Sunday, October 14

6:00 p.m.-6:30 p.m.  WELCOME  Salons I-IV, Third Floor

6:00 p.m.-6:15 p.m.  Welcome  Margaret Foti, American Association for Cancer Research, Philadelphia, PA

6:15 p.m.-6:30 p.m.  Conference overview  Phillip A. Sharp, David H. Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA

6:30 p.m.-8:00 p.m.  KEYNOTE LECTURES  Salons I-IV, Third Floor

6:30 p.m.-7:15 p.m.  Detection of cancer with circulating nucleic acids using large data sets and machine learning-based classification  Richard Klausner, Mindstrong Health, Palo Alto, CA

7:15 p.m.-8:00 p.m.  Title to be announced  Aviv Regev, Massachusetts Institute of Technology, Cambridge, MA

8:00 p.m.-9:30 p.m.  OPENING RECEPTION  Atrium, Lobby Level

Monday, October 15

7:00 a.m.-8:00 a.m.  BREAKFAST  Salon I-IV Foyer, Third Floor

8:00 a.m.-10:00 a.m.  PLENARY SESSION 1: PREDICTING THE GENETIC/ENVIRONMENTAL CAUSES OF CANCER  Salons I-IV, Third Floor

8:00 a.m.-8:30 a.m.  The fourth revolution in cancer research: From phenotype to molecular biology to omics to data science  Alan Bernstein, Canadian Institute for Advanced Research (CIFAR), Toronto, ON, Canada

8:30 a.m.-9:00 a.m.  Models of pancreatic cancer risk  Alison P. Klein, Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD
CONFERENCE PROGRAM

9:00 a.m.-9:30 a.m. The challenge of characterizing cancer susceptibility
Stephen J. Chanock, National Cancer Institute, Rockville, MD

9:30 a.m.-10:00 a.m. Title to be announced
Anna Goldenberg, University of Toronto, Toronto, ON, Canada

10:00 a.m.-10:30 a.m. BREAK
Salon I-IV Foyer, Third Floor

10:30 a.m.-12:00 p.m. PLENARY SESSION 2: PREDICTING CANCER PHENOTYPE THROUGH IMAGES
Salons I-IV, Third Floor

10:30 a.m.-11:00 a.m. Title to be announced
Josephine Bunch, National Physical Laboratory, Middlesex, United Kingdom

11:00 a.m.-11:30 a.m. Assignment of surgical margins with PARP imaging agents in the oral cavity
Thomas Reiner, Memorial Sloan Kettering Cancer Center, New York, NY

11:30 a.m.-12:00 p.m. Rethinking prevention and early diagnostics with deep learning
Regina Barzilay, MIT Computer Science and Artificial Intelligence Laboratory, Cambridge, MA

12:00 p.m.-2:00 p.m. LUNCH ON OWN / FREE TIME

2:15 p.m.-4:15 p.m. PLENARY SESSION 3: PREDICTING CANCER PHENOTYPE THROUGH HISTOLOGY AND PATHOLOGY
Salons I-IV, Third Floor

2:15 p.m.-2:45 p.m. Predicting cancer phenotype through histology and pathology
Thomas J. Fuchs, Memorial Sloan Kettering Cancer Center, New York, NY

2:45 p.m.-3:15 p.m. Machine learning approaches to annotate pathology images with high-dimensional cellular state information
Barbara E. Engelhardt, Princeton University, Princeton, NJ

3:15 p.m.-3:45 p.m. Bringing it all together: AI-powered pathology for immuno-oncology
Andrew H. Beck, PathAI, Cambridge, MA

3:45 p.m.-4:15 p.m. Title to be announced
Dana Pe’er, Memorial Sloan Kettering Cancer Center, New York, NY
4:30 p.m.-5:10 p.m.  SHORT TALKS FROM PROFFERED PAPERS SESSION 1
Salons I-IV, Third Floor

4:30 p.m.-4:40 p.m.  Computed tomography textures machine learning classifiers predict response to immunotherapy in patients with lung cancer*
Harini Veeraraghavan, Memorial Sloan Kettering Cancer Center, New York, NY

