CONFERENCE PROGRAM

From Concept to the Clinic

November 14–16, 2017

JOSEPH B. MARTIN CONFERENCE CENTER • HARVARD MEDICAL SCHOOL
77 AVENUE LOUIS PASTEUR, BOSTON, MA 02115

13TH ANNUAL
PERSONALIZED
MEDICINE
CONFERENCE


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MEDICINE
CONFEREN






SPEAKER











President's Message

Dear Colleague:

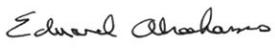
"The standard of care is just not good enough," Michael Pellini, M.D., M.B.A., Chairman, Board of Directors, Foundation Medicine, told the audience at the 12th Annual Personalized Medicine Conference. It is time, Pellini said, to think about the space differently.

Guided by that premise, the 13th Annual Personalized Medicine Conference will facilitate dialogue focused on translating the concept of personalized medicine into improved clinical care. Participants will engage with thought leaders and health professionals from the front lines to explore, among other subjects, how an under-studied value proposition, information technology challenges, and practical obstacles at the point of care complicate efforts to bring personalized medicine to patients — and how emerging partnership models, economic utility studies and real-world evidence may help to eliminate these impediments. The agenda includes:

- An exploration of the implications of CRISPR-Cas9 and gene therapy for medicine and humanity
- A fireside chat with a pharmaceutical industry representative on the pricing of personalized medicines
- A discussion of case studies on the economic value of personalized medicine
- Detailed clinical insights from patients, providers, and payers

Thank you for joining us as we chart a course for the future of personalized medicine — from concept to the clinic.

Sincerely yours,



Edward Abrahams, Ph.D.
President
Personalized Medicine Coalition

Thank You to Our Supporters

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RECEPTION

November 14, 2017



The 13th Annual Personalized Medicine Conference will begin with informal discussions on the field and its future during a welcome reception at the **Hotel Commonwealth at 5:30 p.m. ET on November 14.**

HOTEL COMMONWEALTH • 500 COMMONWEALTH AVE., BOSTON, MA 02215











PART I

November 15, 2017



"It's not really 'should we do this.' We have to do this. We don't get to decide what the biology of these diseases are, we just have to work with it."

— Barbara Weber, M.D., Venture Partner, Third Rock Ventures

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Agenda · Part I

7:00 am **Registration and Breakfast**

Joseph B. Martin Conference Center
Harvard Medical School
77 Avenue Louis Pasteur
Boston, MA 02115

8:00 am **Opening Remarks**

SPEAKER | **Edward Abrahams**, Ph.D., President, Personalized Medicine Coalition

8:10 am **The State of Personalized Medicine**

INTRODUCTION | **Steven D. Averbuch**, M.D., Head, Precision Medicine Research & Development, Bristol-Myers Squibb; Board Member, Personalized Medicine Coalition

KEYNOTE | **Thomas J. Lynch**, Jr., M.D., Executive Vice President, Chief Scientific Officer, Research & Development, Bristol-Myers Squibb

8:40 am **13th Annual Leadership in Personalized Medicine Award**

AWARDEE | **Jay T. Flatley**, M.S., Executive Chairman, Illumina

9:10 am **Networking Break**

9:35 am **Progress in Partnerships: A Two-Part Discussion**

Aligning the constructs of the health system with the principles of personalized medicine will require stakeholders to scale the most promising cross-sector partnership models. This series of conversations will examine the potential of several of the most promising models that have emerged thus far.

Discussion Part 1

9:35 am **A Model for Risk-Sharing Agreements Between Payers and the Pharmaceutical Industry**

Many payers are reluctant to assume that covering personalized medicines will help mitigate costs associated with major medical events that require hospitalization. During this fireside chat, however, representatives from Amgen and Harvard Pilgrim Health Care will discuss the logic and implications of their groundbreaking agreement to share the financial risks of covering a targeted medicine based on that premise. Under the terms of the agreement, Amgen agreed to cover treatment costs for patients who have a heart attack or stroke while taking its personalized therapy for familial hypercholesterolemia.

