PR06</td>
</tr>
<tr>
<td>Croghan, Ivana</td>
<td>C088</td>
</tr>
<tr>
<td>Cromo, Mark</td>
<td>A015, A068, B110</td>
</tr>
<tr>
<td>Cromwell, Lee</td>
<td>A076</td>
</tr>
<tr>
<td>Crop, Cheryl D</td>
<td>C050</td>
</tr>
<tr>
<td>Cross, Deanna</td>
<td>B079</td>
</tr>
<tr>
<td>Crouthamel, Katherine</td>
<td>A042</td>
</tr>
<tr>
<td>Cruz, Casierra</td>
<td>A088</td>
</tr>
<tr>
<td>Cruz-Correa, Marcia R</td>
<td>B086, C045, C054</td>
</tr>
<tr>
<td>Cudjoe, Dora</td>
<td>B092</td>
</tr>
<tr>
<td>Cudjoe, Joycelyn</td>
<td>B092, B093</td>
</tr>
</tbody>
</table>
AUTHOR INDEX

Cuff, Germaine ......................................................... B029
Cuitino, Maria ....................................................... C025
Cultiva, Sebastian .................................................. C076
Cukierman, Edna ..................................................... B070
Cullen, Jennifer ................................................. A108, A111, C023
Cummings, Yvonne ............................................. A057
Curling, DuVaughn ............................................... C060
Cykert, Samuel .................................................. B025, B026

D
D’Angelo, Heather ................................................. A001, C013
D’Angelo, Olivia .................................................... C053
Dabney, Kirk ...................................................... B043, C071
Da, Yihe G ........................................................ IA37
Dalbahr, Ahmad ................................................... C057
Dalisay, Francis S ................................................. A116
Danciu, Oana C .................................................... C022
Danos, DM ........................................................... B049, PR08
Danos, Denise ..................................................... C070, IA08
Darwish, Hisham ................................................... C057
Das, Dibash K ...................................................... A109
Datri, Paula ........................................................ B067
Datta, Somenath ................................................... C036
Dauphin, Cassy .................................................... A017
Davenport, Felicia ................................................. A024
David, Fred ........................................................... C032
David, Yakira ........................................................ B102
Davis Lynn, Brittney C ........................................ C087
Davis, Jennifer ..................................................... C064
Davis, John .......................................................... A053
Davis, Kimberly E ............................................... B031
Davis, Melissa ..................................................... B058, C033
Davis, Melissa B .................................................. B056, IA27
Davis, Terry C ...................................................... B099, PR12, IA07
Dawkins-Moulin, Lenna ...................................... A009
Dayao, Zoneddy ................................................... B015
Dayo, Adepeju ..................................................... B061
Dazard, Jean-Eudes ............................................. C018
De Siervi, Adrianna ............................................. C033
De Toma, Allan ..................................................... A085
Dean Columb, Windy ......................................... B052
Deapen, Dennis .................................................... C085
Decker, Janae ..................................................... A061
DeGennaro, Vincent ............................................. C060
DeJesus, Jose ..................................................... A089
Dela Cruz, Mart .................................................... C036
Delavega, Elena ................................................. A098
Delgado, Rupika .................................................. C126
Delk, Samuel ..................................................... A064
Demarco-Wahnefried, Wendy ......................... C122, C123
Demarzo, Angelo ............................................... C058, PR06

Demissie, Kitaw .................................................. C046, C063, C067, PR15
Denton, Gary RW ................................................ C075
DeRouen, Mindy ................................................ IA37, C058, PR06
Deveaux, April E .................................................. B071
Devi, Gayathri R ................................................. A023, A038, C100, IA18
Deville Jr., Curtiland .......................................... A075
Devonish, Jumila ................................................ A108
Dhillon, Kashish .................................................. B066
Diaz, Carlos R ..................................................... B023
Diaz, Leslie ......................................................... A030
Diaz, Mirna ........................................................ B113
Diaz, Tresa P ....................................................... A046
Diaz, Zuanel ....................................................... B054
Diaz-Insua, Mireya ............................................. A113
Dieli-Conwright, Christina M ....................... C122, C123
Dignan, Mark ..................................................... A055, A068
Dignan, Mark B ................................................ A015
Ding, Kai ............................................................ A004, PR01
Dirgo, Victoria .................................................... B042
Dixon, Crystal .................................................... B025, B026
Dixon, Maria S .................................................. A023, C100
Djibo, Djeneba Audrey M .................................. A096
Doan, Stacey N .................................................. A084, C078
Dobi, Albert ......................................................... C023
Dobs, Adrian ..................................................... A068
Doescher, Mark P .............................................. A004, PR01
Doherty, Jennifer A ........................................... C079
Donald, Katherine ............................................. A002
Donenberg, Talia ................................................ C060
Doody, David R .................................................. C004
Doose, Michelle .................................................. B083
Dorsey, Tiffany ................................................... B051
Dourado, Claudia .............................................. A096
Dove, Austin PH ............................................... A098
Downs, Tracy M ................................................ A019
Drake, Richard R ................................................ C032
Drennan, Marilyn ............................................... A056
Driskill, Leslie .................................................. A004, PR01
Dronca, Roxana ................................................ A120
Du, Yuchen ........................................................ C121
Dudoit, Sandrine ............................................... C065
Dulana, Louis ..................................................... C015
Duldulao, M Philip ............................................ B027
Duma, Narjust ................................................... A120, C088
Durant, Raegan ................................................ A008, A039
Dutil, Julie ......................................................... A093
Dvorak, Justin D ................................................ A004, PR01
Dwyer, Laura ...................................................... C013
Dwyer, Sharon .................................................. A055
Dyer, Hedda ....................................................... C060
Dyson, Greg ........................................................ B053
AUTHOR INDEX

E
Eaton, Arieanna ........................................ C071
Eberle, Carolyn ........................................ A100, PR03
Eberth, Jan M .......................................... B008, B075
Echeverry, Magdalena ......................... C030
Edmonds, Megan C ................................. A057, A076
Eedunuri, Vijay K .................................. B066
Eggen, Amanda T.................................. A019
Ekena, Christine C .................................. A093
Elizabeth, Claus .................................... B111
Elkins, Wendy ........................................ B026
Elliot, Steven .......................................... C110
Ellis, Elizabeth ....................................... B040
Ellis, Ian O ............................................... C026, C102, PR18
Ellis, Katrina ......................................... B025, B026
Ellis, Nathan .......................................... IA26
Elmer, Allison ....................................... A061
Elshaikh, Mohamed ............................. C120
Emad, Rakha A ...................................... C102, PR18
Emmadi, Rajyaseer ................................ IA26
Eng, Eugenia ......................................... B025, B026
English, Kevin ....................................... A014
Enninga, Elizabeth .......................... A120
Enquoselassie, Fikre .......................... C104
Erb, Nicole ............................................... B038
Erblach, Joel ........................................... C021
Ericson, Marissa .................................... A044
Ernst, Thomas ........................................ A138
Erwin, Deborah O ................................ A017, A018, B105
Escareno, Jessica M ......................... C109
Eschrich, Steven ................................... C093
Escoffery, Cam ...................................... A066, B090
Esnaola, Nestor F .................................. A085
Espinoza, Ingrid ................................... C038
Espinoza, Ingrid C......................... C028
Estrada, Ana .......................................... C030
Etim, Ndifeke ................................. B091
Evers, B. Mark .................................... A068
Ewane, Ewune ....................................... C039
Eze, Cedric ............................................ B061

F
Fadden, Mary Kay .................................. C064
Fagan, Pebbles ...................................... A002
Fareeduddin, Anita ............................. C022
Farrar, Christine E .......................... A116
Fedewa, Stacey A ................................ B106
Fejeaman, L ........................................ C035, C051, C065, C092, PR05
Felder, Tisha ........................................ A068
Felder, Tisha M .................................. A069, B008, B075
Feldman, Robert ................................. C041
Ferguson, Tekeda.................................. C070, IA08
Fernandez, Aileen I ............................. C103
Fernandez, Alejandro ....................... B095
Finch, Jordan ........................................ A064
Findlay, Victoria J ........................... B047, C024, C025
Finlay, David ........................................ C048, PR04
Fiore, Michael C .................................. A001
Fisher, Christine M ......................... B019
Fitts, Kenneth ....................................... A064
Flaherty, Patrick ................................... B062
Fleifel, Talina ....................................... B056
Fleisher, Linda ....................................... A070
Fleming, Jodie M .................................. A023, C100
Flore, Armida ......................................... B118
Flores, Raja ............................................. B007
Flores, Tessa .......................................... B105
Florez, Zujeil ......................................... A010
Foley, Kristie L ....................................... C001
Fool, Wen-Chi ....................................... A114
Forbes, Elizabeth .............................. C001
Ford, Ford E ............................................ C024
Ford, Jean G .......................................... A096
Ford, Marvella E ......................... A069, A085, B047, C025
Foster, Dion .......................................... B047
Fozdar, Heenali ..................................... B110
Franco, Regina ...................................... A069
Frank, Matthew .................................... A014
Frank-Pearce, Summer ................. A032
Franke, Adrian ....................................... A116
Frankenfeld, Cara L ............................. C069
Fraser, David ......................................... C080, C081
Frasor, Joanna ....................................... C022
Fredrick, Cody ....................................... A019
Freedman, Jennifer ...................... IA18
Freedman, Jennifer A .................. A114, B006, B050, B061, B071, C100
Freeman, Maisha K .......................... B098
Friday, Ellen .......................................... B082
Friedland, Adam .................................. B022
Friedman, Daniela B ...................... A069
Frohn, Scott .......................................... A119
Frye, Jesse ............................................. B102
Fucinari, Juliana E .............................. C089
Fuentes, HA .......................................... C051, PR05
Fuentes, Yanette ............................... A034
Fuller-Rowell, Thomas E .............. C078
Fullington, Hannah ...................... C073, PR14
Funkhouser, Ellen ....................... C044

G
Gaballa, Rofaida ................................... B045, C029
Gaballah, Mohamed ...................... B045, C029
<table>
<thead>
<tr>
<th>Author Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabram-Mendola, Sheryl</td>
<td>C053</td>
</tr>
<tr>
<td>Gachupin, Francine</td>
<td>C059</td>
</tr>
<tr>
<td>Gad, Mohamed M</td>
<td>A110</td>
</tr>
<tr>
<td>Gaffney, Ann O</td>
<td>A034</td>
</tr>
<tr>
<td>Gaglioti, Anne</td>
<td>C053</td>
</tr>
<tr>
<td>Galadima, Hadiza</td>
<td>C005</td>
</tr>
<tr>
<td>Galadima, Hadiza I</td>
<td>B098</td>
</tr>
<tr>
<td>Gales, Dominique N</td>
<td>C113</td>
</tr>
<tr>
<td>Gallion, Kipling</td>
<td>A074</td>
</tr>
<tr>
<td>Gallion, Kipling J</td>
<td>B118</td>
</tr>
<tr>
<td>Galons, Jean-Phillipe</td>
<td>C124</td>
</tr>
<tr>
<td>Gany, Francesca</td>
<td>A100, PR03</td>
</tr>
<tr>
<td>Garai, Jone</td>
<td>C034, C035, C092, C118, IA06</td>
</tr>
<tr>
<td>Garcia Laguna, Anel</td>
<td>C061</td>
</tr>
<tr>
<td>Garcia, Carlos</td>
<td>C022</td>
</tr>
<tr>
<td>Garcia, Marisela</td>
<td>A087, B095, B119</td>
</tr>
<tr>
<td>Garcia-Bigley, Felipe</td>
<td>B113</td>
</tr>
<tr>
<td>Gardner, Kevin</td>
<td>B042, B055, C033</td>
</tr>
<tr>
<td>Gardner, Kevin</td>
<td>IA21</td>
</tr>
<tr>
<td>Garlapati, Chakravarty</td>
<td>B065</td>
</tr>
<tr>
<td>Garrett-Mayer, Elizabeth</td>
<td>C024</td>
</tr>
<tr>
<td>Garra, Mary A</td>
<td>C041</td>
</tr>
<tr>
<td>Gash, Fikre Enqaselassi</td>
<td>B033</td>
</tr>
<tr>
<td>Gaubatz, Matthew E</td>
<td>A115, A117</td>
</tr>
<tr>
<td>Gaudet, Mia M</td>
<td>C053</td>
</tr>
<tr>
<td>Gearhart, Larisa</td>
<td>A038</td>
</tr>
<tr>
<td>Gehlert, Sarah</td>
<td>B018</td>
</tr>
<tr>
<td>Geisler, Alyssa</td>
<td>A061</td>
</tr>
<tr>
<td>Genao, Inginia</td>
<td>B111</td>
</tr>
<tr>
<td>George, Daniel</td>
<td>B022</td>
</tr>
<tr>
<td>George, Daniel J</td>
<td>A114, B006, B050, B061</td>
</tr>
<tr>
<td>George, Sophia HL</td>
<td>C060</td>
</tr>
<tr>
<td>Gerber, Michael H</td>
<td>A106</td>
</tr>
<tr>
<td>Getachew, Sefonias</td>
<td>C104, C105</td>
</tr>
<tr>
<td>Ghahbass, Basmam</td>
<td>A095, B079, B080</td>
</tr>
<tr>
<td>Ghosh, Karthik</td>
<td>C088</td>
</tr>
<tr>
<td>Gibb, Lee D</td>
<td>B042, B055</td>
</tr>
<tr>
<td>Gierach, Gretchen L</td>
<td>C087</td>
</tr>
<tr>
<td>Gillespie, Theresa W</td>
<td>B084</td>
</tr>
<tr>
<td>Gillies, Robert</td>
<td>C091</td>
</tr>
<tr>
<td>Gilliland, Aubrey</td>
<td>C070</td>
</tr>
<tr>
<td>Gill, Tamara</td>
<td>B068, PR09, B114</td>
</tr>
<tr>
<td>Giri, Veda N</td>
<td>A028</td>
</tr>
<tr>
<td>Gizaw, Mulukzen</td>
<td>B103</td>
</tr>
<tr>
<td>Glaser, Kathryn M</td>
<td>B105</td>
</tr>
<tr>
<td>Glover, Wayne</td>
<td>A114</td>
</tr>
<tr>
<td>Godfrey, Sherette</td>
<td>B072</td>
</tr>
<tr>
<td>Godding Sauer, Ann</td>
<td>B106</td>
</tr>
<tr>
<td>Gogana, Pooya</td>
<td>A036</td>
</tr>
<tr>
<td>Gogineni, Keerthi</td>
<td>C053</td>
</tr>
<tr>
<td>Gomez, Anu M</td>
<td>C011, C012</td>
</tr>
<tr>
<td>Gomez, Christian</td>
<td>C038</td>
</tr>
<tr>
<td>Gomez, Christian R</td>
<td>C028, C090</td>
</tr>
<tr>
<td>Gómez, HL</td>
<td>C051, PR05</td>
</tr>
<tr>
<td>Gomez, Scarlett L</td>
<td>IA37, IA49, IA52, A79, A119, B039, B040, C011, C012, C058, PR06, C072, C073, PR14</td>
</tr>
<tr>
<td>Gomez-Arteaga, Alexandra</td>
<td>C061</td>
</tr>
<tr>
<td>Gonzales, Ralph</td>
<td>A081</td>
</tr>
<tr>
<td>Gonzalez, Evelyn</td>
<td>C014, PR13</td>
</tr>
<tr>
<td>Gonzalez, Evelyn T</td>
<td>A035</td>
</tr>
<tr>
<td>Gonzalez-Pons, Maria</td>
<td>C054</td>
</tr>
<tr>
<td>Gooden, Reginald</td>
<td>B031</td>
</tr>
<tr>
<td>Goodman Jr, Oscar B</td>
<td>B017</td>
</tr>
<tr>
<td>Goodman, Melody G</td>
<td>B018</td>
</tr>
<tr>
<td>Goodman, Michael</td>
<td>B084</td>
</tr>
<tr>
<td>Gordji, Roya</td>
<td>C038</td>
</tr>
<tr>
<td>Gorjala, Priyatham</td>
<td>B017, B073</td>
</tr>
<tr>
<td>Gossell-Williams, Maxine</td>
<td>C126</td>
</tr>
<tr>
<td>Gradishar, William</td>
<td>C022</td>
</tr>
<tr>
<td>Graetz, Ilana</td>
<td>A005, A073</td>
</tr>
<tr>
<td>Graff, J Carolyn</td>
<td>A005, A073</td>
</tr>
<tr>
<td>Graham, Garrett</td>
<td>C103</td>
</tr>
<tr>
<td>Grant, Stefan</td>
<td>C001</td>
</tr>
<tr>
<td>Gray, Heewon L</td>
<td>A034</td>
</tr>
<tr>
<td>Gray, II, Darrell M</td>
<td>IA10</td>
</tr>
<tr>
<td>Greally, John</td>
<td>B060</td>
</tr>
<tr>
<td>Green, Andrew</td>
<td>C026</td>
</tr>
<tr>
<td>Green, Andrew R</td>
<td>C102, PR18</td>
</tr>
<tr>
<td>Green, Paige</td>
<td>C027</td>
</tr>
<tr>
<td>Greenlee, Heather</td>
<td>A034</td>
</tr>
<tr>
<td>Greer, Adam</td>
<td>B082</td>
</tr>
<tr>
<td>Gregorich, Steven</td>
<td>A043, A103</td>
</tr>
<tr>
<td>Gregory, Paula</td>
<td>A065</td>
</tr>
<tr>
<td>Gregoski, Mathew J</td>
<td>C024</td>
</tr>
<tr>
<td>Grigoryan, Hasmik</td>
<td>C065</td>
</tr>
<tr>
<td>Grossman, Betsy</td>
<td>A015</td>
</tr>
<tr>
<td>Grossman, Evan</td>
<td>B102</td>
</tr>
<tr>
<td>Grossman, Suzanne</td>
<td>A010</td>
</tr>
<tr>
<td>Grumbach, Giesela</td>
<td>A048</td>
</tr>
<tr>
<td>Gruß, Inga</td>
<td>B009</td>
</tr>
<tr>
<td>Gu Lee, Yong</td>
<td>B021</td>
</tr>
<tr>
<td>Gudina, Abd T</td>
<td>C106</td>
</tr>
<tr>
<td>Guerrab, Fatima</td>
<td>B025, B026</td>
</tr>
<tr>
<td>Guertin, Kristin A</td>
<td>C044</td>
</tr>
<tr>
<td>Guest, Dolores</td>
<td>A014</td>
</tr>
<tr>
<td>Guevara-Pardo, Gonzalo</td>
<td>A049</td>
</tr>
<tr>
<td>Gundelach, Amy</td>
<td>B015</td>
</tr>
<tr>
<td>Gundell, Susan</td>
<td>C058, PR06</td>
</tr>
<tr>
<td>Gupta, Meenaksh</td>
<td>C102, PR18</td>
</tr>
<tr>
<td>Gupta, Nilesh</td>
<td>A113</td>
</tr>
<tr>
<td>Gupta, Raavi</td>
<td>B059, C118</td>
</tr>
</tbody>
</table>
AUTHOR INDEX

