

Monday, September 22, 2008

12:00 PM-2:00 PM Educational Session 1A: Assay Validation Salon A-C

Chairperson: Andrew Hruszkewycz, National Cancer Institute, Rockville, MD

Accurate data derived from the molecular analyses of biospecimens is central to the development and implementation of personalized medicine. New opportunities inherent in the growing spectrum of biomarker measurement capabilities offered by new technologies are prompting increasing attention to the complex pre-analytic and analytic issues that need to be addressed in order that biomarker measurements provide the most useful information for basic scientific investigations and therapeutic development. This session will focus on key analytic and statistical issues that need to be addressed for qualifying biomarkers for their intended use in various aspects of cancer research, using different kinds of biospecimens for validated analyses.

Exploiting the Success and Failure of Cancer Therapies: Investing Now in Accurate Biomarker Data to Improve Outcomes Later*

Peter S. Nelson, Fred Hutchinson Cancer Research Center, Seattle, WA

Biomarker Validation: Pre-analytic and Assay Performance

Herbert A. Fritsche, University of Texas M. D. Anderson Cancer Center, Houston, TX

Accurate, Reproducible, and Quantitative Measurement of Protein Analyte Concentration(s) in Tissue Slides*

David L. Rimm, Yale University School of Medicine, New Haven, CT

Statistical Issues in Biomarker Assay Development and Evaluation*

Viswanath Devanarayan, Abbott Laboratories, Parsippany, NJ

12:00 PM-2:00 PM Educational Session 1B: Non-Coding RNAs Salon D

Chairperson: Carlo M. Croce, Ohio State University Comprehensive Cancer Center, Columbus, OH

Non-coding RNAs are thought to regulate a quarter of all mammalian genes and alterations in their expression have been associated with the development of cancer. These RNAs can regulate every stage of gene expression: transcription, mRNA stability, and mRNA translation. Cancer cells have genetic and epigenetic changes from their normal counterparts and the role of non-coding RNAs in mediating these differences is beginning to emerge. This exciting new area of research, from basic biology to biomarker development, will be the focus of this session.

MicroRNA Reprogramming by Oncogenes and Tumor Suppressors*

Joshua Mendell, Johns Hopkins University, Baltimore, MD

miRNome Integrative Analysis in Ovarian Cancer*

George Coukos, University of Pennsylvania Medical Center, Philadelphia, PA

MicroRNAs in the Diagnosis and Prognosis of Cancer*

Carlo M. Croce

MicroRNAs in Control of Cell Proliferation*

Anindya Dutta, University of Virginia Health Sciences Center, Charlottesville, VA

2:00 PM-2:15 PM Break

*An extended abstract for this presentation is available in the Invited Abstracts section of the *Proceedings*.

**2:15 PM-4:15 PM Educational Session 2A:
Molecular Markers and
Patient Decisions**
Salon A-C

Co-Chairpersons: **Jane Perlmutter**, Gemini Group, Naperville, IL, and **Daniel F. Hayes**, University of Michigan Comprehensive Cancer Center, Ann Arbor, MI

The purpose of this session is to explore the impact of molecular biomarkers on patient decision making. Several research scientists will present data that demonstrates how patients incorporate biomarker information in their prevention and treatment decisions. They will then be joined by a panel that includes physicians, patient advocates, as well as individuals who have been involved in developing and marketing tests and decision tools. Questions to be addressed include: What cancer risks are high enough to motivate patients to make lifestyle changes; to take risk-reducing drugs; to undergo prophylactic surgery? What recurrent risks are low enough to motivate clinicians to recommend against and/or patients to feel comfortable foregoing chemotherapy? How do American clinicians and their patients incorporate the use of molecular markers into decision making? What are the individual, socio/cultural, and economic factors that impact these decisions? How can biomarker information be optimally presented to clinicians and patients to increase their use in decision making?