MODERATOR | **Meg Tirrell**, M.S.J., Reporter, CNBC

Joshua Ofman, M.D., M.S.H.S., Senior Vice President, Global Value, Access and Policy, Amgen

Michael Sherman, M.D., M.B.A., M.S., Chief Medical Officer, Senior Vice President, Harvard Pilgrim Health Care; Board Member, Personalized Medicine Coalition

Discussion Part 2

10:05 am **Models for the Development of Personalized Medicine Diagnostics**

Pharmaceutical and diagnostics companies have responded to a host of complex scientific, regulatory and reimbursement challenges partly by developing innovative partnership models around companion diagnostics. This panel discussion will feature representatives from the pharmaceutical and diagnostics industries, who will discuss the challenges partnerships have helped industry overcome as well as the obstacles that continue to inhibit the development of the diagnostic tools upon which personalized medicine depends.

MODERATOR | **Alexander Vadas**, Ph.D., Managing Director, L.E.K. Consulting

Nicholas C. Dracopoli, Ph.D., Vice President, Head, Oncology Diagnostics, Janssen Research & Development LLC, Pharmaceutical Companies of Johnson & Johnson

Joydeep Goswami, Ph.D., M.B.A., M.S., President, Clinical Next-Generation Sequencing, Oncology, Thermo Fisher Scientific

Jacob S. Van Naarden, Chief Business Officer, Loxo Oncology

10:35 am **Real-World Personalized Medicine: Examining the Role of Real-World Evidence in Personalizing Health Care**

FDA has offered a definition of real-world evidence, but the community continues to debate what is needed to fully integrate it into decision-making. This panel will explore what real-world evidence is, how it is being used and what regulatory requirements are needed to realize its potential.

MODERATOR | **Amy Abernethy**, M.D., Ph.D., Chief Medical Officer, Chief Scientific Officer, Flatiron Health; Board Member, Personalized Medicine Coalition

Sean Khozin, M.D., M.P.H., Associate Director (Acting), Oncology Center of Excellence, FDA

Eric G. Klein, Pharm.D., Senior Director, Oncology, Global Patient Outcomes and Real-World Evidence, Eli Lilly and Company

Eleanor M. Perfetto, Ph.D., M.S., Senior Vice President, Strategic Initiatives, National Health Council

Deborah Schrag, M.D., M.P.H., Chief, Division of Population Sciences, Medical Oncology, Dana-Farber Cancer Institute

11:50 am **Luncheon**

1:00 pm **The Designer Genome: Exploring the Implications of Gene Editing and Gene Therapy for the Future of Medicine and Humanity**

Many scientists believe the clustered regularly interspaced short palindromic repeats (CRISPR) genetic engineering tool and recent developments in gene therapy will dramatically alter the trajectory of medicine, but the specific implications of these developments for health systems around the world remain unclear. During this session, a panel of experts will discuss the status of these new technologies and how the medical community and regulatory agencies may have to adapt to keep up with forthcoming developments.

MODERATOR | **Kevin Davies**, Ph.D., Co-Author, *DNA: The Story of the Genetic Revolution* (with Jim Watson and Andrew Berry); Executive Editor, *The CRISPR Journal*

Katrine Bosley, CEO, Editas Medicine

Arthur L. Caplan, Ph.D., Drs. William F. and Virginia Connolly Mitty Chair, Director, Division of Medical Ethics, New York University Langone Medical Center

George M. Church, Ph.D., Professor of Genetics, Health Sciences and Technology, Harvard-MIT Division of Health Sciences and Technology; Director, Harvard Medical School NHGRI-Center of Excellence in Genomic Science; Director, Harvard Medical School Personal Genome Project; Founding Member, Wyss Institute for Biologically Inspired Engineering at Harvard University

Jeffrey D. Marrazzo, M.B.A., M.P.A., CEO, Spark Therapeutics

2:15 pm **Pricing Personalized Medicines**

The increasing pressure on industry stakeholders to alter their drug pricing practices has particular significance for personalized medicines, which must recoup research and development costs from smaller patient populations. This conversation will explore the pharmaceutical industry's strategies for facilitating sustainable access to these innovative therapies.