Gupta, Samir ................................................................. A041, B113
Guzman, Arielle ............................................................ B076
Guzman, Monica L ......................................................... C061
Gwede, Clement ............................................................ C091
Gwede, Clement K ......................................................... A065
Györffy, Balazs ............................................................... C103

H
Haardorfer, Regine ............................................................ A066
Hagensee, Michael .......................................................... B116
Halie, Robert ................................................................. IA37
Hailu, Benjamin ............................................................. A026
Haiman, Christopher ................................................... IA49, C058, C084, PR06
Hakes, John K ................................................................. C069
Hale, Rachel ................................................................. A002
Hall, Ivanhoe ................................................................. A036
Hall, Marla B ................................................................. B107
Halpern, Michael T ......................................................... B010, B011, IA45
Hamad, Nour Al-Huda ................................................... C057
Hamilton, Ann S ........................................................... B039, C058, PR06
Hammer, Sunetra TG ........................................................ A107
Hann, Hie-Won .............................................................. A101, A102
Hannon, Peggy A ........................................................... C004
Hanson, Ginger C ........................................................... B009
Harb de la Rosa, Alfredo .................................................. C059
Harding, Garrett ............................................................ A061
Hardy, Claudia M ........................................................... A020
Harfouche, Frances ....................................................... A018
Harold, Karen ............................................................... A082
Harper, Felicity ............................................................. C048, PR04
Harris, Marion ............................................................... A006
Harris, Monica ............................................................... A007, A008, A039
Harvey, Demetrius ........................................................ C080
Hassane, Duane C ........................................................ C061
Hastert, Theresa ........................................................... C068
Hastert, Theresa A ........................................................ B032
Hatcher, Jennifer ......................................................... B097, B100
Hatoum, Hassan .......................................................... C086
Hatzi, Christos ............................................................... A089
Haughton, Jessica .......................................................... B113
Hauser, Lindsay ............................................................ A015
Hawkins, Anfernee ........................................................ C109
He, Jun .......................................................................... A076
Heaphy, Christopher ..................................................... C027
Heath, Elisabeth ............................................................ B022
Hebert, James ............................................................... A068
Hebert, James R ............................................................ A069, B008, B075, C044
Hebig, Prophet, Anke ................................................... A081
Hegerty, Scott ............................................................... C022
Heiny, Sue P ................................................................. A069, B008, B012, B016, C019
Helitzer, Deborah ......................................................... A014
Helke, Kristi ................................................................. C025
Henderson, Vida ........................................................... A048, A058, B108
Henry, Kevin ............................................................... C014, PR13
Herbst, Roy ................................................................. B096
Herbstman, Julie B ........................................................ C082
Herget, Kimberly .......................................................... C079
Hernandez, Brenda Y .................................................... A116, C074
Hernandez, Jessica ......................................................... B086
Hernandez, Natalie ....................................................... A039
Hernandez, Natalie D ..................................................... A007, A008
Hernandez, Olivia ........................................................ A030
Hernandez, Sara Gil ....................................................... C033
Herold, Karen .............................................................. A083, A084, A086, B109, B119
Herring, Kijai ............................................................... B043
Hershman, Dawn ........................................................ A034
Herzon, Thaddeus A ...................................................... A088, A116
Hewitt, Stephen .......................................................... C033
Hicks, Amanda ............................................................. A063
Hill, Dorian ................................................................. A064
Hill, Elizabeth G .......................................................... A085
Hill, Steven C ............................................................... B011
Hilliard, Constance B .................................................... B069
Hilton, Ebony J ............................................................. C024
Himbert, Caroline ........................................................ C079
Hinds, Kathynie ............................................................ IA16
Hirko, Kelly A .............................................................. C106
Hoang, Van T ............................................................. C110
Hodge, Stephanie ........................................................ B009
Hoh, Sarah D ............................................................... A021
Holliday, Emma B ........................................................ A075
Holm, Hannah ............................................................ A061
Holmes Jr, Larry .......................................................... B043, C071
Holowatyj, Andreana N ................................................ C079
Holt, Cheryl L ............................................................... A024
Hong, Chi-Chen .......................................................... C046, C063, C067, PR15
Hong, Susan ............................................................... BI12
Hong, Young-Rock ........................................................ B028
Hooker Jr, Stanley E ..................................................... B073
Hoover, Diana S .......................................................... A032
Hopkins, Michelle .................................................... A004, PR01
Horst, Kathleen C ........................................................ A091
Hoskins, Kent .............................................................. A058, C022, C098
Hoskins, Kent F ........................................................... A048
Hossain, Fokhrul ........................................................... C070, C110
Hough, Holly .............................................................. A023, A038, IA18
Houston, Julia F ........................................................ A015, A068, B110
Hovesten, Katheline .................................................... A120
Howe, Elizabeth A ....................................................... IA27
Hsieh, Meichen .......................................................... C020
Hsu, David S ............................................................... A114
Hsu, Ping-Ching .......................................................... A002, C062
# AUTHOR INDEX

<table>
<thead>
<tr>
<th>Author</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hu, D</td>
<td>C051</td>
</tr>
<tr>
<td>Huang, Franklin</td>
<td>A122</td>
</tr>
<tr>
<td>Huang, Jiaoti</td>
<td>A114</td>
</tr>
<tr>
<td>Huang, Li</td>
<td>B102</td>
</tr>
<tr>
<td>Huang, Wei</td>
<td>C023</td>
</tr>
<tr>
<td>Huang, Yulun</td>
<td>C121</td>
</tr>
<tr>
<td>Huertas, Antonio</td>
<td>A049</td>
</tr>
<tr>
<td>Huff Davis, Anna</td>
<td>A002</td>
</tr>
<tr>
<td>Hughes, Amy E</td>
<td>C073</td>
</tr>
<tr>
<td>Hughes, Marybeth</td>
<td>C005</td>
</tr>
<tr>
<td>Hughes, Steven J</td>
<td>A106</td>
</tr>
<tr>
<td>Hughes-Halbert, Chania</td>
<td>C032</td>
</tr>
<tr>
<td>Hughley, Reymond</td>
<td>B052</td>
</tr>
<tr>
<td>Hull, Pam</td>
<td>A033</td>
</tr>
<tr>
<td>Hullar, Meredith A</td>
<td>IA38</td>
</tr>
<tr>
<td>Hunlieth, Jean</td>
<td>B115</td>
</tr>
<tr>
<td>Hunt, Kelly K</td>
<td>C039</td>
</tr>
<tr>
<td>Huntsman, S</td>
<td>C051</td>
</tr>
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<td>Huo, Jinhai</td>
<td>B028</td>
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<tr>
<td>Hurley, Judith</td>
<td>C060</td>
</tr>
<tr>
<td>Hussein, Muneer J</td>
<td>A110</td>
</tr>
<tr>
<td>Hwang, Caroline</td>
<td>A100</td>
</tr>
<tr>
<td>Hwang, Tae Hyin</td>
<td>A107</td>
</tr>
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<td>Hyslop, Terry</td>
<td>A082</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>Ibe, Ifeoma</td>
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<td>Ibrahim, Safa S</td>
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<td>Idassi, Omberni</td>
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</tr>
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<td>Imtiaz, Sayed</td>
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<td>In, Haejin</td>
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<tr>
<td>Ingraham, Kearston L</td>
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<tr>
<td>Injac, Sarah</td>
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<td>Investigators, CaPTC</td>
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<td>Iqbal, Sadat</td>
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<td>Isa, Muhammad</td>
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<table>
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<td>Ji, Ping</td>
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<td>Jimenez, Cecilia</td>
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<td>Jin, Anqi</td>
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<td>John, Esther M</td>
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<tr>
<td>Johnson, Jarrett A</td>
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<td>Jones, Alana</td>
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<td>Jones, Beth A</td>
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<tr>
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<td>Jones, Katherine L</td>
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<td>Jones, Steven D</td>
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<tr>
<td>Jones, Tameka N</td>
</tr>
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<td>Jones, Veronica C</td>
</tr>
<tr>
<td>Jordan, Lauren</td>
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<tr>
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</tr>
<tr>
<td>Jordan, Symone</td>
</tr>
<tr>
<td>Joseph, Galen</td>
</tr>
<tr>
<td>Joseph, Kathie-Ann</td>
</tr>
<tr>
<td>Joseph, Samantha</td>
</tr>
<tr>
<td>Joshi, Shriya</td>
</tr>
<tr>
<td>Joshu, Corinne E</td>
</tr>
<tr>
<td>Joslin, Charlotte</td>
</tr>
<tr>
<td>Judge, Andrew</td>
</tr>
<tr>
<td>Judge, Andrew R</td>
</tr>
<tr>
<td>Jung, Gabriel</td>
</tr>
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<td>Juon, Hee-Soon</td>
</tr>
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<td>Justin, Markowski</td>
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</table>

<table>
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<tbody>
<tr>
<td>Kadari, Saritha</td>
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<tr>
<td>Kadjacsny-Balla, Andre</td>
</tr>
<tr>
<td>Kadiuban, Susan</td>
</tr>
</tbody>
</table>
AUTHOR INDEX

Kagan, Jacob................................................................. A111, C023
Kagawa-Singer, Marjorie........................................... IA15
Karabasheh, Hamzah............................................... A023
Karabasheh, Hamzah............................................... A023
Kaljic, Vladimir..................................................... B076
Kamal, Miral............................................................... A122
Kantelhardt, Eva...................................................... B013
Kantelhardt, Eva Johanna................................. A118, B020, C031, C014, C015
Kantoff, Philip......................................................... B022
Kaplan, Cecilia........................................................ A042
Kapura, Neeraj........................................................ C112
Karlawitz, Jordan J................................................ IA09
Karlawitz, Jordan J................................................ IA09
Karmi, Basar............................................................. C057
Kaufman, Andreas M............................................... B019
Kaur, Ravneet.......................................................... A048
Kashal, Sharmela..................................................... A042
Kasha, Alpana.......................................................... B112
Keegan, Theresa HM............................................... B039
Keith, Scott.............................................................. C017
Keller, Maria............................................................. A017
Kelley, Michael J....................................................... C116, PR11
Kelly, Joan............................................................ B029
Kelly, Michael......................................................... C002
Kelly, Scott P.......................................................... C016
Kennedy, Amy E.................................................... A121
Kennedy, Kendall.................................................. A082, B109
Kennedy, Kendall J................................................ A083, A084, B119
Kent, Erin E............................................................... B010
Khalil, Remonds...................................................... C120
Kharabasheh, Hamzah........................................... A023
Khosla, Parameet.................................................... B076
Kidner, Sherry.......................................................... IA15
Kim, Eunjung........................................................... A122
Kim, Joanne............................................................ A085
Kim, Julie................................................................. C022
Kim, Yoon-Ji............................................................ A081
Kimbro, Kevin S..................................................... B073
Kimbrough, Alexander........................................... A036
King-Marshall, Evelyn............................................ C041
Kittles, Rick A......................................................... A044, A087, A114, B071, B073
Kiviniemi, Marja...................................................... A017
Klassen, Ann Carroll.............................................. A010
Klein, Eric................................................................. B051
Klimov, Sergey........................................................ C101, C102, PR18
Knight, Kendrea D................................................ A085, C024
Kobetz, Erin N........................................................ C056
Kocacik, Mehmet.................................................... A073
Koch, Pam............................................................... A034
Koga, Yuseke.......................................................... A122
Kogiso, Mari............................................................ C121
Kohaar, Indu............................................................ A111
Kohli, Nidhi............................................................. B037
Kong, Chung Yin................................................... B087
Kottschade, Lisa................................................... A120
Kramer, Rita M....................................................... C024
Kramis, Konstantinos........................................... B068, PR09
Krause, Trudy M.................................................... B081
Krisanits, Bradley A............................................. B047, C024, C025
Krishnamurthi, Uma............................................. C102, PR18
Krishnamurthi, Uma............................................. C206
Kristal, Bruce S....................................................... IA38
Kroenke, Candyce.................................................. B048
Kroenke, Candace H............................................. A079, C068
Krukowski, Rebecca............................................. A073
Krukowski, Rebecca A........................................... A005
Kruper, Laura L...................................................... A082, A083, A084, B109, B119
Kulik, Margarette............................................... A002
Kumar, Deepak..................................................... C038
Kumar, Rizie........................................................... B083
Kumar, Samir......................................................... B102
Kuo, Huai-Ching.................................................. A108, C023
Kupfer, Sonja......................................................... IA26
Kurian, Allison........................................................ C011, C012
Kurian, Allison W................................................ IA50
Kushi, Lawrence................................................... B040
Kushi, Lawrence H............................................... A079
Kwan, Marilyn L.................................................... A079
Kwon, Simona....................................................... A026, B029

L

L, Rubin................................................................. A069
La Rue, Amanda C............................................... C024
LaCroix, Bonnie L................................................ B006
Lai, Sarah............................................................. A029
Lammers, Philip E................................................ A050
Lampe, Johanna W............................................... IA38
Lamson, David R................................................... C100
Lane, Dorothy S.................................................... C068
Lane, Whitney....................................................... A038
Laracheute, Antonio............................................ C095
Larson, Timothy.................................................... A119
Lathan, Christopher S......................................... A003
Le Marchand, Loic................................................ A119, C096, IA38, IA49
Le, Mindy............................................................. A089
Leach, Robin........................................................ C032
Leader, Amy.......................................................... A010
Leader, Amy E...................................................... A028
Lee, Benjamin R................................................... C059
Lee, Chaeyun........................................................ C026
Lee, Hye-ryeon....................................................... C015
AUTHOR INDEX