How Behavioral Science Can Help Us Understand and Improve Patient Decision Making
Suzanne M. Miller, Fox Chase Cancer Center, Philadelphia, PA

Shared Decision Making: A Clinician's Perspective
Peter A. Ubel, University of Michigan, Ann Arbor, MI

Decision Tools: The Challenge of Integrating New Molecular Biomarkers and Classical Information
Peter M. Ravdin, University of Texas Health Science Center, San Antonio, TX

Panelists

Susan Friedman, Facing Our Risk of Cancer Empowered, Tampa, FL
Daniel F. Hayes
Robert McCormack, Veridex, LLC, Raritan, NJ
Jane Perlmutter
Steven Shak, Genomic Health Inc., Redwood City, CA

**2:15 PM-4:15 PM Educational Session 2B:
Molecular Imaging:
From Mouse to Human**
Salon D

Chairperson: **Wafik S. El-Deiry**, Abramson Cancer Center of the University of Pennsylvania, Philadelphia, PA

Molecular imaging is an important tool for the advancement of successful, personalized treatments. It is the technology that is capable of detecting *in vivo* molecular interactions, such as drug delivery and tumor progression. Therefore, imaging will be vital to improving the efficiency of both preclinical and clinical research on new drug candidates, as well as gauging patient response. This session will highlight some of the new techniques and technologies being used in every stage of treatment development.

Imaging of Immune Cell Trafficking Patterns Refines Development of Cell-Based Therapies*
Christopher H. Contag, Stanford University School of Medicine, Stanford, CA

Optical Imaging of Tumor Progression and Therapeutic Response in Preclinical Models
Wafik S. El-Deiry

Monitoring of Tumor Response to Therapy by ¹⁸F-ML-10, a Novel Small-Molecule PET Tracer for Apoptosis: From Preclinical to Clinical Studies*
Anat Shirvan, Aposense, Ltd., Petach-Tikva, Israel

Detecting Tumor Responses to Treatment with Magnetic Resonance Imaging*
Kevin M. Brindle, Cancer Research UK, University of Cambridge, Cambridge, United Kingdom

4:15 PM-4:30 PM Break

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**4:30 PM-6:30 PM Educational Session 3A:
From Discovery to Product**
Salon D

Chairperson: Michael K. Samoszuk, Roche Diagnostics Corporation, Indianapolis, IN

Recent advances in molecular biology and proteomics have identified many promising biomarkers and molecular signatures that may someday be of value for cancer detection, monitoring, prognostication, and prediction of response to therapy. To date, however, relatively few of these discoveries have actually been successfully translated into tools that are routinely used to fulfill the promise of personalized medicine in the management of cancer patients. In order for these discoveries to be translated into clinically valuable tools, it is first necessary to confirm the analytical and clinical validity of the biomarkers and genomic signatures. Often overlooked by the investigator, however, is the necessity of ultimately demonstrating that the proposed molecular diagnostic tool also has clinical utility in the management of cancer patients. This session will serve as a forum for some of the leading companies and individuals involved in developing molecular diagnostic tests to present informative and interesting case studies that illustrate the challenges of translating basic science discoveries into products.

Bringing the Promise of Genomics to Clinical Practice:
Lessons from Oncotype DX

Steven Shak, Genomic Health Corporation,
Redwood City, CA

Developing Tissue-Based Predictive Biomarkers in Oncology*

Paul M. Waring, University of Western Australia,
Crawley, Australia

Personalized Healthcare Strategies and Challenges
in Oncology*

Walter H. Koch, Roche Molecular Systems, Pleasanton, CA

Implementation of Biomarkers during Oncology Drug
Development

Nancy Simonian, Millennium Pharmaceuticals,
Cambridge, MA; Representing the Personalized Medicine
Coalition, Washington, DC

**4:30 PM-6:30 PM Educational Session 3B:
Molecular Marker Driven
Trial Design**
Salon A-C

Chairperson: Donald A. Berry, University of Texas M. D.
Anderson Cancer Center, Houston, TX

Statistical Issues in Identifying, Validating, and Using
Molecular Markers in Clinical Trials*

Marc E. Buyse, International Drug Development Institute,
Ottignies, Belgium

Multiple Markers: The FDA Perspective

Steven I. Gutman, Food and Drug Administration,
Rockville, MD

Molecular Marker Driven Trial Design

Donald A. Berry

Neoadjuvant Trials in Breast Cancer: Integrating Biology,
Imaging, and Response to Treatment

Angela M. DeMichele, University of Pennsylvania,
Philadelphia, PA

6:30 PM-7:30 PM Break

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7:30 PM-9:00 PM **Opening Session:**
Salon A-C

Welcome

Margaret Foti, American Association for Cancer Research, Philadelphia, PA

Introductory Remarks

Gordon B. Mills, University of Texas M. D. Anderson Cancer Center, Houston, TX

Keynote Addresses

Personalized Cancer Medicine in the Next Decade
David Sidransky, Johns Hopkins University, Baltimore, MD

Models of Molecular Diversity to Facilitate Marker Guided Therapy*

Joe W. Gray, Lawrence Berkeley National Laboratory, Berkeley, CA

9:00 PM-10:00 PM **Opening Reception**
Salon E

All registrants are invited to attend.