MODERATOR | **Meg Tirrell**, M.S.J., Reporter, CNBC

Stephen J. Ubl, President, CEO, PhRMA

2:45 pm **Networking Break (sponsored by GreyBird Ventures)**

3:15 pm **Precision Valuation: A Discussion of How Value Assessment Frameworks Can Account for Personalized Medicine**

Payers control access to personalized medicine, and some have begun to take an interest in findings from value assessment frameworks that are challenged to account for developments in the field. In addition to exploring their potential impact on individualized care, this session will examine how value assessment frameworks can and should consider personalized medicine as part of their processes for evaluating therapeutic options.

MODERATOR | **Jennifer Snow**, M.P.H., Director, Health Policy, Xcenda

Dane J. Dickson, M.D., CEO, Founder, CureOne (formerly MED-C); Director, Precision Medicine Policy and Registries, Knight Cancer Institute at Oregon Health and Science University

Robert Dubois, M.D., Ph.D., Executive Vice President, Chief Science Officer, National Pharmaceutical Council

Andrea Stern Ferris, M.B.A., President, Chairman of the Board, LUNGevity Foundation

Steven D. Pearson, M.D., M.Sc., Founder, President, Institute for Clinical and Economic Review (ICER)

4:30 pm **The Utility Proposition: An Analysis of Case Studies in the Economic Value of Personalized Medicine**

Although personalized medicine's proponents contend that the field can deliver economic value by helping doctors avoid prescribing costly but ineffective therapies, the field lacks literature testing that hypothesis. This session will highlight recent studies on the clinical and economic value of personalized medicine, shedding light on what we know about personalized medicine's clinical and economic utility — and what we don't.

MODERATOR | **Michael Pellini**, M.D., M.B.A., Chairman, Board of Directors, Foundation Medicine; Board Member, Personalized Medicine Coalition

Lincoln Nadauld, M.D., Ph.D., Executive Director, Precision Medicine, Precision Genomics, Intermountain Healthcare

David B. Roth, M.D., Ph.D., Simon Flexner Professor Chair, Pathology and Laboratory Medicine, Perelman School of Medicine at University of Pennsylvania; Director, Penn Center for Precision Medicine

Lotte Steuten, Ph.D., M.Sc., Associate Faculty Member, Hutchinson Institute for Cancer Outcomes Research (HICOR), Fred Hutchinson Cancer Research Center; Affiliate Associate Professor, Pharmaceutical Outcomes Research and Policy Program, School of Pharmacy at University of Washington, Seattle

5:45 pm **Elements Café Cocktail Reception**

PART II

November 16, 2017



"[We're] not talking about something that may happen someday. [We're] talking about what's happening now."

— Howard McLeod, Pharm.D., Medical Director, DeBartolo Family Personalized Medicine Institute, Moffitt Cancer Center

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Agenda · Part II

7:00 am **Registration and Breakfast**

8:00 am **Opening Remarks**

SPEAKER | **Stephen L. Eck**, M.D., Ph.D., President, CEO, Aravive Biologics; Board Chairman, Personalized Medicine Coalition

8:10 am **Clinical Adoption of Personalized Medicine: A Two-Part Discussion**

Pioneering health care providers have begun to explore the business models, operational processes, IT infrastructure and educational programs that are needed to catalyze the paradigm shift toward personalized medicine. This two-part session on clinical adoption will examine the strategic and day-to-day challenges clinical organizations face as they seek to integrate personalized medicine in clinical settings — and the solutions they employ to address those challenges.

SESSION CHAIR | **Marcia A. Kean**, M.B.A., Chairman, Strategic Initiatives, Feinstein Kean Healthcare

Discussion Part 1

8:15 am **The Case for Personalized Medicine in the Clinic: The View From the Corner Office**

Inspiring an organizational commitment to a new way of practicing medicine requires visionary leadership. This fireside chat will highlight the viewpoints and approaches of leaders who are spearheading efforts to adopt personalized medicine at clinical institutions, with an eye on the value proposition for changing existing norms and practices.