Lee, Kyuwan.......................................................... C122, C123
Lee, Sang W.......................................................... B027
Legdesog, Chandra............................................. A088
Leighton, John C................................................... A096
Lemus, Brenda Y................................................... A050
Lengerich, Eugene J.............................................. B013
Leon Guerrero, Rachael T..................................... C125
Leonardi, Claudia................................................... C070, IA08
Leslie, Timothy F................................................... C069
Levine, Fayola...................................................... B068, PR09, B114
Lewin, Jack.......................................................... C038
Lewis, Ayanna...................................................... B102
Lewis, Deyana D.................................................... C050
Lewis, Kayla A...................................................... B046
Li, Bin.................................................................... C020
Li, Ellen............................................................... B059, B102, C118
Li, Li....................................................................... C034
Li, Xiao-Nan........................................................... C121
Li, Xiaoxian............................................................ C026
Li, Xiaoxian Bill...................................................... C102, PR18
Li, Yanjing............................................................. A114
Li, Yisheng........................................................... A053
Li, Yuqing............................................................ IA37
Liang, Su-Ying..................................................... IA37
Lichtensztajn, Daphne.......................................... IA37
Lightfoot, Alexandra F......................................... B025, B026
Likhtshytyn, Michelle............................................. B102
Lillard, Jr, James W............................................... C113
Lilly, Michael B.................................................... B047, C024
Lim, Unhee........................................................... C084, IA38
Lindsay, Holly..................................................... C121
Lines, Lisa M........................................................ B010
Lipworth, Loren.................................................. C064
Lisovizc, Nedra.................................................... A008
Liss, Michael........................................................ C032
Li, Liang............................................................. C001, C002
Li, Lihua............................................................... C085
Li, Ying................................................................... C108
Li, Zhigang........................................................... C121
Llanos, Adana AM............................................... C063
Llanos-Wilson, Adana AM.................................... C067, PR15
Llave, Karen....................................................... IA15
Llera, Andrea S..................................................... IA41
Llor, Xavier........................................................ IA26
Llorente, Ricardo................................................ A075
Lloyd, Stacy....................................................... B073
Lo, Shelly........................................................... C099
Lobo, Jolene........................................................ B015
Locklear, MPH, Gavin........................................ B107
Loest, Helena..................................................... A056
Loffredo, Christopher......................................... B051
Loh, Alice............................................................ IA22
Lopes, Gilberto................................................... A094, C056
Lopez, Ana Maria................................................ A061
Lopez, Jose........................................................ B113
Lopez de la Torre, Carolina................................. B113
Lotan, Tamara..................................................... C058, PR06
Lowe, Phillip....................................................... B021
Loyd, Susan........................................................ B116
Lu, Jiayun........................................................... C027
Lu, Qian............................................................. A099, IA22
Lu, Yan............................................................... A095, B079, B080
Lu-ao, Grace..................................................... A108
Lucio, Araceli....................................................... A030
Lufi, Hal............................................................. IA37
Lum, Ray............................................................ A028
Lung, Brandon................................................... B102
Luu, Minh........................................................ A066
Lyn-Cook, Beverly............................................... B064, C109
Lynch, Miranda.................................................. B105
Lynch, Shannon M............................................... C014, PR13
Lyo, Helen........................................................ B102

M

Ma, Grace.......................................................... A029, B114, C047
Ma, Hilary.......................................................... A053
MA, Arissa......................................................... A045
Ma, Xiaohui........................................................ C037
Ma, Xinran........................................................ C082
Ma, Y............................................................... B049, PR08
Ma, YM............................................................ C066
Machiorlatti, Michael......................................... C086
Macias, Virgilia................................................... C098
Maclean, Catherine.......................................... B011
Madak-Erdogan, Zeynep.................... B048, C003, C022
Madeira da Silva, Luciana.................................... B057
Madeleine, Margaret........................................... C006
Magi-Gulluzzi, Cristina....................................... B051
Magliocco, Anthony............................................ C091
Magwood, Gayenel............................................. C025
Magwood, Gayenell............................................ C024
Mahfouz, Mahmoud........................................... B002
Mahmoud, Abeer M.......................................... C098
Maki, Julia........................................................ A011, B115
Malafa, Mokenge............................................... C091
Malik, Manmeet................................................ A100, PR03
Malika, Nipher M............................................... A072
Mama, Scherezade K.......................................... B013
Manamo, Wondimu Ayele................................. B033, B034
Manley, Nancy.................................................. B058
Mann, Devin...................................................... A026
Manne, Upender............................................... C102, PR18
**AUTHOR INDEX**

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manning, Michelle L.</td>
<td>B024, PR07</td>
</tr>
<tr>
<td>Manochkarian, Rami</td>
<td>A120</td>
</tr>
<tr>
<td>Manoljovic, Zarko</td>
<td>IA26</td>
</tr>
<tr>
<td>Mansfield, Aaron</td>
<td>A120</td>
</tr>
<tr>
<td>Mansfield, Krystine</td>
<td>BO42</td>
</tr>
<tr>
<td>Mansour, John C</td>
<td>A107</td>
</tr>
<tr>
<td>Mantey, Julia</td>
<td>BO32, BO35, CO48, PR04</td>
</tr>
<tr>
<td>Margenthaler, Julie</td>
<td>BO18</td>
</tr>
<tr>
<td>Marin-Chollom, Amanda</td>
<td>A034</td>
</tr>
<tr>
<td>Marker, KM</td>
<td>C051, PR05</td>
</tr>
<tr>
<td>Markham, Merry-Jennifer</td>
<td>A063</td>
</tr>
<tr>
<td>Marquez, Jessica</td>
<td>B113</td>
</tr>
<tr>
<td>Márquez-Magaña, Leticia</td>
<td>C111</td>
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<tr>
<td>Martello, Laura</td>
<td>B102</td>
</tr>
<tr>
<td>Martello-Roney, Laura</td>
<td>B059, C118</td>
</tr>
<tr>
<td>Martin, Elizabeth C</td>
<td>C110</td>
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<td>C022</td>
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<td>Martin, Michelle Y</td>
<td>A098</td>
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<td>Martin, Paul M</td>
<td>BO02</td>
</tr>
<tr>
<td>Martinez Tovar, Adolfo</td>
<td>C061</td>
</tr>
<tr>
<td>Martinez, Elena</td>
<td>IA02</td>
</tr>
<tr>
<td>Martinez, Erica</td>
<td>B108</td>
</tr>
<tr>
<td>Martinez, Jessica</td>
<td>C124</td>
</tr>
<tr>
<td>Martinez, Maria E</td>
<td>A041, A045, B121</td>
</tr>
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<td>Martinez-Donate, Ana</td>
<td>A010</td>
</tr>
<tr>
<td>Martini, Rachel</td>
<td>B058</td>
</tr>
<tr>
<td>Martini, Rachel A</td>
<td>IA27</td>
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<td>Martini, Rachel N</td>
<td>BO56</td>
</tr>
<tr>
<td>Masire, Phatsumo</td>
<td>BO43, C071</td>
</tr>
<tr>
<td>Maslamani, Nufuz</td>
<td>C057</td>
</tr>
<tr>
<td>Masri, Shahir</td>
<td>A119</td>
</tr>
<tr>
<td>Matossian, Margarite D</td>
<td>C110</td>
</tr>
<tr>
<td>Matsuno, Rayna K</td>
<td>C055</td>
</tr>
<tr>
<td>Matsuyama, Robin</td>
<td>A092</td>
</tr>
<tr>
<td>Mattle, Heather</td>
<td>A094</td>
</tr>
<tr>
<td>Matsuyama, Mihoko</td>
<td>IA40</td>
</tr>
<tr>
<td>Maurana, Cheryl</td>
<td>C080, C081</td>
</tr>
<tr>
<td>Mavingire, Nicole</td>
<td>C126</td>
</tr>
<tr>
<td>Maxwell, Cynthia</td>
<td>A018</td>
</tr>
<tr>
<td>May, Folasade P</td>
<td>IA12</td>
</tr>
<tr>
<td>May, Jennifer</td>
<td>C005</td>
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<tr>
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<td>BO25</td>
</tr>
<tr>
<td>Mba, Olive M</td>
<td>BO26</td>
</tr>
<tr>
<td>McAllister, MPH, Jamila</td>
<td>BI07</td>
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<tr>
<td>McAuliffe, John</td>
<td>A104, A105</td>
</tr>
<tr>
<td>McBride, Colleen</td>
<td>BO90</td>
</tr>
<tr>
<td>McCall, Shannon J</td>
<td>A114, BO71</td>
</tr>
<tr>
<td>McCall, Shannon J</td>
<td>A108</td>
</tr>
<tr>
<td>McCauley, John</td>
<td>A108</td>
</tr>
<tr>
<td>McCrav, Gail</td>
<td>BO90</td>
</tr>
<tr>
<td>McCullough, Lauren</td>
<td>C026</td>
</tr>
<tr>
<td>McCullough, Lauren E</td>
<td>C053, C102, PR18</td>
</tr>
<tr>
<td>McDaniels-Davidson, Corinne R</td>
<td>A041</td>
</tr>
<tr>
<td>McDowell, Tiffany</td>
<td>A036</td>
</tr>
<tr>
<td>Meachron, Troy</td>
<td>B055</td>
</tr>
<tr>
<td>McElfish, Pearl</td>
<td>C049, C062</td>
</tr>
<tr>
<td>McElwain, Cora</td>
<td>A093</td>
</tr>
<tr>
<td>McFarlane, Anita</td>
<td>A025</td>
</tr>
<tr>
<td>McGee-Avila, Jennifer K</td>
<td>B083</td>
</tr>
<tr>
<td>McGirt, Stephanie</td>
<td>B015</td>
</tr>
<tr>
<td>McIntire, Russell</td>
<td>C017</td>
</tr>
<tr>
<td>McKay, Rana</td>
<td>B022</td>
</tr>
<tr>
<td>McKinney, Lawrence</td>
<td>A007, A008, B090</td>
</tr>
<tr>
<td>McKey, Lisako</td>
<td>A009</td>
</tr>
<tr>
<td>McLarty, Jerry</td>
<td>B116, C037</td>
</tr>
<tr>
<td>McLeod, David G</td>
<td>C023</td>
</tr>
<tr>
<td>McLean, Emily</td>
<td>IA16</td>
</tr>
<tr>
<td>McMulhen, Carmit</td>
<td>B009</td>
</tr>
<tr>
<td>McNeel, Timothy S</td>
<td>B023</td>
</tr>
<tr>
<td>McNeil-Haughton, Lorna</td>
<td>C039</td>
</tr>
<tr>
<td>McNeil, Mina H</td>
<td>A053</td>
</tr>
<tr>
<td>Meade, Cathy</td>
<td>A065</td>
</tr>
<tr>
<td>Meade, Victoria</td>
<td>A061</td>
</tr>
<tr>
<td>Medina, Maria</td>
<td>A030</td>
</tr>
<tr>
<td>Medina, Vilma</td>
<td>A049</td>
</tr>
<tr>
<td>Meeker, Alan</td>
<td>C027</td>
</tr>
<tr>
<td>Meeks, Joel</td>
<td>C012, PR18</td>
</tr>
<tr>
<td>Mejia, Juan Carlos</td>
<td>B054</td>
</tr>
<tr>
<td>Meliccio, Lemuel</td>
<td>A049</td>
</tr>
<tr>
<td>Mencia-Trinch, Nuria</td>
<td>C061</td>
</tr>
<tr>
<td>Mendez, Ana Joy</td>
<td>A088, A116</td>
</tr>
<tr>
<td>Mendez, Gayle</td>
<td>C118</td>
</tr>
<tr>
<td>Mendoza, Jason A</td>
<td>C004</td>
</tr>
<tr>
<td>Menon, Mani</td>
<td>A113</td>
</tr>
<tr>
<td>Mercado, Vanessa</td>
<td>IA15</td>
</tr>
<tr>
<td>Merchant, Nipun</td>
<td>C091</td>
</tr>
<tr>
<td>Merlo, Leyla</td>
<td>C041</td>
</tr>
<tr>
<td>Meyer, Jerrod</td>
<td>A101</td>
</tr>
<tr>
<td>Meza Florez, R.</td>
<td>C051, PR05</td>
</tr>
<tr>
<td>Michaels, Elizabeth</td>
<td>C072</td>
</tr>
<tr>
<td>Miele, I</td>
<td>BO49, PR08</td>
</tr>
<tr>
<td>Miele, Lucio</td>
<td>C034, C070, C110, IA07</td>
</tr>
<tr>
<td>Mijals, Eleni</td>
<td>C037</td>
</tr>
<tr>
<td>Milam, Joel</td>
<td>A013</td>
</tr>
<tr>
<td>Milia, Maria</td>
<td>B113</td>
</tr>
<tr>
<td>Miller, Cameron</td>
<td>C032</td>
</tr>
<tr>
<td>Miller, Joshua</td>
<td>B102</td>
</tr>
<tr>
<td>Miller, Rachel L</td>
<td>C082</td>
</tr>
<tr>
<td>Million-Underwood, Sandra</td>
<td>C080, C081</td>
</tr>
<tr>
<td>Mills, Glenn</td>
<td>A097, B082, B099, PR12, C037, IA07</td>
</tr>
<tr>
<td>Mir, Hina</td>
<td>C113</td>
</tr>
</tbody>
</table>
AUTHOR INDEX

Miranda-Carboni, Gustavo ........................................ C109
Mishra, Shiraz .......................................................... A014, B015
Mishra, Shiraz I .......................................................... A059
Missanelli, Megan ..................................................... B057
Mitchell, Eudora ....................................................... A044
Mitchell, Khadijah A ................................................ A112
Mitra, Ranjana ........................................................... B017, B073
Mitrea, Cristina .......................................................... B053
Mittal, Karuna .............................................................. C102, PR18
Modjeski, Denise ....................................................... C058, PR06
Mohammad, Ramzi M ................................................ B053
Mohammed, Sulma ................................................... B021, C114
Mohammed, Tabrez A ............................................... B066
Mohanty, Salini .......................................................... A028
Mohiuddin, Kamran ................................................... A096
Molina, Yamile .......................................................... A021, A030, A031, A051, B076, C094, PR17
Molinolo, Alfredo A .................................................. A042
Mollica, Michelle A .................................................. B010
Monge Pimentel, CL .................................................. C051, PR05
Monico, Jesus ............................................................ C038
Monroe, Kristine R ..................................................... C084, IA38
Monteil, Michele ........................................................ IA27
Monteiro, Alvaro N .................................................... C093
Montgomery, Guy H ................................................... C021
Montgomery, Susanne ................................................ A044, A072
Moore, LeAndre ........................................................ A036
Moore, Rhonda .............................................................. C109
Moore-Connelly, Marci .............................................. B115
Moore-Medlin, Tara ..................................................... C037
Moorman, Patricia ..................................................... C083, PR16
Moorman, Patricia G .................................................. C044
Morales, Jayson .......................................................... C015
Morales, Jennyfer ....................................................... A061
Moran, Robert ............................................................ B079
Morency, Jason ......................................................... A012
Moreno, Carlos S ....................................................... C028
Morgan, Douglas ....................................................... C054
Morgan, Glen ............................................................. A001
Moroz, Krzysztof ......................................................... C110
Morris, James ............................................................. B099, PR12
Mortimer, Joanne E .................................................... C122, CI23
Moser, Richard P ....................................................... IA51
Mosley, Thomas H ..................................................... C090
Mossp, Jessie .............................................................. B105
Motley-Johnson, Evangeline ....................................... A064
Mucci, Lorelei ............................................................. B022
Mukherjee, Sarbajit .................................................... C086
Mukhopadhyay, Partha .............................................. C033
Mungai, Faith ............................................................. A064
Munoz, Edgar ............................................................. B118
Munoz-Sagastibelza, Maria ......................................... B059, C118
Murphy, Adam .......................................................... A036
Murphy, Peggy ........................................................ B099, PR12
Murray, Marcus ......................................................... A036
Muscarella, Peter ...................................................... A104, A105
Musser, John ............................................................ A108
Mustafa, Saeed ........................................................ C057
Myckatyn, Terence ....................................................... B018
Myer, Parvathi ............................................................ B060
Myers, Evan ............................................................... C083, PR16