Tuesday, September 23, 2008

7:00 AM-8:00 AM **Continental Breakfast**
Salon A-D Foyer

8:00 AM-10:15 AM **Plenary Session 1:**
Transformative Technology
Salon A-C

Chairperson: David A. Tuveson, Cancer Research UK, Cambridge Research Institute, Cambridge, United Kingdom

Recent progress in functional imaging, nucleic acid analysis, and nanotechnology have fueled the development of new approaches to investigate drug discovery, protein function, and gene regulation. These advances have accelerated the ability to determine pertinent features of tumor identity, tumor heterogeneity, and therapeutic responses, and are already having a measureable impact in clinical studies. Several promising approaches will be highlighted in this session.

High Content Imaging in Cancer Drug Discovery
Richard B. Gaynor, Eli Lilly and Company, Indianapolis, IN

New Technologies to Understand and Diagnose Cancer
Stephen Quake, Stanford University, Stanford, CA

PET Technology for Interrogating Genome Functions and Genome Variations in Cancer Cells
Yijun Ruan, Genome Institute of Singapore, Singapore

Talk from Proffered Papers:

High Throughput, Quantitative DNA Methylation Screening Using a Quantum Dot Based Nanotechnology Assay*
Bailey Vasudev, Johns Hopkins School of Medicine, Baltimore, MD

Summary
David A. Tuveson

10:15 AM-10:45 AM **Coffee Break**
Salon A-D Foyer

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**10:45 AM-1:00 PM Plenary Session 2:
Pharmacogenomics**
Salon A-C

Co-Chairpersons: **Nancy Cox**, The University of Chicago, Chicago, IL, and **David A. Flockhart**, Indiana University Cancer Center, Indianapolis, IN

Interindividual variation in response to cancer drug therapy can be explained in part by inherited variants in genes that influence the absorption, metabolism, disposition of drugs, or that alter signaling pathways. Studies that test for associations between germline variants in specific candidate pathways are of potential value in identifying predictors of therapeutic response and elucidating the underlying mechanisms of drug effects. A number of germline genetic tests that analyze specific genes and their combinations are now FDA approved, and a number of others are under review. Genome wide association studies are now commonplace for disease etiology, but to date few studies using this approach are available in therapeutics. The promise of pharmacogenomics, to provide improved therapy through improved patient stratification, is most realizable in settings where several alternative therapies are available, and genomics can be used to stratify patients into those most likely to respond to specific therapies. This session will highlight the potential applications and future challenges in pharmacogenetic research relating to tamoxifen, aromatase inhibitor, and anti-angiogenic breast cancer therapeutics and risk assessment.

Germline Pharmacogenomics as a Tool to Individualize Therapy in Breast Cancer
David A. Flockhart

Genome-Wide Association Studies in Clinical Trials
Nancy Cox

Personalized Medicine: Advantages and Shortcomings of Genomics versus Metabonomics*
Daniel W. Nebert, University of Cincinnati Medical Center, Cincinnati, OH

Talk from Proffered Papers:

Plucked Hair Is a Noninvasive Surrogate Tissue Useful for Establishing Drug Response and Providing Pharmacodynamic Data in Preclinical Studies*
Ged Brady, Epistem PLC, Manchester, United Kingdom

Summary
Nancy Cox and **David A. Flockhart**

1:00 PM-4:15 PM Exhibits
Franklin Hall A

2:15 PM-4:15 PM Poster Session A
Franklin Hall A

**4:30 PM-6:45 PM Plenary Session 3:
Molecular Classification
and Prognostic Markers**
Salon A-C

Co-Chairpersons: **Laura J. van't Veer**, The Netherlands Cancer Institute, Amsterdam, Netherlands, and **Margaret R. Spitz**, University of Texas M. D. Anderson Cancer Center, Houston, TX

Personalized medicine is becoming an integral part of cancer diagnostics. The wealth of information coming from basic and translational research will allow us to tailor therapy to the most effective combination of drugs, targeted to the specific biological make-up of the tumor or the host, as well as integrating knowledge on prognosis, thus preventing unnecessary treatments. At earlier stages, molecular information may guide interventions in screening programs.