4:40 p.m.-4:50 p.m.  Identification of relevant alterations in cancer using topologic data analysis*
Pablo Camara, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

4:50 p.m.-5:00 p.m.  Systematic network-based analysis reveals novel molecular subtypes conserved in multiple pancreatic cancer cohorts and at the single-cell level*
Pasquale Laise, Columbia University, New York, NY

5:00 p.m.-5:10 p.m.  An integrative genetic epidemiologic approach to analysis of multiomics data identifies low- and medium-risk susceptibility genes for breast cancer*
Roxana Moslehi, University at Albany, Albany, NY

5:30 p.m.-7:30 p.m.  POSTER SESSION A / RECEPTION
Atrium, Lobby Level

7:30 p.m.-  EVENING ON OWN / FREE TIME

Tuesday, October 16

7:00 a.m.-8:00 a.m.  BREAKFAST
Salon I-IV Foyer, Third Floor

8:00 a.m.-10:00 a.m.  PLENARY SESSION 4: PREDICTING CANCER RESPONSE USING PATIENT-CENTRIC DATA PLATFORMS
Salons I-IV, Third Floor

8:00 a.m.-8:30 a.m.  Partnering with patients to advance cancer research
Nikhil Wagle, Dana-Farber Cancer Institute, Boston, MA

8:30 a.m.-9:00 a.m.  A multiscale, omic, and image view of metastatic breast cancer
Joe W. Gray, Oregon Health & Science University, Portland, OR

9:00 a.m.-9:30 a.m.  Emerging opportunities at the intersection of computational oncology and precision cancer medicine
Eliezer M. Van Allen, Dana-Farber Cancer Institute, Boston, MA

9:30 a.m.-10:00 a.m.  The reality of complexity when using knowns to query unknowns: From yeast and omics to humans and forecasting symptom transitions
Stephen M. Friend, Sage Bionetworks, Seattle, WA

*Short talk from proffered abstract
CONFERENCE PROGRAM

10:00 a.m.-10:30 a.m.  
BREAK  
Salon I-IV Foyer, Third Floor

10:30 a.m.-12:30 p.m.  
PLENARY SESSION 5: PREDICTING CANCER RESPONSE TO PRECISION THERAPY  
Salons I-IV, Third Floor

10:30 a.m.-11:00 a.m.  
Heterogeneity and evolution of gliomas  
Raul Rabdan, Columbia University Medical Center, New York, NY

11:00 a.m.-11:30 a.m.  
Defining a cancer dependency map  
William C. Hahn, Dana-Farber Cancer Institute, Boston, MA

11:30 a.m.-12:00 p.m.  
Identification of breast cancer drivers and therapy resistance mechanisms in mouse models  
Jos Jonkers, Netherlands Cancer Institute, Amsterdam, Netherlands

12:00 p.m.-12:30 p.m.  
Title to be announced  
Alice T. Shaw, Massachusetts General Hospital Cancer Center, Boston, MA

12:30 p.m.-2:30 p.m.  
LUNCH ON OWN / FREE TIME

1:45 p.m.-2:30 p.m.  
SPECIAL SESSION: NEW FUNDING OPPORTUNITIES FROM THE NCI CENTER FOR CANCER TRAINING  
Salons I-IV, Third Floor

Michele McGuirl, Center for Cancer Training, National Cancer Institute, Bethesda, MD

A new NCI funding opportunity is expected to be published in late 2018 for early-stage postdocs who wish to pursue careers as independent cancer researchers, and those in data and population sciences are especially encouraged to apply. Mentors and potential applicants (including international students and postdocs) are invited to learn more about this new pilot program and other funding opportunities offered by the NCI.