N
Naidoo, Michelle K .................................................. B068, PR09
Napoles, Anna .......................................................... B055, C033
Napoles, Anna M ...................................................... A103, C111
Napoles, Anna Maria ................................................ A043
Narod, Steven .......................................................... C060
Nassour, Ibrahim ...................................................... A107
Nathan, Cherie-Ann ................................................... C037
Navder, Khursheed .................................................... C047
Neal, Lon ................................................................. C088
Nebeling, Linda ........................................................ C013
Neerukonda, Latha .................................................... B079
Nenez, Alan .............................................................. A086
Nerio, Katty ............................................................... B095, B119
Neuhausen, Susan .................................................... C057
Newcomb, Polly A ..................................................... C068
Newman, Lisa ............................................................ B058
Newman, Lisa A ....................................................... B056, C033, IA27, IA43
Ng, Diane ................................................................. B023
Nganteh, Maridine NL ................................................. A050
Nguyen, Harry ........................................................ B002
Nguyen, Minhuyen ................................................... C014, PR13
Nguyen, Nga ............................................................ A032
Nichols, Hazel B ....................................................... C052
Nickell, Alyssa ........................................................ B039
Nicometo, Ann ........................................................ B094
Nie, Sixiang .............................................................. IA37
Nigussie, Meron Yohannes ......................................... A118, B20, C031
Nikolinakos, Petros ................................................... IA27
Nodora, DrPhil, Jesse ............................................... A045
Nodora, Jesse .......................................................... A041, B113
Nodoro, Jesse N ......................................................... B121
Nogueira, Lourdes M ................................................ B047, C024, C025
Norbeck, Carrie ....................................................... A070
Noren, Erik .............................................................. B027
Norris, Katherine ...................................................... A020
Nouri Emamzadeh, Fatemeh ...................................... C109
Nova, Jose ............................................................... B083
Nunez, Alan .......................................................... A082, A083, A084, B109, B119
Nunez-Smith, Marcella ........................................... B111
Nuramo, Adamu Addissie ........................................ B033, B034
# AUTHOR INDEX

**O**

O’Connor, Sarah N .......................................................... B036  
Oakley-Girvan, Ingrid .................................................. B039  
Obaid, Mariam A .......................................................... A110  
Obajemu, Adeola .......................................................... B051  
Ochoa, Carol Y .............................................................. A013  
Odendina, Folake ........................................................... IA42  
Odoms-Young, Angela ................................................. A048  
Oestmann, Kevin ........................................................... B115  
Ogunwobi, Olorunseun ................................................. B044, CO47  
Ogunwobi, Olorunseun ............................................... B068, PR09, B114  
Oh, April ........................................................................ C013  
Ojha, Rohit P ................................................................. A095, B079, B080  
Oladapo, Helen O .......................................................... C100  
Olapade-Olaopa, EO .................................................... B068, PR09  
Olarte Carrillo, Irma ..................................................... C061  
Oldfield, Carla E ............................................................. IA18  
Olshon, Andrew ............................................................. C043  
Olshon, Andrew F .......................................................... C052  
Olson, Jessica ................................................................. C080, C081  
Omoefuna, Omonife ....................................................... C043  
Onabajo, Olusgun .......................................................... B051  
Onega, Tracy .................................................................. A015  
Onyeaguchu, Benjamin C ............................................. B066  
Onyenwoke, Rob ............................................................ B061  
Ortiz, Carmen ................................................................. A043, A103  
Ortiz, Rosa ..................................................................... A035  
Orunmuyi, Akintunde .................................................... B068, PR09  
Osan, Remus ................................................................. C026  
Osazuwa-Peters, Nosa Y ............................................... A115, A117, B014, B085, B088  
Ostler, Jane .................................................................. A061  
Ostrowski, Michael C ................................................... C025  
Ottaviano, Lorenzo ....................................................... B102  
Ozwar, Kourosh .............................................................. B071  
Ozdenerol, Esra ............................................................... A098  

**P**

Packenham, Joan .......................................................... A080  
Packenham, Joan P ........................................................ A023  
Padilla, Neda R .............................................................. B026  
Padmashree, Rida .......................................................... B065  
Pal, Gargi ....................................................................... B044  
Paladino, Andrew J ........................................................ A073  
Palfax, Neal A ................................................................. C125  
Palanisamy, Nallasivam ................................................ A113  
Palazzo, Lauren ............................................................. B087  
Palmer, Julie R ............................................................... C040  
Palmer, Nynikka R ........................................................ A047  
Paludo, Jonas ................................................................. A120  
Pan, Janet ...................................................................... A026  
Pan, Kathy ..................................................................... C068  
Pandolfi, Stephanie ....................................................... C048, PR04  
Panitz, April .................................................................... C047  
Panneerdoss, Subbarayalu ............................................ B066  
Panth, Neelima ............................................................... B088  
Pappas, Lisa M ............................................................... C079  
Paredes Sanchez, Jenny E ............................................. B059  
Paredes, Jenny E ............................................................. C118  
Park, Vipul ...................................................................... C086  
Parides, Michael ......................................................... A104, A105  
Park, Grace .................................................................... A102  
Park, Jihye ...................................................................... B102  
Park, Jong ....................................................................... C058, PR06  
Park, Sam ........................................................................ C033  
Park, Sung-Shim L .......................................................... C096  
Parris, Don ....................................................................... B054  
Pasche, Boris ................................................................. C001, C002  
Pashos, Nicholas ............................................................ C110  
Pasick, Rena .................................................................. A006, A074  
Pasick, Rena J ......................................................... IA15, A047  
Paskett, Electra D ............................................................ A021  
Patel, Hariyali ................................................................. C022  
Patel, Krishna ................................................................. B111  
Patel, Manali ................................................................. IA37  
Patel, Manali I ................................................................. C068  
Patel, Parth ...................................................................... B085  
Patel, Sandip P ................................................................. A041  
Patierno, Brendon M ...................................................... A114, B006, B061  
Patierno, Steven ................................................................ A080  
Patierno, Steven R ......................................................... A114, B006, B050, B061, B071, IA18  
Patil, Sujata ................................................................. A100, PR03  
Patterson, Jenny R ........................................................... A062  
Paul, Rachel ................................................................. A034  
Paulino, Yvette C ............................................................ A088, A116, C074  
Pawlish, Karen ............................................................. C046, C058, PR06  
Peabody, James ............................................................ A113  
Penn, Tanya ................................................................. A048  
Penner, Reinhold ........................................................... A116  
Perdono, Bianca P .......................................................... B121  
Perdono, Bianca ............................................................ A045  
Pere-Stables, Eliseo ....................................................... B055  
Perera, Frederica P ........................................................ C082  
Perera, Udara ................................................................. A010  
Peres, Lauren ................................................................. C083, PR16  
Peres, Lauren C ............................................................. C044  
Perez, Arely .................................................................... A074  
Perez, Maria ................................................................. A093  
Perez-Hernandez, Maria E ........................................... C045  
Perez-Mayoral, Julyann .................................................. C045  
Perlaky, Lazlo ................................................................. C121  
Permuth, Jennifer ......................................................... C091
<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permut, Jennifer B</td>
<td>A106</td>
</tr>
<tr>
<td>Persaud, Leah</td>
<td>A109</td>
</tr>
<tr>
<td>Pesko, Michael</td>
<td>B011</td>
</tr>
<tr>
<td>Peters, Edward S</td>
<td>C044</td>
</tr>
<tr>
<td>Petersen, Wesley</td>
<td>B094</td>
</tr>
<tr>
<td>Peterson, John A</td>
<td>C125</td>
</tr>
<tr>
<td>Peterson, Lindsay L</td>
<td>C024</td>
</tr>
<tr>
<td>Petrovic, Gyorgy</td>
<td>A111, C023</td>
</tr>
<tr>
<td>Pettaway, Curtis</td>
<td>A053</td>
</tr>
<tr>
<td>Petty, W Jeffrey</td>
<td></td>
</tr>
<tr>
<td>Peyton, Shelly</td>
<td>B062</td>
</tr>
<tr>
<td>Phuar, Hsiao Ling</td>
<td>B081</td>
</tr>
<tr>
<td>Piazuelo, Maria B</td>
<td>IA06</td>
</tr>
<tr>
<td>Picado, Omar</td>
<td>C056</td>
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<tr>
<td>Picard, Charlotte</td>
<td>B076</td>
</tr>
<tr>
<td>Pichardo, Catherine</td>
<td>A030</td>
</tr>
<tr>
<td>Pichardo, Catherine M</td>
<td>A031</td>
</tr>
<tr>
<td>Pierre, Joseph F</td>
<td>B064</td>
</tr>
<tr>
<td>Piñeiro, Bárbara</td>
<td>A032</td>
</tr>
<tr>
<td>Pincky, Paul F</td>
<td>A071</td>
</tr>
<tr>
<td>Piononeault, Laura</td>
<td>C080, C081</td>
</tr>
<tr>
<td>Pirrotte, Patrick</td>
<td>B042</td>
</tr>
<tr>
<td>Pisup, Maria</td>
<td>A098</td>
</tr>
<tr>
<td>Plascak, Jesse J</td>
<td>C067, PR15</td>
</tr>
<tr>
<td>Platt, Manu</td>
<td>B062</td>
</tr>
<tr>
<td>Platz, Elizabeth</td>
<td>C027</td>
</tr>
<tr>
<td>Platz, Elizabeth A</td>
<td>C090</td>
</tr>
<tr>
<td>Pokhrel, Pallav</td>
<td>A116</td>
</tr>
<tr>
<td>Polanco-Echever, Guadalupe M</td>
<td>C030</td>
</tr>
<tr>
<td>Polendik, Katherine M</td>
<td>A115, A117</td>
</tr>
<tr>
<td>Polin, Lisa A</td>
<td>B053</td>
</tr>
<tr>
<td>Polonsky, Michal</td>
<td>B117</td>
</tr>
<tr>
<td>Polter, Elizabeth J</td>
<td>B037</td>
</tr>
<tr>
<td>Polverini, Amy C</td>
<td>A082, A083, A084</td>
</tr>
<tr>
<td>Polverini, Amy C</td>
<td>B109</td>
</tr>
<tr>
<td>Porcel, Jackie</td>
<td>C096</td>
</tr>
<tr>
<td>Porembska, Matthew R</td>
<td>A107</td>
</tr>
<tr>
<td>Porter, Ben</td>
<td>C055</td>
</tr>
<tr>
<td>Porter, Christopher</td>
<td>A108</td>
</tr>
<tr>
<td>Potdar, Rashmika R</td>
<td>A096</td>
</tr>
<tr>
<td>Pou, Zasha</td>
<td>B054</td>
</tr>
<tr>
<td>Pound, Charles R</td>
<td>C038</td>
</tr>
<tr>
<td>Prabhu, Sneha</td>
<td>B118</td>
</tr>
<tr>
<td>praresh, Om</td>
<td>C070</td>
</tr>
<tr>
<td>Pratap, Siddharth</td>
<td>A050</td>
</tr>
<tr>
<td>Prokunina-Olsson, Ludmila</td>
<td>B051</td>
</tr>
<tr>
<td>Provenzale, Dawn</td>
<td>C116, PR11</td>
</tr>
<tr>
<td>Pruitt, Sandi L</td>
<td>C073, PR14</td>
</tr>
<tr>
<td>Pruthi, Sandhya</td>
<td>C088</td>
</tr>
<tr>
<td>Puckett, Mary C</td>
<td>A062</td>
</tr>
<tr>
<td>Purington, Kristen S</td>
<td>B053</td>
</tr>
</tbody>
</table>

**Q**

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qi, Lin</td>
<td>C121</td>
</tr>
<tr>
<td>Qin, Bo</td>
<td>C044, C046, C063</td>
</tr>
<tr>
<td>Qin, Bonnie</td>
<td>C067, PR15</td>
</tr>
<tr>
<td>Quinn, Gwendolyn</td>
<td>A063, A065</td>
</tr>
<tr>
<td>Quiros-Alcala, Lesliam</td>
<td>C041</td>
</tr>
</tbody>
</table>