Ovarian Cancer Classification: Lessons from Morphology, Molecules, and Mice*
Kathleen R. Cho, University of Michigan Medical School, Ann Arbor, MI

Pharmacogenetics of Lung Cancer: An Integrative Epidemiologic Approach*
Margaret R. Spitz

Early Detection of Colon Cancer Using Methylated Fecal DNA
Sanford D. Markowitz, Case Western Reserve University, Cleveland, OH

Talk from Proffered Papers:

Src Pathway Activation Correlates with Treatment Resistance in Breast Cancer and Identifies Patient Subsets Predicted to Benefit from Src Inhibition*
Christina M. Coughlin, Wyeth Research, Collegeville, PA

Summary
Laura J. van't Veer and **Margaret R. Spitz**

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Wednesday, September 24, 2008

7:00 AM-8:00 AM **Continental Breakfast**
Salon A-D Foyer

8:00 AM-10:15 AM **Plenary Session 4:
Molecular Response
Prediction Markers**
Salon A-C

Co-Chairpersons: **Sanford D. Markowitz**, Case Western Reserve University, Cleveland, OH, and **Barbara L. Weber**, GlaxoSmithKline, King of Prussia, PA

Fueled by information and technology development from the Human Genome Project and the early successes of Herceptin and Gleevec, cancer drug development has changed dramatically in the past five years. The pharmaceutical industry, biotechnology companies, and academic research all have moved away from empiric approaches for discovering and developing cytotoxic agents to targeted therapeutics. The associated use of biomarkers, usually fixed genetic defects in the tumor, which identify individual patients most likely to respond to specific targeted agents is essential to maximize clinical benefit. In fact, using empiric methods to develop targeted drugs will almost certainly fail, as the efficacy signal from the subset of potential responders will be swamped out by the majority of patients who have no possibility of responding. This session will serve as a forum to discuss the discovery and use of response prediction biomarkers in the development of specific drugs and genomic strategies.

Molecular Markers Predictive of Response to EGFR Inhibitors*
Bruce E. Johnson, Dana-Farber Cancer Institute, Boston, MA

Genomic Strategies towards Personalized Cancer Therapy
Joseph R. Nevins, Duke University Institute for Genome Science and Policy, Durham, NC

Targeting the Hedgehog Pathway: From Bench to Clinic*
Frederic J. de Sauvage, Genentech, Inc., South San Francisco, CA

Talk from Proffered Papers:

An Intermediate Methylation Signature Is Associated with Improved Patient Survival and a Distinct Global mRNA Expression Profile in Glioblastoma: An Interim Analysis of the Cancer Genome Atlas Data*

Christopher E. Pelloski, University of Texas M. D. Anderson Cancer Center, Houston, TX

Summary

Sanford D. Markowitz and **Barbara L. Weber**

10:15 AM-10:45 AM **Coffee Break**
Salon A-D Foyer

10:45 AM-1:00 PM **Plenary Session 5:
Molecular Markers
and Cancer Stem Cells**
Salon A-C

Co-Chairpersons: **Thea D. Tlsty**, University of California at San Francisco, School of Medicine, San Francisco, CA, and **Jenny Chang**, Baylor College of Medicine, Houston, TX

The area of cancer stem cell research has been expanding rapidly and indicates that these cells have unique properties such as the ability to self-renew and undergo differentiation, albeit aberrant. Work has demonstrated that these are the only cells in a cancer capable of initiating tumor growth in transplantation assays. The importance of identifying cancer stem cells and targeting therapeutics to them cannot be underestimated. This session will focus on molecular markers related to characterization and therapy design.

Gene Signature of Cancer Stem Cells Is Manifested within an Intrinsic Subgroup of Breast Cancers with Mesenchymal Properties*

Jenny Chang

Characterization and Targeting of Leukemia Stem Cells
Craig T. Jordan, University of Rochester School of Medicine, Rochester, NY

Molecular Phenotypes of Human Breast Cancer Stem Cells
Thea D. Tlsty

Discussion and Summary

Thea D. Tlsty and **Jenny Chang**

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1:00 PM-2:15 PM **Special Session:
Professional Advancement
Session for Early
Career Scientists**
Salon D

1:00 PM-4:15 PM **Exhibits**
Franklin Hall A

2:15 PM-4:15 PM **Poster Session B**
Franklin Hall A

4:30 PM-6:45 PM **Plenary Session 6:
Pharmacodynamics of Markers**
Salon A-C

Co-Chairpersons: **Gary B. Gordon**, Abbott Laboratories, Abbott Park, IL, and **Paul M. Waring**, University of Western Australia, Crawley, Australia

Biomarkers are increasingly seen as the key to future cancer drug development. Their use will streamline drug development, predict which patients will respond, and aid cancer susceptibility predictions. The talks in this session will discuss how to integrate them into your research and what pitfalls to avoid.