2:45 p.m.-4:45 p.m.  
PLENARY SESSION 6: PREDICTING THE IMPACT OF EARLY INTERVENTION IN CANCER  
Salons I-IV, Third Floor

2:45 p.m.-3:15 p.m.  
RNA-based elucidation of pharmacologically actionable dependencies in human malignancies  
Andrea Califano, Columbia University, New York, NY

3:15 o.m.-3:45 p.m.  
Title to be announced  
Franziska Michor, Dana-Farber Cancer Institute, Boston, MA

CONVERGENCE: ARTIFICIAL INTELLIGENCE, BIG DATA, AND PREDICTION IN CANCER
3:45 p.m.-4:15 p.m.  Making hay of needles: Connecting clinical and physical parameters in the search for early cancer
Imran S. Haque, Freenome, South San Francisco, CA

4:15 p.m.-4:45 p.m.  The convergence of data streams for pancreatic cancer earlier detection
Brian M. Wolpin, Dana-Farber Cancer Institute, Boston, MA

4:45 p.m.-5:15 p.m.  SHORT TALKS FROM PROFFERED PAPERS SESSION 2
Salons I-IV, Third Floor

4:45 p.m.-4:55 p.m.  Incorporating breast anatomy in radiomic machine learning for breast cancer risk estimation with digital mammograms*
Aimilia Gastounioti, University of Pennsylvania, Philadelphia, PA

4:55 p.m.-5:05 p.m.  DeepAbstractor: A scalable deep learning framework for automated information extraction from free-text pathology reports*
Georgia Tourassi, Oak Ridge National Laboratory, Oak Ridge, TN

5:05 p.m.-5:15 p.m.  Mammogram-derived texture features and risk of breast cancer*
Oana A. Zeleznik, Brigham and Women’s Hospital and Harvard Medical School, Boston, MA

5:15 p.m.-7:15 p.m.  POSTER SESSION B / RECEPTION
Atrium, Lobby Level

7:15 p.m.-  EVENING ON OWN / FREE TIME

Wednesday, October 17

7:00 a.m.-8:00 a.m.  BREAKFAST
Salon I-IV Foyer, Third Floor

8:00 a.m.-10:00 a.m.  PLENARY SESSION 7: PREDICTING IMMUNE RESPONSE TO CANCER
Salons I-IV, Third Floor

8:00 a.m.-8:30 a.m.  Immunotherapy-induced immune responses to pancreatic cancer
Elizabeth M. Jaffee, Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD

8:30 a.m.-9:00 a.m.  Multi-omic, dynamic data clouds for early detection of cancer or cancer recurrence
James R. Heath, Institute of Systems Biology, Seattle, WA

*Short talk from proffered abstract
CONFERENCE PROGRAM

9:00 a.m.-9:30 a.m.  The predictive value of the pre-existing immune contexture and Immunoscore
Jerome Galon, INSERM UMRS1138, Cordeliers Research Center, Paris, France

9:30 a.m.-10:00 a.m. Identifying and tracking tumor-specific T-cell clones
Harlan Robins, Adaptive Biotechnologies Corporation, Seattle, WA

10:00 a.m.-10:15 a.m. BREAK
Salon I-IV Foyer, Third Floor

10:15 a.m.-12:15 p.m. PLENARY SESSION 8: PREDICTING CANCER STATUS BY METABOLIC CHANGES
Salons I-IV, Third Floor
10:15 a.m.-10:45 a.m. Metabolic modeling of single-cell RNA-Seq reveals cell-to-cell metabolic heterogeneity and actionable targets in autoimmunity
Nir Yosef, UC Berkeley Center for Computational Biology, Berkeley, CA

10:45 a.m.-11:15 a.m. Metabolic reprogramming in human tumors in vivo
Ralph J. DeBerardinis, UT Southwestern Medical Center, Dallas, TX

11:15 a.m.-11:45 a.m. Leveraging metabolic limitations of tumor growth to treat cancer
Matthew G. Vander Heiden, David H. Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA

11:45 a.m.-12:15 p.m. Urea cycle dysregulation, emerging pyrimidines mutation bias, and enhanced response to immunotherapy in cancer
Eytan Ruppin, National Cancer Institute, Bethesda, MD

12:15 p.m.-12:30 p.m. CLOSING REMARKS
Salons I-IV, Third Floor
Phillip A. Sharp, David H. Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA
William C. Hahn, Dana-Farber Cancer Institute, Boston, MA

12:30 p.m. DEPARTURE