**R**

<table>
<thead>
<tr>
<th>Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radecki Breitkopf, Carmen</td>
<td>C053</td>
</tr>
<tr>
<td>Ragin, Camille</td>
<td>IA 24, B091, C021</td>
</tr>
<tr>
<td>Rajanamickam, Subapriya</td>
<td>B066</td>
</tr>
<tr>
<td>Rakha, Emad</td>
<td>C026</td>
</tr>
<tr>
<td>Ramers, Christian</td>
<td>B113</td>
</tr>
<tr>
<td>Ramirez, Amelie</td>
<td>A074</td>
</tr>
<tr>
<td>Ramirez, Amelie G</td>
<td>B118</td>
</tr>
<tr>
<td>Ramos Penafiel, Christian</td>
<td>C061</td>
</tr>
<tr>
<td>Ramos-Cardona, Xavier E</td>
<td>B021</td>
</tr>
<tr>
<td>Randise, Jaime F</td>
<td>C025</td>
</tr>
<tr>
<td>Rangarajan, Tara</td>
<td>C120</td>
</tr>
<tr>
<td>Rao, J Sunil</td>
<td>C018</td>
</tr>
<tr>
<td>Rao, Manjeet K</td>
<td>B066</td>
</tr>
<tr>
<td>Rappaport, Stephen M</td>
<td>C065</td>
</tr>
<tr>
<td>Rauscher, Garth</td>
<td>A051, B112, C022</td>
</tr>
<tr>
<td>Rauscher, Garth H</td>
<td>A052, C094, PR17, C098</td>
</tr>
<tr>
<td>Ravenell, Joseph</td>
<td>A025</td>
</tr>
<tr>
<td>Ravindranath, Lakshmi</td>
<td>C023</td>
</tr>
<tr>
<td>Reburn, Kelly</td>
<td>B107</td>
</tr>
<tr>
<td>Redding, Thomas</td>
<td>B007</td>
</tr>
<tr>
<td>Redding, Thomas Ivey</td>
<td>C116, PR11</td>
</tr>
<tr>
<td>Reddy, Amit</td>
<td>C038</td>
</tr>
<tr>
<td>Reed, Amanda R</td>
<td>B032</td>
</tr>
<tr>
<td>Reed, Breia</td>
<td>B064</td>
</tr>
<tr>
<td>Reed, Clay</td>
<td>A120</td>
</tr>
<tr>
<td>Reed, Ta'Myah</td>
<td>A085</td>
</tr>
<tr>
<td>Reed-Dee-Hayes, Katherine E</td>
<td>B024, PR07</td>
</tr>
<tr>
<td>Rees, Vaughan</td>
<td>A094</td>
</tr>
<tr>
<td>Reid, Mary</td>
<td>B105</td>
</tr>
<tr>
<td>Reiss, Kelly E</td>
<td>B016</td>
</tr>
<tr>
<td>Rencsok, Emily</td>
<td>B022</td>
</tr>
<tr>
<td>Resto, Cristal</td>
<td>B095, B119</td>
</tr>
<tr>
<td>Reyes, Clara</td>
<td>C004</td>
</tr>
<tr>
<td>Reynolds, Peggy</td>
<td>IA37</td>
</tr>
<tr>
<td>Reznick, Scott I</td>
<td>A107</td>
</tr>
<tr>
<td>Rhee, Joanne</td>
<td>B114</td>
</tr>
<tr>
<td>Rhoades, Dorothy A</td>
<td>A004, PR01</td>
</tr>
<tr>
<td>Riaz, Ansa</td>
<td>C102, PR18</td>
</tr>
<tr>
<td>Rice, Kevin</td>
<td>A108</td>
</tr>
<tr>
<td>Richards, Antoine</td>
<td>B031</td>
</tr>
<tr>
<td>Richards, Thomas B</td>
<td>B023</td>
</tr>
<tr>
<td>Richardson-Heron, Dara</td>
<td>IA03</td>
</tr>
<tr>
<td>Rida, Padmasree CG</td>
<td>C026, C102, PR18</td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Rider, Jennifer R</td>
<td>B063</td>
</tr>
<tr>
<td>Riggins, Rebecca B</td>
<td>C103</td>
</tr>
<tr>
<td>Rigoutos, Isidore</td>
<td>IA31, C10</td>
</tr>
<tr>
<td>Riker, Adam</td>
<td>C110</td>
</tr>
<tr>
<td>Rios, Genesis</td>
<td>A030</td>
</tr>
<tr>
<td>Ripperger, Ellen</td>
<td>A082, A086</td>
</tr>
<tr>
<td>Ripperger, Ellen J</td>
<td>A083, A084, B109, B119</td>
</tr>
<tr>
<td>Ritz, Beate</td>
<td>A119</td>
</tr>
<tr>
<td>Ritzwoller, Debra</td>
<td>B009</td>
</tr>
<tr>
<td>Rivera, Francisca</td>
<td>B091</td>
</tr>
<tr>
<td>Rivera-Herrera, Ana Lucia</td>
<td>A049</td>
</tr>
<tr>
<td>Rivers, Brian</td>
<td>A039</td>
</tr>
<tr>
<td>Rivers, Brian M</td>
<td>A007, A008, A039</td>
</tr>
<tr>
<td>Rivers, Desiree</td>
<td>A007, A008, A039</td>
</tr>
<tr>
<td>Rizzo, Anthony</td>
<td>C027</td>
</tr>
<tr>
<td>Roberson, Mya L</td>
<td>C052</td>
</tr>
<tr>
<td>Roberts, Lisa</td>
<td>A072</td>
</tr>
<tr>
<td>Roberts, Shelby S</td>
<td>B038</td>
</tr>
<tr>
<td>Robertson, Linda</td>
<td>B025, B026</td>
</tr>
<tr>
<td>Robin, Tyler</td>
<td>B019</td>
</tr>
<tr>
<td>Robinett, Hall</td>
<td>A116</td>
</tr>
<tr>
<td>Robinett, Hall R</td>
<td>C125</td>
</tr>
<tr>
<td>Robinson, Anastasia GJ</td>
<td>B030</td>
</tr>
<tr>
<td>Robinson, Brandi E</td>
<td>A076</td>
</tr>
<tr>
<td>Robinson, Jamaica R</td>
<td>C068</td>
</tr>
<tr>
<td>Robinson, Seronda A</td>
<td>A023</td>
</tr>
<tr>
<td>Robinson, Whitney R</td>
<td>C052</td>
</tr>
<tr>
<td>Robles, Margarita</td>
<td>A082, A083, A084, B109, B119</td>
</tr>
<tr>
<td>Robson, Mark E</td>
<td>A100, PR03</td>
</tr>
<tr>
<td>Rocconi, Rodney P</td>
<td>B057</td>
</tr>
<tr>
<td>Rodgers, Carolyn</td>
<td>A048</td>
</tr>
<tr>
<td>Rodriguez, Elisa M</td>
<td>A017</td>
</tr>
<tr>
<td>Rodriguez, Hector P</td>
<td>C011, C012</td>
</tr>
<tr>
<td>Rodriguez, Luz</td>
<td>B086</td>
</tr>
<tr>
<td>Rodriguez, Mariela</td>
<td>B108</td>
</tr>
<tr>
<td>Roe, Denise</td>
<td>C124</td>
</tr>
<tr>
<td>Rogers, Craig</td>
<td>A113</td>
</tr>
<tr>
<td>Rogers, Lora</td>
<td>C049, C062</td>
</tr>
<tr>
<td>Rogers, Melinda L</td>
<td>A015</td>
</tr>
<tr>
<td>Rohan, Elizabeth</td>
<td>A055</td>
</tr>
<tr>
<td>Rohrmann, Sabine</td>
<td>C027</td>
</tr>
<tr>
<td>Rojas, Dalia</td>
<td>B113</td>
</tr>
<tr>
<td>Rolf, Liz</td>
<td>B115</td>
</tr>
<tr>
<td>Rolland, Betsy</td>
<td>A001</td>
</tr>
<tr>
<td>Rollyson, Phoebe A</td>
<td>B082</td>
</tr>
<tr>
<td>Roman, Janessa</td>
<td>C015</td>
</tr>
<tr>
<td>Rorie, Checo</td>
<td>B072</td>
</tr>
<tr>
<td>Rosenberg, Andrew</td>
<td>B029</td>
</tr>
<tr>
<td>Rosenberg, Lynn</td>
<td>C083, PR16</td>
</tr>
<tr>
<td>Rosenberg, Philip R</td>
<td>C016</td>
</tr>
<tr>
<td>Rosenberg, Philip S</td>
<td>C087</td>
</tr>
<tr>
<td>Rosenblum, Marika</td>
<td>A001</td>
</tr>
<tr>
<td>Rosenstein, Donald L</td>
<td>B024, PR07</td>
</tr>
<tr>
<td>Rosner, Inger</td>
<td>A108, A111</td>
</tr>
<tr>
<td>Rosner, Inger L</td>
<td>C023</td>
</tr>
<tr>
<td>Ross, Jerlinda</td>
<td>B057</td>
</tr>
<tr>
<td>Ross, Levi</td>
<td>A018</td>
</tr>
<tr>
<td>Ross, Wilhelmmina</td>
<td>B023</td>
</tr>
<tr>
<td>Rosser, BR</td>
<td>B037</td>
</tr>
<tr>
<td>Round, Krista</td>
<td>A086, B117</td>
</tr>
<tr>
<td>Round, Krista M</td>
<td>A082, A083, A084, B109, B119</td>
</tr>
<tr>
<td>Roy, Hemant K</td>
<td>A036</td>
</tr>
<tr>
<td>Roy, SK</td>
<td>B049, PR08, C066</td>
</tr>
<tr>
<td>Rozek, Laura S</td>
<td>C089</td>
</tr>
<tr>
<td>Rozen Fuller, Etta</td>
<td>C061</td>
</tr>
<tr>
<td>Rubens, Muni</td>
<td>C076</td>
</tr>
<tr>
<td>Rubens, Muni B</td>
<td>B054</td>
</tr>
<tr>
<td>Ruddies, Friederike</td>
<td>B103</td>
</tr>
<tr>
<td>Ruffin, Candace</td>
<td>A002</td>
</tr>
<tr>
<td>Rugo, Hope</td>
<td>A006</td>
</tr>
<tr>
<td>Ruiz, Jimmy</td>
<td>C001</td>
</tr>
<tr>
<td>Rundle, Andrew G</td>
<td>C048, PR04</td>
</tr>
<tr>
<td>Runnells, Gail</td>
<td>C049, C062</td>
</tr>
<tr>
<td>Ruterbusch, Julie J</td>
<td>C048, PR04, C089, C120</td>
</tr>
<tr>
<td>Rutland, Sarah B</td>
<td>A008</td>
</tr>
<tr>
<td>Rutledge, Teresa</td>
<td>B015</td>
</tr>
<tr>
<td>Ryan, Brid</td>
<td>IA29</td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Saad, Anas M</td>
<td>A110</td>
</tr>
<tr>
<td>Saad-Harfove, Frances</td>
<td>IA23</td>
</tr>
<tr>
<td>Saad-Harfove, Frances G</td>
<td>A017</td>
</tr>
<tr>
<td>Sabol, Rachel A</td>
<td>C110</td>
</tr>
<tr>
<td>Sahasrabudhe, Ruta</td>
<td>C030</td>
</tr>
<tr>
<td>Sahoo, Bikram</td>
<td>C026</td>
</tr>
<tr>
<td>Saint Fleur-Calixte, Rose</td>
<td>A012</td>
</tr>
<tr>
<td>Sakiyama, Marcelo J</td>
<td>C038</td>
</tr>
<tr>
<td>Salamheh, Abdal-Rahman</td>
<td>C057</td>
</tr>
<tr>
<td>Salazar, Jose</td>
<td>C080, C081</td>
</tr>
<tr>
<td>Salgado, Teresa M</td>
<td>A076</td>
</tr>
<tr>
<td>Salinas, Jim</td>
<td>A042</td>
</tr>
<tr>
<td>Salloum, Ramzi</td>
<td>C095</td>
</tr>
<tr>
<td>Salloum, Ramzi G</td>
<td>B028</td>
</tr>
<tr>
<td>Samayo, Cathy</td>
<td>C111</td>
</tr>
<tr>
<td>Samet, Jonathan</td>
<td>A119</td>
</tr>
<tr>
<td>Sami, Nathalie</td>
<td>C122, C123</td>
</tr>
<tr>
<td>Samuel, Cleo A</td>
<td>B024, PR07, B025, B026</td>
</tr>
<tr>
<td>San Miguel, Liliana G</td>
<td>A030</td>
</tr>
<tr>
<td>San Miguel, Yazmin</td>
<td>B121</td>
</tr>
<tr>
<td>Sanabria-Salas, Maria C</td>
<td>C035, C092</td>
</tr>
<tr>
<td>Sanabria-Salas, Maria Carolina</td>
<td>A049</td>
</tr>
<tr>
<td>Sanchez, Angelica</td>
<td>A082, A083, A084, A086, B109, B119</td>
</tr>
</tbody>
</table>
AUTHOR INDEX

Sanchez, Janeth ................................................................. C006
Sanchez Diaz, Carola T.............................................. C094, PR17
Sanderson, Maureen .................................................. C064
Sangaramoorthy, Meera............................................ B040
Santaliz-Casiano, Ashlie M......................................... B048
Santiago-Torres, Margarita.......................................... A034
Santos, Sherie Lou Z.................................................. A024
Santoyo-Olsson, Jasmine ......................................... A043, A103, C111
Sauane, Moira .............................................................. A109
Scalici, Jennifer ........................................................... B057
Schaal, Jennifer ........................................................... B025, B026
Schabath, Matthew .................................................... A063
Schifano, Katelyn ......................................................... A015
Schiffelbein, Jenna ....................................................... A015
Schiffman, Courtney .................................................. C065
Schildkraut, Joellen ..................................................... C083, PR16
Schildkraut, Joellen M ................................................ C044
Schillinger, Dean ........................................................ A047
Schlumbrecht, Matthew ............................................. A063
Schlundt, David G........................................................ A033
Schmitz, Kathryn H .................................................... B013
Schmolze, Daniel B..................................................... A082, B109, C078
Schneider, Sallie .......................................................... B062
Schnur, Julie B.............................................................. C021
Schootman, Mario ....................................................... C062
Schulte, Lauren ............................................................ C022
Schwartz, Alyssa ......................................................... B062
Schwartz, Ann G.......................................................... B032, B035, C044, C048, PR04
Schwartz, David L....................................................... A098
Schwartz, Kendra L ..................................................... C089
Schwartz, Stephen M .................................................. C004
Schwartzberg, Lee ....................................................... A073
Scott, Lia C................................................................. C007, C008
Scribner, RA................................................................. B049, PR08
Scribner, Richard ....................................................... IA08, C020, C070,
Sealy-Jefferson, Shawnita .......................................... C068
Seay, Julia S................................................................. A063
Seetela, Kumari ............................................................. A020
Seewaldt, Victoria ...................................................... A082, A083, A084, A086,
Segarra-Vazquez, Barbara .......................................... IA28
Seifu, Daniel................................................................. B062
Seldon, Crystal S ........................................................ A075
Seliger, Barbara ............................................................ B020, C031
Seligmann, Bruce ....................................................... C059
Sellers, Jean B.............................................................. B024, PR07
Sellers, Thomas ........................................................... C058, PR06
Sellner, Joshua E .......................................................... B016
Selove, Rebecca .......................................................... A033
Selvan, Preethi .............................................................. A028
Sepulveda, Jorge ........................................................ C033
Serrano, Mayra ........................................................... A087, B095, B119
Serrano-Gomez, Silvia J............................................ C035, C065, C092
Serrao, Samantha ........................................................ A028
Sesterhenn, Isabell A.................................................. C023
Sethi, Rosh KV ............................................................ B088
Setiawan, Veronica Wendy ....................................... A119, C083, C084,
.............................................................................. C085, C096, PR16
Sfandis, Karen ............................................................ C058, PR06
Shalabi, Sundus ............................................................. C057
Shamim, Ainny ............................................................. A008
Shamsuddin, Abdullah S........................................... A050
Shankar, S................................................................. B049, PR08, C066
Shankaran, Veena ....................................................... C006
Shariff-Marco, Salma ............................................... A119, B039, B040, C058,
.............................................................................. PR06, C073, PR14, IA37, IA49
Sharma, Ritin ............................................................... B042
Sharpe, Katherine ....................................................... B038
Sharpless, Norman E................................................ IA01
Shawar, Jehad ............................................................. C057
Sheehan, Deirdre ........................................................ B087
Shen, Jeanne ............................................................... A107
Shepherd, John ............................................................ IA38
Sheppard, Vanessa ...................................................... A057
Sheppard, Vanessa B.................................................. A076, A078
Sherman, Mark ............................................................ C053
Shet, Tanuja ................................................................. C102, PR18
Shi, Lawrence ............................................................. A097
Shi, Runhua ................................................................. A097
Shi, Zaiying ................................................................. A034
Shim, Janet K ............................................................... A047
Shivappaa, Nitin .......................................................... C044
Shogan, May ............................................................... IA23
Sholl, Andrew S ........................................................... B045, C029
Shortell, Stephen ....................................................... C011
Sicklick, Jason K.......................................................... A042
Siegel, Jolie ................................................................. C053
Silber, Andrea .............................................................. A089
Silbsy, Joscelyn ........................................................... A033
Silva, Abigail ............................................................... B076, C099
Silverman, Robert ....................................................... B051
Simonoff, Laura A ....................................................... A092
Simmons, Stacey ........................................................ B022
Simmons, Vani N ........................................................ A065
Simoncini, Gina ......................................................... B114
Simonsen, Neal .......................................................... C070, IA08
Simpson, Matthew C............................................... A115, A117, B014, B085, B088
Simpson, Richard ....................................................... A053
Sims, Z’Kera ............................................................... A065
Singal, Amit G ............................................................ IA32
Singer, Karyn ............................................................. A026
Singh, Rajbir ............................................................... A050
AUTHOR INDEX

Singh, Shailash..................................................C113
Singh, Shweta ..................................................C024
Singhal, Sandeep K ........................................C033
Sipin, Andrea ..................................................C085
Sistrunk, Christopher ..................................A082, A083, A084, B109, B119
Sitek, Andrea ..................................................A120
Siu, Phillip ..........................................................A029
Slade, Jimmie L ...............................................A024
Slamecka, Jaroslav .........................................B057
Small, Eric .........................................................A081
Smith, Alana ......................................................B064
Smith, Brandi Patrice ..................................C003
Smith, Judith Lee .............................................IA13
Soler-Vila, Hosanna ....................................B111
Soliman, Amr ....................................................C106
Somarelli, Jason A .........................................A114
Somera, Llinabeth P ........................................C015
Song, Jingwelle ................................................C009
Song, S ...............................................................C051, PR05
Sorice, Kristen ..................................................C014, PR13
Soto-Salgado, Marivelisse .............................C054
Sott, Patrick Francis P ....................................A088, C074
Souder, Antonika ...........................................A090, PR02
Spagnardi, Marzia ..........................................C118
Spencer, Jennifer C ..........................................B024, B122, PR07
Spencer, Nicola ..................................................A002
Spencer, Shirley ...............................................A048
Spencer, Darcy .................................................C122, C123
Spicer, Paul ......................................................A004, PR01
Springfield, Sanya A .......................................IA14
Spruill, Laura ..................................................B047, C024, C032
Srivastava, RK ...............................................B049, PR08, C066
Srivastava, Shiv .............................................A108, A111, C023
Srivastava, Sudhir ..........................................A111, C023
Ssenkoko, Nannozi ..........................................B101
Stahr, Shelbie ..................................................B057
Stamatakis, Katherine A ...................................B085
Starenki, Dmytro .............................................B057
Stark, George ....................................................B051
Starlard-Davenport, Athena .........................B064
Steck, Susan .....................................................C043
Stephens, Robert ............................................B051
Sterba, Katherine ...........................................A085
Stern, Mariana .............................................C045, C084, C085
Stevens, Denise E .............................................B096
Stewart, Anita L ................................................A043, A103
Stewart, LaMonica .........................................A064
Stewart, Sherri L .............................................A062
Stinchcomb, David G ......................................B023
Stockton, Eric ...................................................A055
Stoll, Carolyn ...................................................A011
Stolley, Melinda .............................................C080
Stolley, Melinda R ...........................................C081
Stram, Daniel O ................................................A119
Strayhorn, Shaila M .........................................A077
Street, Richard L ............................................A047
Stroup, Antoinette ............................................C058, PR06
Stroup, Antoinette M .......................................B083
Stroup, Sean ....................................................A108
Su, Jack MF ......................................................C121
Su, Joseph .........................................................A002
Su, Joseph L .....................................................C049
Su, L. Joseph ....................................................B036, C062
Suarez, Deborah .............................................C076
Subhedar, Preeti D ...........................................C053
Sullenger, Bruce A ..........................................B006
Sussman, Andrew L .........................................A014, A059, B015
Sutter, Megan E ............................................A065
Suttiratan, Sakinah C .......................................B096
Sutton, Arnethea ............................................A057, A076
Sutton, Arnethea L ..........................................A078
Sweeney, Carol ...............................................C079
Sweeney, Frank C ............................................C122, C123
Sweetenham, John ..........................................A061
Sylvester, Charity F ..........................................B067
Syrigos, Krista ..................................................C038
T
Tadesse, Mahlet G ..........................................A076
Taioli, Emanuela .............................................B007
Taiyim, Deanna ...............................................C022
Talus, Henry .................................................C118
Tamayo, LI ......................................................C051, PR05
Tambe, Beverly ...............................................B027
Tan, Ming .........................................................B052
Tan, Shy-Han ...................................................C023
Tan, Yi-Ling .....................................................A026
Tan, Yin ..........................................................A029, B114, C047
Tang, Wei ........................................................B051
Tanna, Bhavna ..............................................A095, B079
Tapia, Edgar ....................................................C124
Tarpley, Michael T ..........................................C100
Tate, Tia A ........................................................A023
Taylor, Lesley ...............................................B034, C104, C105
Taylor, Marian H .............................................C024
Teer, Jamie ......................................................C034
Teer, Jamie K ...................................................C093
Tejeda, Silvia ...................................................A058
Teku, Bhranu ...................................................B103
Telonis, Aristeidis G ........................................C100
Tenner, Laura ..................................................B118
Teo, Wan-Yee ....................................................C121
AUTHOR INDEX