Practical Application of Pharmacodynamic Markers during Oncology Drug Development
Richard R. Lesniewski, Abbott Laboratories, Abbott Park, IL

Celecoxib for Prevention of Sporadic Colorectal Adenomas: Patient Selection to Optimize Efficacy and Safety*
Monica M. Bertagnolli, Brigham and Women's Hospital, Boston, MA

Utilizing Pharmacodynamic Studies to Test Biological Hypotheses and Accelerate Anticancer Drug Development
Johann S. de Bono, Royal Marsden Hospital, Sutton, United Kingdom

Talk from Proffered Papers:

Bayesian Adaptive Randomization Designs for Targeted Agent Development*
J. Jack Lee, University of Texas M. D. Anderson Cancer Center, Houston, TX

Summary
Gary B. Gordon and **Paul M. Waring**

7:00 PM-9:00 PM **Conference Networking
Reception and Dinner**
Salon E

Thursday, September 25, 2008

7:00 AM-8:00 AM **Continental Breakfast**
Salon A-D Foyer

8:00 AM-10:15 AM **Plenary Session 7:
Noninvasive Markers**
Salon A-C

Co-Chairpersons: **Wafik S. El-Deiry**, Abramson Cancer Center of the University of Pennsylvania, Philadelphia, PA, and **Samir M. Hanash**, Fred Hutchinson Cancer Research Center, Seattle, WA

Inference Engines for Phosphosignaling Networks, Disease Mechanism, and Clinical Outcome at the Single Cell Level*
Garry P. Nolan, Stanford School of Medicine, Stanford, CA

Novel Proteomics-Based Biomarkers for Early Cancer Detection
Samir M. Hanash

Targeting Cell Signaling in Lung Cancer to Enhance Therapeutic Efficacy*
Fadlo R. Khuri, Emory University Winship Cancer Institute, Atlanta, GA

Talks from Proffered Papers:

Analysis of Circulating Prostate Tumor Cells by Fluorescence *in situ* Hybridization*
Margaret A. Leversha, Memorial Sloan-Kettering Cancer Center, New York, NY

Differential Phosphoprotein Profiling by PA-GeLC-MS/MS to Define Cellular Responses to Targeted Therapies
Stephen J. Kron, University of Chicago, Chicago, IL

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10:15 AM-10:45 AM Coffee Break
Salon A-D Foyer

**10:45 AM-1:00 PM Plenary Session 8:
Regulatory Issues
and Science Policy**
Salon A-C

Co-Chairpersons: **Steven I. Gutman**, Food and Drug Administration, Rockville, MD, and **J. Carl Barrett**, Novartis Institute for BioMedical Research, Inc., Cambridge, MA

The path that new molecular diagnostic tests must follow to move successfully from the research bench to the patient bedside is marked by a need to address multiple regulatory challenges. These challenges differ depending on the business model used and depending on the country in which a particular test is being developed. Optimally regulation should be informed by and follow good science. While traditional regulatory programs (FDA and the CLIA programs in the United States and various other programs in other countries) pose potential hurdles, the successful promotion of a new diagnostic is a much more complex process than can be explained by looking at traditional regulatory models alone. Issues of reimbursement and of proper test use are of increasing interest and importance in the success of new diagnostics. This is likely to become more keenly appreciated as health care costs spiral and patients and payers become more concerned with the application of evidence based medicine to health care decision making.

FDA Perspective on Molecular Diagnostics: Shortening the Critical Path to Market
Steven I. Gutman

Financial Considerations for Development of New Diagnostics
Emily S. Winn-Deen, Cepheid, Sunnyvale, CA

The European Perspective on Molecular Diagnostics: How Regulations Differ across the Pond
Stuart Hogarth, Loughborough University, Leicestershire, United Kingdom

Test Method Validation Requirements under CLIA*
Penny Keller, Centers for Medicare and Medicaid Services, Baltimore, MD

Medicare Coverage of Genetic Testing*
Jeffrey Roche, Centers for Medicare and Medicaid Services, Baltimore, MD

Panel Discussion

1:00 PM-1:15 PM Closing Remarks
Salon A-C

Gordon B. Mills, University of Texas M. D. Anderson Cancer Center, Houston, TX

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