Terry, Mary Beth ......................................................... C082
Terry, Paul D ............................................................... C044
Tesfaw, Aragaw ......................................................... C105
Teslow, Emily A ......................................................... B053
Teteh, Dede K .............................................................. A044
Thai, Christine ................................. A082, A083, A084, A086, B109, B119
Theis, Katie ............................................................... C025
Thomas, Arun ............................................................. A096
Thomas, Charles R ................................................... A075
Thomas, Jeronay King ............................................. C113
Thomas, Justin .......................................................... A057
Thompson, Beti ................................. A021, A031, A056, A059, C004, C006
Thompson, Caroline ........................................... IA37
Thompson, Simonnette ........................................ C060
Thompson, Taylor .................................................. B060
Thomsen, Catherine ............................................... B040
Thomson, Cynthia .................................................. C124
Thomson, Maria D ................................................... A092
Tian, Ligeng ............................................................. C009
Timilsina, Santosh ............................................... B066
Toal, Ted ................................................................. C030
Tollefsbol, Trygve O ............................................... B046
Tolsma, Dennis ....................................................... A076
Tomsic, Jerneja ................................. A082, A083, A084, B109, B119, C057
Tong, Virginia ........................................................ B029
Topaloglu, Umit ...................................................... C001, C002
Torres, Javier ........................................................ C030
Torres, Paola .......................................................... C054
Torres-Luquis, Odalys J ........................................ C114
Tossas-Milligan, Katherine ....................... B108, B112
Townsend, Julie S .................................................. A062
Trabue, Balancee .................................................... A064
Tramontano, Angela ............................................. B087
Trant, Amelia A ...................................................... A089
Trevino, Jose ........................................................ C091
Trevino, Jose G ....................................................... A106
Triche, Tim ............................................................. IA26
Trinh-Shevin, Chau ............................................... A026, B029
Tripathi, Shweta .................................................... B052
Tripathy, Debub .................................................... C122, C123
Triplett, D’zare ....................................................... A017
Troester, Melissa .................................................. C043
Troester, Melissa A ................................................. C052
Trout, Martha ........................................................ A076
Trujillo, Jesse ......................................................... C124
Truman, Samantha C .............................. B008, B012, B016, C019
Truman, Samantha N .......................................... B075
Tseng, Chiuchen ................................................... A119
Tsih, Fern ............................................................... A065
Tsoh, Janice Y ........................................................ IA39
Tsui, Jennifer ........................................................ B083
Tu, Jonathan .......................................................... B002
Turner, David P ...................................................... B047, C024, C025
Turner, Tonya F ...................................................... C024
Turnquest, Theodore ........................................... C060
Ucarr, Deniz A ......................................................... C110
Ulladlay, Kathleene T ........................................... A034
Ulich, Cornelia M ................................................... C079
Umrigar, Ayesha .................................................... A065
Underwood, Patrick ............................................. C091
Underwood, Patrick W ........................................ A106
Unger, Joseph ......................................................... C006
Unguez, Graciela ................................................... A056
Uribarri, Jaime ....................................................... C024

Vanderford, Nathan ........................................... A068
Varga, Alexandr ..................................................... B009
Varner, Heidi ........................................................ C024
Varvares, Mark A .................................................. A115, B088
Vásquez, JN ............................................................ C051, PR05
Vavaras, Mark A ..................................................... A117
Venkatesh, Brinda ................................................ C011, C012
Vereen, Rhyan N ..................................................... A090, PR02
Verma, Hannah .................................................... A089
Vesely, Sara ........................................................... C086
Vetter, Martina ....................................................... A118, B020, C031
Vidal, Gregory A ................................................... A073
Vidaurre, T .............................................................. C051, PR05
Vidrine, Damon J .................................................. A032
Vidrine, Jennifer I .................................................. A032
Vierkant, Robert A ................................................. B094
Vignesh, Shivakumar ................................................ B102
Vijayasiri, Ganga ................................................... A058
Villa-Guillen, Diana ............................................... C124
Villalona-Calero, Miguel ............................ B054, C076
Villanti, Paul ........................................................ B022
Villanueva, Augusta ............................................... A010
Vinson, Jake ........................................................ B022
Visvanathan, Kala ................................................ C077
Vito, Courtney ....................................................... A082, A084, B109
Vito, Courtney A .................................................. A083
Vogel, Carl-Wilhelm .............................................. C125
Vohra, Nasreen ..................................................... B042, B055, C033
Von Eyben, Rie ....................................................... A091
Vos, Paul ............................................................... B107
Vu, Milkie H. N ..................................................... A066
AUTHOR INDEX

| Y | Zhang, Huiyuan | C121 |
|  | Zhang, Juanjuan | C085 |
|  | Zhang, Lu | C020 |
|  | Zhang, Wei | C001, C002 |
|  | Zhang, Yujing | C121 |
|  | Zhao, Qiuqu | A026 |
|  | Zhao, Sibo | C121 |
|  | Zhao, Xiumei | C121 |
|  | Zhou, Xinchun | C038 |
|  | Zhou, Yuhong | C072 |
|  | Zhu, Hao | A029, B114 |
|  | Zhu, Lin | A107 |
|  | Zhu, Min | A107 |
|  | Ziv, E | C051, PR05 |

| Z | Zabaleta, Jovanny | B059, C034, C035, C092, C110, C118, IA06 |
|  | Zabora, James | A015 |
|  | Zalles, Carola M | A082, A083 |
|  | Zambrano, Cristina N | C047 |
|  | Zanwar, Preeti | B045 |
|  | Zarif, Jelani | B022 |
|  | Zarins, Katie M | C089 |
|  | Zavala, Valentina A | C092 |
|  | Zaworski, Caroline | C036 |
|  | Zbikowski, Susan M | A032 |
|  | Zea, Arnold | C110 |
|  | Zea, Arnold H | A065 |
|  | Zea, Arnold | B067 |
|  | Zeigler-Johnson, Charmita | C017 |
|  | Zeinomar, Nur | C082 |
|  | Zeleke, Tamrat Abebe | A118, B020, C031 |
|  | Zhai, Shumenghui | A118, A029 |
|  | Zhang, Dadong | B071 |
SUBJECT INDEX

30-day mortality.............................................. B085
90-day mortality.............................................. A115

A
Access ................................................ IA47
Active surveillance........................................ A053
Acute lymphocytic leukemia ....................... B043
Adherence .................................................. B016, B081
Adjuvant endocrine therapy ......................... A069, A076
Adjuvant hormonal therapy ......................... B016
Adjuvant hormone treatment ....................... B016
Adjuvant phase .......................................... A073
Adolescent girls ........................................ B092
Adolescent health ....................................... C013
Advanced glycation end products ................. B047, C024, C025
Adverse events ............................................ B086
Affordable Care Act .................................... B076, B079
African American ........................................ A007, A008, A024, A047, B030, B048, B055, B059, B114, C048, C058, C064, C083, PR04, PR06, PR16
African American breast cancer in women........ C101
African American prostate cancer ................. A122
African American women............................. A058, B018, B052, C040, C046
African Americans ...................................... A035, A085, B045, B051, B056, B069, B072, C078, C118, IA25, IA26
African Americans and whites ..................... B071
African ancestry .................................... A114, B058, C026, IA27, IA43
Aggressive prostate cancer in ..................... A109
African American men ................................ A119
Air pollution .............................................. C088
Alaskan Native ......................................... IA05
All of Us Research Program ....................... IA03
Alpha-catenin .......................................... B042
Alternative mRNA splicing ......................... B053
alternative splicing .................................. B061
American Indian ...................................... A004, A014, B094, PR01
AML ......................................................... C061
Androgen deprivation therapy ..................... B017
Androgen receptor .................................... B017, C012, PR18
Androgen receptor signaling ...................... B006
Androgen receptor/AMPK signaling ............. B061
Angiogenic factors .................................. B048
Annexin A2 ............................................. C023
APC mutation ......................................... IA26
Apoptosis ............................................... B066
Appalachia ............................................. A055, B100
Arab American ......................................... C089
Area of residence .................................... C071
Areca (betel) nut .................................... A088, A116, C074
Asian American ...................................... A026, A029, B029
Asian American, Native Hawaiian, and Pacific Islander .... IA37
Asian Indian/Pakistani ............. A028
Asians ................................................. A084, C085
Ask-Advise-Connect ................................. A032

B
Barriers .................................................. A088
Barriers to care ....................................... B101
BCL2 ..................................................... C098
Benign prostatic hyperplasia ...................... A071
Betel nut ............................................. A116, C074
Big data ................................................. B019
Biomarkers .............................................. C023
Biomedical research workforce diversity .... A056
Biorepository ......................................... A042
Biospecimen donation .............................. A057, A080
Black breast cancer survivors .................. C067, PR15
Black population .................................... A040
Black women ........................................ A044, A078
Blacks, racial disparities in cancer .............. B025
Bladder cancer ....................................... A110
Blood biospecimen provision ...................... C040
Body composition .................................. C123
BRCA1, BRCA2, PALB2 ......................... C060
Breast .................................................. B080
Breast abnormalities .............................. B034
Breast and cervical cancer screening .......... A020
Breast and lung cancer ......................... C080
Breast cancer ......................................... A005, A006, A017, A021, A025, A030, A034, A038, A073, A078, A079, A083, A089, A093, A100, A118, B008, B012, B016, B026, B033, B034, B046, B052, B056, B058, B062, B064, B066, B076, B108, B112, B117, C008, C022, C031, C033, C034, C039, C043, C049, C051, C052, C057, C062, C072, C077, C087, C094, C098, C099, C100, C104, C105, C108, C111, C122, C123, C124, IA43, IA50, PR03, PR05, PR17
Breast cancer cell line ............................. B020
Breast cancer disparities ......................... A010, B048, C113, IA27
Breast cancer incidence ......................... C057, IA14
Breast cancer metastasis ......................... C114
Breast cancer mortality .......................... C017, C053
Breast cancer outcomes disparities .......... C063
Breast cancer prevention ......................... A044
Breast cancer quality of care ..................... C011, C012
Breast cancer risk ................................. A058, B109, C025, C046, C065
Breast cancer subtype ............................ C064
Breast cancer survivors ......................... A043
SUBJECT INDEX

Breast cancer treatment .................................................. B008
Breast clinicopathologic features ..................................... C063
Breast density ............................................................... C088, C124
Breast neoplasms ............................................................ B011
Breast reconstruction ...................................................... B018
Breastfeeding ................................................................. A017
Butajira HDSS ................................................................. B03

C
Cancer ................................................................. A042, A084, B031, B035, B050, C056, IA08, IA24, IA49
Cancer-associated fibroblast (CAF) .................................... B070
Cancer cachexia ......................................................... A106, C042, C091
Cancer caregivers .......................................................... A092
Cancer cell lines ........................................................... C093
Cancer centers .............................................................. A01, A041
Cancer clinical trials ...................................................... A007, A008
Cancer cohort ............................................................... A095
Cancer disparities research support ................................... IA14
Cancer diversity workforce training .................................. IA14
Cancer education .......................................................... A064
Cancer health disparities .............................................. A006, A015, A059, A074, B105, B110, C093
Cancer Information ........................................................ A012
Cancer Moonshot ........................................................ IA01
Cancer pain management ............................................... IA01
Cancer prevention ......................................................... A019, A029, A061, C024, IA39
Cancer prevention and screening ..................................... B118
Cancer research ............................................................ IA16
Cancer risk ................................................................. C047
Cancer risk assessment .................................................. A028, A048
Cancer screening ......................................................... A014, A018, A051
Cancer stage ................................................................. B076
Cancer stem cell ........................................................... B049, B080, C109
Cancer surveillance ....................................................... C006
Cancer survivorship ....................................................... A077, A103, B009, B014, B036, IA40
CAR T-cell ................................................................. B021
Career development ....................................................... IA18
Caregiver burden ........................................................ A092
Caribbean ................................................................. C060
Catchment area ............................................................. C004
CDC ............................................................... C004, C009
Cell proliferation and migration ....................................... B044
Center to Reduce Cancer
Health Disparities (CRCHD) ............................................. A068
Cervical cancer ............................................................ B019, B074, B092, B093, B097
Cervical cancer screening ............................................. B103, B116
Cessation ................................................................. C095
Cessation program ....................................................... A088
Chamorro ................................................................. A046
Chemokine ................................................................. B056
Chemokine and chemokine receptor .................................. C113
Chemo prevention ....................................................... B119
Chinese immigrant breast cancer survivors ...................... IA22
Chronic disease .......................................................... B095
Chronic hepatitis B patients ........................................... A101
Chronic obstructive pulmonary disease ......................... C096
Chronic stress ............................................................ A101
Cigarette smoking ....................................................... A004, PR01
Citizen scientists ........................................................ A036
Clinical outcomes of African American patients ............... C029
Clinical practice patterns .............................................. B010
Clinical research participation ....................................... A080
Clinical trial accrual .................................................... A082, A083
Clinical trials ............................................................. A034, A039, A040, A081, A089, B022, B086
Clinical trials and biobanking ......................................... IA07
Clinical trials recruitment ............................................. A087
Colon ................................................................. IA25
Colon cancer .............................................................. A051, A052, C036, C066, C118
 Colon cancer survival .................................................. A097
 Colonrectal ................................................................. IA12
 Colorectal cancer (CRC) .............................................. A046, A061, B009, B060, B077, B113, C006, C009, C045, C068, C116, IA09, IA10, IA13, PR10, PR11
 Colon cancer disparity ................................................ IA10
 Colorectal cancer disparity ......................................... IA10
 Colorectal cancer, late-stage, treatment patterns .............. C005
 Colorectal cancer screening ........................................ A011, A015, B099, B100, B105, B115, IA10, PR12
 Common data elements ................................................ IA51
 Community engagement ............................................... A002, A023, A038, A080, B096
 Community health workers .......................................... B090
 Community navigator .................................................. A020
 Community-based ...................................................... B094
 Community-based intervention ..................................... A019
 Community-based participatory research ....................... A039, A043
 Comorbidities .......................................................... B112
 Comparative effectiveness research ................................ A030
 Comprehensive cancer control ..................................... A062
 Concentrated disadvantage index (CDI) ......................... C070
 Consent ................................................................. A086
 Controlled direct effect (CDE) ...................................... C019
 Cooking methods ....................................................... C043
 Cortisol ................................................................. C111
 Cost ................................................................. B028, B081
 Cost of cancer care ................................................... IA46
 Costa Rica ............................................................... C056
 Counterfactual notation ................................................ C019
 Couple ................................................................. A053
 CRCHD funding opportunities ..................................... IA14
 Cross-sector collaboration ............................................ C081
 Cultural competency .................................................... A063, B107

Program and Proceedings • November 2-5, 2018 • New Orleans, LA 279
### SUBJECT INDEX

<table>
<thead>
<tr>
<th>CURE</th>
<th>A068</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYP3A5</td>
<td>B017</td>
</tr>
<tr>
<td>Cytochrome P450</td>
<td>C126</td>
</tr>
<tr>
<td>Cytokines</td>
<td>C037</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td></td>
</tr>
<tr>
<td>Data integration</td>
<td>IA49, IA51</td>
</tr>
<tr>
<td>Database</td>
<td>A104</td>
</tr>
<tr>
<td>Death</td>
<td>B033</td>
</tr>
<tr>
<td>Decision making</td>
<td>A047</td>
</tr>
<tr>
<td>Descriptive</td>
<td>C016</td>
</tr>
<tr>
<td>Diabetes</td>
<td>C077</td>
</tr>
<tr>
<td>Dibenzyl trisulfide</td>
<td>C126</td>
</tr>
<tr>
<td>Dietary behavior</td>
<td>C047</td>
</tr>
<tr>
<td>Dietary epigenetics</td>
<td>B046</td>
</tr>
<tr>
<td>Dietary inflammatory index</td>
<td>C044</td>
</tr>
<tr>
<td>Disadvantaged populations</td>
<td>A021</td>
</tr>
<tr>
<td>Disaggregating Asian race/ethnicity</td>
<td>C012</td>
</tr>
<tr>
<td>Disparities in financial burden, cancer care costs</td>
<td>B024, PR07</td>
</tr>
<tr>
<td>Dissemination</td>
<td>A041</td>
</tr>
<tr>
<td>Dissemination of guidelines</td>
<td>B002</td>
</tr>
<tr>
<td>Distress</td>
<td>B032</td>
</tr>
<tr>
<td>Diversity</td>
<td>A075, A083, IA02, IA15</td>
</tr>
<tr>
<td>Diversity and health disparities</td>
<td>IA28</td>
</tr>
<tr>
<td>Diversity in research</td>
<td>IA28</td>
</tr>
<tr>
<td>DNA damage</td>
<td>B066</td>
</tr>
<tr>
<td>DNA damage response</td>
<td>B042</td>
</tr>
<tr>
<td>DNA methylation</td>
<td>A112, C062, C082, IA26</td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>B066</td>
</tr>
<tr>
<td>Drug therapy</td>
<td>B030</td>
</tr>
<tr>
<td>Ductal carcinoma in situ (DCIS)</td>
<td>B021, C108</td>
</tr>
<tr>
<td>Endocrine therapy, adherence</td>
<td>C104</td>
</tr>
<tr>
<td>Endocrine-disrupting chemicals</td>
<td>A044</td>
</tr>
<tr>
<td>Endometrial cancer</td>
<td>C002, C120</td>
</tr>
<tr>
<td>End point PCR</td>
<td>A118</td>
</tr>
<tr>
<td>Engagement</td>
<td>IA03</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>B007, B084, C008, C069, IA32</td>
</tr>
<tr>
<td>Epigenetics</td>
<td>B049, C066, PR08</td>
</tr>
<tr>
<td>Equity</td>
<td>IA02</td>
</tr>
<tr>
<td>Erlotinib</td>
<td>B087</td>
</tr>
<tr>
<td>Estrogen receptor</td>
<td>C033, C087</td>
</tr>
<tr>
<td>Estrogen receptor-positive (ER+)</td>
<td>B062</td>
</tr>
<tr>
<td>Estrogen-related receptor beta</td>
<td>C103</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>B062, C031</td>
</tr>
<tr>
<td>Ethnic enclave</td>
<td>C073, PR14</td>
</tr>
<tr>
<td>Ethnic/racial disparities</td>
<td>C054</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>C021</td>
</tr>
<tr>
<td>Ethnicity/race/ethnicity</td>
<td>A091</td>
</tr>
<tr>
<td>Evidence-based intervention</td>
<td>A024</td>
</tr>
<tr>
<td>Exercise</td>
<td>C122, C123</td>
</tr>
<tr>
<td>Exosomal microRNAs</td>
<td>B045, C029</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
</tr>
<tr>
<td>Factors of influence</td>
<td>A082</td>
</tr>
<tr>
<td>Family health history</td>
<td>B090</td>
</tr>
<tr>
<td>Family history</td>
<td>C052</td>
</tr>
<tr>
<td>Fatty acid metabolism</td>
<td>C001, C002</td>
</tr>
<tr>
<td>Female</td>
<td>B088</td>
</tr>
<tr>
<td>Financial hardship</td>
<td>B032, IA46</td>
</tr>
<tr>
<td>Financial toxicity</td>
<td>B024, PR07</td>
</tr>
<tr>
<td>Finasteride use</td>
<td>A071</td>
</tr>
<tr>
<td>Food insecurity</td>
<td>C041</td>
</tr>
<tr>
<td>Foreign born</td>
<td>IA23</td>
</tr>
<tr>
<td>Foreign-born Latinos</td>
<td>C065</td>
</tr>
<tr>
<td>Framework for Collaborations</td>
<td>C080</td>
</tr>
<tr>
<td>Fructosamine</td>
<td>C077</td>
</tr>
<tr>
<td><strong>G</strong></td>
<td></td>
</tr>
<tr>
<td>Gastric cancer</td>
<td>A026, A107, C030, C054, IA06</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>A105</td>
</tr>
<tr>
<td>Gastrointestinal cancer</td>
<td>A104</td>
</tr>
<tr>
<td>Gender</td>
<td>A075</td>
</tr>
<tr>
<td>Gene expression</td>
<td>A111, C035</td>
</tr>
<tr>
<td>Gene expression profiling</td>
<td>B054, B057</td>
</tr>
<tr>
<td>Genetic ancestry</td>
<td>B073, C093</td>
</tr>
<tr>
<td>Genetic counseling</td>
<td>A048</td>
</tr>
<tr>
<td>Genetic epidemiology</td>
<td>C050, C051, PR05</td>
</tr>
<tr>
<td>Genetic risk</td>
<td>C057</td>
</tr>
<tr>
<td>Genetic testing</td>
<td>B087, IA50</td>
</tr>
<tr>
<td>Genetic testing cancer</td>
<td>A050</td>
</tr>
<tr>
<td>Genetic variants</td>
<td>B082</td>
</tr>
<tr>
<td>Genetics</td>
<td>IA25</td>
</tr>
</tbody>
</table>

280  THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED
## SUBJECT INDEX

| Genomic analysis                                      | A122 |
| Genomic research                                      | A057 |
| Genomics                                              | B071, IA27 |
| GLI1                                                  | C100 |
| Global research in Africa                             | IA42 |
| Glycosylation                                          | C032 |
| GMaP                                                  | A068, A070 |
| GRO                                                   | C037 |
| Guam                                                  | C075 |
| Gut microbiome                                         | C042 |
| Gynecologic cancer                                     | A062 |
| Hispanic/Latina                                        | A107, B111 |
| HIV                                                   | B037 |
| HIV positive                                           | B074 |
| HIV testing                                            | B083 |
| Homeless                                               | C079 |
| Hormone receptor (HR)-positive breast cancer           | A057, A076 |
| Hormone-related risk factors                          | C064 |
| Hospital care registry                                  | C005 |
| Hospital effects                                       | C011 |
| Hospitalization                                        | C076 |
| Hospitals, rural, Ethiopia                             | C105 |
| Housing discrimination                                 | C072 |
| HPV                                                   | B074, B097, B116 |
| HPV vaccination                                        | B092, B121 |
| HPV vaccination status                                 | A066 |
| HPV vaccine                                            | A029, B122 |
| Human cell lines                                       | B073 |
| Human papillomavirus                                   | B091, B103, C055 |
| Hypertension                                           | C090 |
| Hypoxia-associated genes                               | C028 |
| Immigrants                                             | B093, C084, IA24 |
| Immune cells                                           | B055 |
| Immune profile                                         | C092 |
| Immune-related adverse events                          | A120 |
| Immune response                                        | B058 |
| Immunogenic subtype                                   | B043 |
| Immunono-cology                                        | C118 |
| Immunosuppressive tumor                                |   |
| microenvironment                                       | C001 |
| Immunotherapy                                          | B021, B067 |
| Impact of vaccine policy                               | A066 |
| Implementation                                         | B096 |
| Implementation science                                 | B015 |
| Incidence trends                                       | A117 |
| Income inequality                                      | C068 |
| Indigenous migrants                                    | A094 |
| Indoor radon exposure                                  | C075 |
| Inflammation                                           | B064, C066, C078, IA06 |
| Inflammatory breast cancer (IBC)                       | A023, C106 |
| Informal caregiver                                     | A013 |
| Informed consent for clinical trials                   | A045 |
| Insurance                                              | A025, B088 |
| Insurance status                                       | A091, B080 |
| Integrative epigenomics                                | A112 |
| Interferon                                              | B051 |
| International                                          | C016 |
| Internet accessibility in cancer patients              | A096 |
| Intervention study, rural, Ethiopia                    | C104 |

**H**

| Hair cortisol                                        | A101 |
| Harmonized data                                       | IA51 |
| HDAC 7                                                | C109 |
| Head and neck cancer                                  | A115, B088 |
| head and neck squamous cell carcinoma                 | B085 |
| Health behaviors                                      |   |
| Health care disparities                                | B011, IA09, IA45 |
| Health care policy                                     | IA45, IA47 |
| Health care providers                                  | A069 |
| Health communication                                   | A013 |
| Health disparities                                    | A084, A089, A113, B015, B060, C058, C094, IA13, IA29, PRE6, PRI7 |
| Health disparities, cancer prevention                  | C014, PRI3 |
| Health disparities research                            | A026, B029 |
| Health education                                       | A062, IA23 |
| Health information                                    | A058 |
| Health insurance                                       | A052 |
| Health literacy                                       | A009, A014, A045, B099, PRI2 |
| Health promotion                                       | A009 |
| Health-related quality of life,                        | B026 |
| supportive care                                        |   |
| Health services research                               | B122 |
| Health-related quality of life                         | B036 |
| Heavy metals                                           | B072 |
| Hedgehog signaling                                    | C100 |
| Helicobacter pylori                                    | IA06 |
| Hepatitis B virus infection                            | A102 |
| Hepatitis C                                            | B114 |
| Hepatocellular carcinoma                              | B002, B049, C076, PRO8 |
| HER4                                                   | C026 |
| Hereditary breast and ovarian cancer                   | C060 |
| Hereditary cancer syndromes                            | A049 |
| High-cost treatment                                   | B077, PRI0 |
| Hispanic                                               | A012, B121, C061, C084 |
| Hispanic Americans                                     | A049 |
| Hispanic population                                    | B054 |
| Hispanic/Latina                                        | A034, C034, C035, C092 |
SUBJECT INDEX

Intratumor heterogeneity ............................................. C030
Invasive cervical cancer ........................................... B083

K
Kentucky ........................................................................ B100
Kidney cancer ............................................................. C059
Kidney cancer health disparities ................................. A112
Knowledge .................................................................... B097

L
L-Arginine ................................................................. B067
Large databases .......................................................... B007
Late-stage diagnosis .................................................. B098, C105
Latin America .............................................................. IA41
Latina/Hispanic ............................................................ A103
Latinas .................................................................. A030, C041, C051, C073, C111, PR05, PR14
Latinos .................................................................. A074, A087, B118
Leptin and leptin receptor ........................................... C063
LGBT ........................................................................ A063
Lifestyle ..................................................................... B047
Lifestyle Intervention .................................................. C024
Lifestyle modification .................................................. B095
Linkages to care .......................................................... B110
Listening session .......................................................... A023
Liver cancer ................................................................. B114, C003, C014, IA32, IA38, PR13
Long-term tracking ...................................................... A056
Low income ................................................................ A033
Lung cancer ................................................................. A119, B007, IA29
Lung cancer in never smokers (LCINS) ......................... IA37
Lung cancer surgery ..................................................... A085
Lymphatic system ......................................................... C114

M
Mammary development ................................................ C025
Mammography screening ........................................... B094, B111
MAPK pathway ........................................................... B066
Marital status .............................................................. B014
Mass spectrometry ...................................................... C032
Measurement ............................................................. IA52
Meat ......................................................................... C043
Media and communication ........................................ A010
Mediation ................................................................... C053
Mediation analysis ....................................................... C20
Medicaid ................................................................. B011, B083, IA45
Medical mistrust ......................................................... A072
Medically underserved area ....................................... A096
Medically uninsured ................................................... B106
Medication adherence .............................................. A076
Melanoma ................................................................... B084
Men of African ancestry .......................................... B068, PR09
Mental health ............................................................. A092, A102
Meta-analysis ............................................................. B122
Metabolic syndrome .................................................. C122
Metabolomic ............................................................... C022
Metastasis ................................................................. A108, IA30
Metastatic breast cancer ........................................... B024, PR07
Metastatic cancers ..................................................... B069
Metastatic potential .................................................... B046
Metastatic prostate cancer ........................................ A114
Metformin ................................................................. B119
MICA ......................................................................... C038
Microbiome ............................................................... B064
Micronesia ................................................................. C125
MicroRNA (miRNA) ................................................... A109, B052, B059, B068, C100, PR09, IA31

Migration and health .................................................. A094
Military ................................................................. C055
Minorities ................................................................. A042, B109
Minorities in research ................................................ IA28
Minority health ........................................................... B108
Minority populations ................................................. B091
Minority recruitment .................................................. A035
Mitochondria .............................................................. IA30
Mixed models ............................................................ C007
Molecular characterization ........................................ IA21
Molecular genomics ................................................... B060
Molecular testing minority ......................................... A050
Mortality ................................................................. C069
Multiethnic cohort ..................................................... A119, IA49
Multilevel analysis ..................................................... C011, IA08
Multilevel approaches .............................................. A021
Multilevel integrated dataset .................................... IA37
Multilevel qualitative research methods ..................... A039
Multiple myeloma ..................................................... A121
Mutation ................................................................. B109

N
NanoString ............................................................... C031
National Cancer Institute ......................................... IA01
National Witness Project ........................................... A018
Native Hawaiian ....................................................... IA40
Navigation .............................................................. A025, B038, B096, B101
NCI CRCHD GMaP .................................................. B110
NCI disparities programs ......................................... IA01
Needs assessment ....................................................... C004
Neighborhood .......................................................... B039, C073, PR14
Neighborhood built environment ................................ C013
Neighborhood factors .............................................. C068
Neighborhood geospatial analysis ............................. C014, PR13
Neoadjuvant therapy in Hispanics ............................. B027
Next-generation sequencing ................................. B054, B082, C034
# SUBJECT INDEX

Nonalcoholic fatty liver disease .................................................. IA38
Noncoding RNA ................................................................. C010
Noncompliance .................................................................. A098
Non-small cell lung cancer ................................................... A120, B071, B087
Novel approaches to reduce disparities ................................. C081
Nutrition ........................................................................... C045
Nutritional disparities .............................................................. A033

**O**

Obesity ................................................................. A031, B053, B095, C041, C074, C124
Obesity prevention ............................................................. IA39
Obesity-related cancers ......................................................... A031
Oncology ........................................................................ A075
Oophorectomy .................................................................... C052
Optimization ...................................................................... A118
Orphan nuclear receptor ....................................................... C103
Orthotopic PDX ................................................................ C121
Ovarian cancer ................................................................. B057, C044, C083, IA50, PR16

**P**

Pacific ................................................................................. A116
Pacific Islanders ................................................................. C015, IA25
Pain/symptom management ................................................... B025
Palestinian women ............................................................... C057
Palliative care .................................................................... B028
Pancreatic cancer ............................................................... A106, B059, C085, C091
Pancreatic ductal adenocarcinoma (PDAC) ......................... B070
Pancreatic neoplasms ......................................................... C086
Papnicolaou (Pap) testing ..................................................... B091, B093, B107
Participation ...................................................................... A086
Path analysis ...................................................................... A090, PR02
Patient activation ................................................................. B038
Patient advocate ................................................................. IA40
Patient education and navigation ....................................... B105
Patient engagement, education and satisfaction ............... A096
Patient navigation ............................................................... A055, A085
Patient-centered care .......................................................... A038
Patient-derived xenograft ................................................... A114, C110
Patient-provider communication ....................................... A005, B025
Pattern of care ................................................................. C020
Payer status ..................................................................... A097
Pediatric brain tumor .......................................................... C121
Pediatric cancer survivors .................................................. B112
Pediatric renal cell carcinoma ........................................... C071
Pediatric, adolescent, and young adult ............................... A117
Perceived barriers .............................................................. A033
Phosphorylation ................................................................. B065
Physical activity ............................................................... B013, C013, C048, C049, PR04
Physical well-being .......................................................... A077
Polycyclic aromatic hydrocarbons ..................................... C082
Polymorphisms ................................................................. C045, IA30
Polyp detection rate ............................................................ B102
Population-based planning ................................................ C002
Poverty ............................................................................. C062
Precision medicine .......................................................... B117, C018, IA02, IA03, IA41
Precision public health ..................................................... IA42
Predictive modeling/machine Learning ............................. C003
Predisposition testing, genetic ........................................... A049
Primary prevention ........................................................... A010
Prognostic model ............................................................. C101
Prognostic value .............................................................. C102, PR18
Program ........................................................................... A065
Proliferation ...................................................................... B065
Promotoras ....................................................................... A087
Promoters ......................................................................... B113
Propensity score matching ............................................... A097
Proportion mediated ......................................................... C019
Prostate ........................................................................... B022, B031, C016
Prostate cancer ............................................................... A036, A047, A053, A072, A081, A108, A109, A111, A113, B023, B037, B047, B051, B061, B068, B098, C028, C032, C038, C050, C058, PR06, PR09
Prostate cancer aggressiveness .......................................... B045
Prostate cancer biomarkers ............................................... C029
Prostate cancer disparities ................................................ IA42
Prostate cancer in black males ............................................ B044
Prostate cancer risk .......................................................... C090
Protein adduct ................................................................. C065
Provider characteristics ................................................... B111
Psychology ........................................................................ A099
Psychosocial distress ........................................................ B013
Psychosocial factors ......................................................... C067, PR15
Psychosocial health ........................................................ A103
Psychosocial stress .......................................................... C094, PR17
Public health .................................................................... IA41
PVT1 exon 4A and 4B ........................................................ B044

**Q**

Qualitative research .......................................................... A005, A069, B090
Quality ............................................................................ IA12
Quality of life ........................................................ .......... B035, B037, B038, B039, B040
Quitline ............................................................................ A032

**R**

Race ................................................................................. A108, B032, C028, C049, C086, C090, C098, C108
Race/ethnicity ................................................................. A100, A111, B028, B073, C044, C096, IA38, PR03
Race-related and aggressive prostate cancer .................... B006
<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Racial disparities...............A051, A073, A106, A110,</td>
<td></td>
</tr>
<tr>
<td>B008, B043, C009, C017, C020, C039,</td>
<td></td>
</tr>
<tr>
<td>C071, C087, C089, C116, PR11</td>
<td></td>
</tr>
<tr>
<td>Racial genetic admixture                                                   B057</td>
<td></td>
</tr>
<tr>
<td>Racial segregation                                                        C069</td>
<td></td>
</tr>
<tr>
<td>Racial specific model                                                       C121</td>
<td></td>
</tr>
<tr>
<td>Racial/ethnic discrimination                                                B040</td>
<td></td>
</tr>
<tr>
<td>Racial/ethnic disparities                                                   A045, C006, C076, C106</td>
<td></td>
</tr>
<tr>
<td>Radiation                                                                   A098</td>
<td></td>
</tr>
<tr>
<td>Rare variants                                                               C050</td>
<td></td>
</tr>
<tr>
<td>Rectosigmoid cancer                                                         B027</td>
<td></td>
</tr>
<tr>
<td>Refugee                                                                     IA23</td>
<td></td>
</tr>
<tr>
<td>Registry                                                                    C056</td>
<td></td>
</tr>
<tr>
<td>Renal cell carcinoma                                                        B067</td>
<td></td>
</tr>
<tr>
<td>Representation                                                              A086</td>
<td></td>
</tr>
<tr>
<td>Research experience                                                         A064</td>
<td></td>
</tr>
<tr>
<td>Residential segregation                                                     B040</td>
<td></td>
</tr>
<tr>
<td>Respect                                                                    B025</td>
<td></td>
</tr>
<tr>
<td>Respondent-driven sampling                                                   C015</td>
<td></td>
</tr>
<tr>
<td>Risk factors                                                                IA24</td>
<td></td>
</tr>
<tr>
<td>RNA splicing                                                                B006, B050</td>
<td></td>
</tr>
<tr>
<td>Root cause analysis                                                         C080</td>
<td></td>
</tr>
<tr>
<td>Rural                         ..................................................................</td>
<td></td>
</tr>
<tr>
<td>Rural and urban                                                             B115</td>
<td></td>
</tr>
<tr>
<td>Rural Arkansas                                                              A018</td>
<td></td>
</tr>
<tr>
<td>Rural cancer control                                                        B013</td>
<td></td>
</tr>
<tr>
<td>Rural communities                                                           A019, B099, PR12</td>
<td></td>
</tr>
<tr>
<td>Rural disparities                                                           B077, C003, PR10</td>
<td></td>
</tr>
<tr>
<td>Rural Ethiopia                                                              B034</td>
<td></td>
</tr>
<tr>
<td>Rural health                                                                A011</td>
<td></td>
</tr>
<tr>
<td>Rural Latinos/Hispanics                                                      A043</td>
<td></td>
</tr>
<tr>
<td>S Safety net                                                                B108</td>
<td></td>
</tr>
<tr>
<td>Safety-net facility                                                         A095</td>
<td></td>
</tr>
<tr>
<td>Safety-net hospitals                                                        A008</td>
<td></td>
</tr>
<tr>
<td>Satisfaction                                                                A013</td>
<td></td>
</tr>
<tr>
<td>Scale validation                                                            A009</td>
<td></td>
</tr>
<tr>
<td>Scale-up                                                                   A024</td>
<td></td>
</tr>
<tr>
<td>Scholarship                                                                A070</td>
<td></td>
</tr>
<tr>
<td>Science education                                                           A056</td>
<td></td>
</tr>
<tr>
<td>Scientific animations                                                       A048</td>
<td></td>
</tr>
<tr>
<td>Screening                                                                   A072, B112, B113, IA09, IA12, IA32</td>
<td></td>
</tr>
<tr>
<td>Screening and early detection                                               B101</td>
<td></td>
</tr>
<tr>
<td>Screening colonoscopy                                                       B102</td>
<td></td>
</tr>
<tr>
<td>Screening disparities                                                       A046</td>
<td></td>
</tr>
<tr>
<td>Screening education                                                         A061</td>
<td></td>
</tr>
<tr>
<td>SCUBE3                                                                     B066</td>
<td></td>
</tr>
<tr>
<td>Secondhand smoke                                                           A002</td>
<td></td>
</tr>
<tr>
<td>SEER Medicare                                                               B023</td>
<td></td>
</tr>
<tr>
<td>Segregation                                                                 C067, PR15</td>
<td></td>
</tr>
<tr>
<td>Self-sampling                                                              B116</td>
<td></td>
</tr>
<tr>
<td>seqFLISH                                                                   B117</td>
<td></td>
</tr>
<tr>
<td>Sequencing                                                                  A107</td>
<td></td>
</tr>
<tr>
<td>Sleep                                                                       C078</td>
<td></td>
</tr>
<tr>
<td>Smartphone use                                                              A096</td>
<td></td>
</tr>
<tr>
<td>Smoking                                                                     A090, C021, C089, C096, PR02</td>
<td></td>
</tr>
<tr>
<td>Smoking cessation                                                           A001</td>
<td></td>
</tr>
<tr>
<td>Social determinants                                                         C070, IA08</td>
<td></td>
</tr>
<tr>
<td>Social determinants of health                                               IA52</td>
<td></td>
</tr>
<tr>
<td>Social environment                                                          C007</td>
<td></td>
</tr>
<tr>
<td>Social isolation                                                            A090, PR02</td>
<td></td>
</tr>
<tr>
<td>Social media                                                                A107</td>
<td></td>
</tr>
<tr>
<td>Social networks                                                             A036, C015</td>
<td></td>
</tr>
<tr>
<td>Social support                                                              A007, A077</td>
<td></td>
</tr>
<tr>
<td>Social-pain clusters                                                        A079</td>
<td></td>
</tr>
<tr>
<td>Sociodemographic characteristics                                            A079, B010</td>
<td></td>
</tr>
<tr>
<td>Sociodemographic disparities                                               A052, A115</td>
<td></td>
</tr>
<tr>
<td>Sociodemographic factors                                                    A071, IA52</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic and racial/ethnic disparities                                A066</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic influences                                                   A099</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status                                                        B036</td>
<td></td>
</tr>
<tr>
<td>Socioeconomically diverse population                                       A096</td>
<td></td>
</tr>
<tr>
<td>Somatic mutates                                                            C030</td>
<td></td>
</tr>
<tr>
<td>Spanish-speaking smokers                                                    A032</td>
<td></td>
</tr>
<tr>
<td>STAG1                                                                        C036</td>
<td></td>
</tr>
<tr>
<td>Stage                                                                       A091</td>
<td></td>
</tr>
<tr>
<td>Stage migration                                                             B079</td>
<td></td>
</tr>
<tr>
<td>Statewide mapping and understanding of disease                             C081</td>
<td></td>
</tr>
<tr>
<td>Statistical methods                                                         C018</td>
<td></td>
</tr>
<tr>
<td>Stem cells                                                                  C036</td>
<td></td>
</tr>
<tr>
<td>Stigma                                                                      A102, IA22</td>
<td></td>
</tr>
<tr>
<td>Strategies                                                                  A006</td>
<td></td>
</tr>
<tr>
<td>Stress                                                                      C021</td>
<td></td>
</tr>
<tr>
<td>Structural racism                                                           C072</td>
<td></td>
</tr>
<tr>
<td>Student research training                                                   IA16</td>
<td></td>
</tr>
<tr>
<td>Subtyping                                                                   C018</td>
<td></td>
</tr>
<tr>
<td>Substance use disorder program                                              A003</td>
<td></td>
</tr>
<tr>
<td>Subtype                                                                     C059</td>
<td></td>
</tr>
<tr>
<td>Suicide                                                                     B014</td>
<td></td>
</tr>
<tr>
<td>Surgery                                                                     A104, A105, B075</td>
<td></td>
</tr>
<tr>
<td>Surveillance                                                                C023</td>
<td></td>
</tr>
<tr>
<td>Survival                                                                    A110, C054, C106, C120</td>
<td></td>
</tr>
<tr>
<td>Survival outcomes                                                           C039</td>
<td></td>
</tr>
<tr>
<td>Survivin                                                                    B065</td>
<td></td>
</tr>
<tr>
<td>Survivors                                                                   B031, IA13</td>
<td></td>
</tr>
<tr>
<td>Survivorship                                                                A093, A099, B010, B015, B039, C048, PR04</td>
<td></td>
</tr>
<tr>
<td>Symptom burden, racial/educational disparities                             B026</td>
<td></td>
</tr>
</tbody>
</table>

284 THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED

09_CHD18_SubjectIndex.indd 284
10/10/18 11:50 AM
SUBJECT INDEX

T
Targeted therapeutic .......................................................... C110
Targeted therapy ............................................................ B020
Telemedicine .................................................................. A011
Telomere length ............................................................... C027
TGFB1 ............................................................................ B070
The Cancer Genome Atlas (TCGA) ................................. B050
Therapy-targeted pathways ............................................ B082
Think tank ....................................................................... A121
Thyroid cancer ............................................................... A117
Thyroid cancer in Filipinos ............................................. C075
Tissue analysis ............................................................... IA21
Tobacco ........................................................................... A002, C095, IA39
Tobacco education .......................................................... A003
Tobacco smoking ............................................................ A094
TP53 mutations ............................................................... C002
tp53 zinc-binding domain .............................................. C001
Training ........................................................................... A035, A055, A063, A065, IA15
Transcriptomics .............................................................. IA29
Translational cancer research training ............................. IA18
Transportation ................................................................. B115
Travel distance ............................................................... B012
Treatment ....................................................................... B012, B023
Treatment delay ............................................................. B080, B084
Treatment-related disparities ......................................... B085
Trial matching ................................................................. A081
Triple-negative breast cancer (TNBC) .............................. B030, B042, B053, B055, B072, C007, C026, C033, C035, C070, C092, C099, C102, C103, C113, C126, IA43, PR18
tRNA .............................................................................. C010
tRNA-derived fragments ............................................... IA31
trpv6 calcium ion channel .............................................. B069
Trust ............................................................................... A012
Tumor cells ...................................................................... C114
Tumor heterogeneity ........................................................ A113
Unequal treatment ........................................................ A006
Utah ............................................................................... C079
Uterine cervical neoplasms ............................................. B106
Utilization ....................................................................... B081
V
Vaccination .................................................................... C055
Variation in care ............................................................. C012
Verbal autopsy ............................................................... B033
Viability .......................................................................... B020
Vitamin D .................................................................... C027, C046, C088
Vorinostat ....................................................................... C109
W
Walnuts .......................................................................... C042
Website .......................................................................... A041
Well-being ..................................................................... B035
Women ........................................................................... A120
Women of color ............................................................. A082
Women's health ............................................................. B107
Work ............................................................................... A100, PR03
Workforce diversity ........................................................ A059
Workshops ...................................................................... A059

Undergraduate training .................................................. A064
Under-represented minorities (URM) .............................. IA16
Under-represented populations ...................................... IA07
Under-represented researchers .................................... A070
Underserved ................................................................... A095, B079
Underserved community ............................................... C047
Underserved populations ............................................. IA21
Understanding and acceptance .................................... IA07
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<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Company</th>
<th>Relationships</th>
<th>Type</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcaraz</td>
<td>Kassandra</td>
<td>American Cancer Society</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
<td>Arnold</td>
<td>Connie</td>
<td>LSU Feist-Weiller Cancer Ctr.</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
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<tr>
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<td>Ronald</td>
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<td>No Relationships</td>
<td>Staff</td>
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<td>Hassan</td>
<td>Howard Univ.</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
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<td>Banegas</td>
<td>Matthew</td>
<td>Kaiser Permanente</td>
<td>AstraZeneca</td>
<td>G Program Committee</td>
<td></td>
</tr>
<tr>
<td>Barrett</td>
<td>Nadine</td>
<td>Duke Cancer Institute</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
<td>Beebe-Dimmer</td>
<td>Jennifer</td>
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<td>No Relationships</td>
<td>Speaker</td>
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</tr>
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<td>No Relationships</td>
<td>Speaker</td>
<td></td>
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<tr>
<td>Blinder</td>
<td>Victoria</td>
<td>Memorial Sloan Kettering Cancer Center</td>
<td>Pfizer Oncology</td>
<td>C Speaker</td>
<td></td>
</tr>
<tr>
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<td>Cathy</td>
<td>University of Colorado</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
<td>Burns White</td>
<td>Karen</td>
<td>Dana-Farber Cancer Inst./Harvard Cancer Ctr.</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
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<td>Lyngine</td>
<td>American Association for Cancer Research</td>
<td>No Relationships</td>
<td>Staff</td>
<td></td>
</tr>
<tr>
<td>Carpten</td>
<td>John</td>
<td>USC Keck School of Medicine</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
<td>Chapman</td>
<td>Monalesia</td>
<td>Univ. of North Carolina at Greensboro</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
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<td>Iona</td>
<td>UCSF</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
<td>Colon Otero</td>
<td>Gerardo</td>
<td>Mayo Clinic Cancer Ctr.</td>
<td>Novartis</td>
<td>G Program Committee</td>
<td></td>
</tr>
<tr>
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<td>Global Liver Institute</td>
<td>No Relationships</td>
<td>Speaker</td>
<td></td>
</tr>
<tr>
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<td>Melissa</td>
<td>Henry Ford Health Systems</td>
<td>No Relationships</td>
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288  THE SCIENCE OF CANCER HEALTH DISPARITIES IN RACIAL/ETHNIC MINORITIES AND THE MEDICALLY UNDERSERVED
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