MODERATOR | **Howard L. McLeod**, Pharm.D., Medical Director, The DeBartolo Family Personalized Medicine Institute, Chair, Department of Individualized Cancer Management, Senior Member, Division of Population Sciences, Moffitt Cancer Center; Board Member, Personalized Medicine Coalition

Jeffrey R. Balser, M.D., Ph.D., Dean, Vanderbilt University School of Medicine; President, CEO, Vanderbilt University Medical Center

Ronald A. Paulus, M.D., M.B.A., President, CEO, Mission Health

Discussion Part 2

9:00 am **Practicing Personalized Medicine: Lessons From the Front Lines**

To successfully integrate personalized medicine into a health system, administrators and clinicians must also design and implement new processes related to program infrastructure and informatics; help educate physicians and patients about the field; and inspire cultural change within the institution. During this panel discussion, a group of early adopters will share lessons learned from implementing pilot programs across the United States.

MODERATOR | **Daryl Pritchard**, Ph.D., Senior Vice President, Science Policy, Personalized Medicine Coalition

Bonnie J. Addario, Founder, Chair, Bonnie J. Addario Lung Cancer Foundation; Board Member, Personalized Medicine Coalition; Lung Cancer Survivor

Scott A. Beck, M.B.A., Administrator, Center for Individualized Medicine, Mayo Clinic

Timothy Cannon, M.D., Clinical Director, Inova Schar Cancer Institute Molecular Tumor Board

Peter Hulick, M.D., M.M.Sc., Medical Director, Center for Personalized Medicine, NorthShore University HealthSystem

Marc S. Williams, M.D., F.A.A.P., F.A.C.M.G., F.A.C.M.I., Director, Genomic Medicine Institute, Geisinger

10:15 am **Networking Break (sponsored by Moffitt Cancer Center)**

10:45 am **Harvard Business School Case Study — Intermountain Healthcare: Pursuing Precision Medicine**

Intermountain has a long history of being at the forefront of health care quality improvement and the development of treatment protocols. In 2013, Intermountain Precision Genomics (IPG) was started with Dr. Lincoln Nadauld as its Executive Director. IPG focused on stage 4 cancer patients and performed three distinct functions: genomic sequencing, interpretation of sequencing results with recommendations for precision therapies, and drug acquisition and reimbursement. A paper published in February 2017 reported that in addition to having a higher quality of life, patients who received the targeted therapies had progression-free survival rates of almost twice as long as other patients. The purpose of our case discussion will be to assess these efforts, to consider their broader applicability and to review IPG's plans for the future.

PRESENTER | **Richard Hamermesh**, D.B.A., Co-Faculty Chair, Harvard Business School Kraft Precision Medicine Accelerator

12:00 pm **Overview of the International Landscape for Personalized Medicine**

PRESENTER | **Kristin Pothier**, M.S., Global Head, Life Sciences, Parthenon-EY

12:30 pm **Bag Lunch**

1:30 pm **Personalized Medicine at FDA: An Inside Look at the Agency's Priorities for the Field**

INTRODUCTION | **Cynthia A. Bens**, Vice President, Public Policy, Personalized Medicine Coalition

KEYNOTE | **Sean Khozin**, M.D., M.P.H., Associate Director (Acting), Oncology Center of Excellence, FDA

2:00 pm **The Patient Perspective on Personalized Medicine**

INTRODUCTION | **Susan McClure**, Founder, Publisher, *Genome* magazine; Board Member, Personalized Medicine Coalition

KEYNOTE | **Bryce Olson**, Global Marketing Director, Health and Life Sciences Group, Intel Corporation

2:30 pm **Patient 2.0: Exploring the Future of Personalized Medicine**

Many observers speculate that the coming wave of gene editing, gene therapy, direct-to-consumer genetic tests and the personalized use of wearables will change the psychology, sociology, economy and efficacy of health care. Informed by the previous panel discussions, this conversation will examine the future of personalized medicine and the merits of these emerging trends.

MODERATOR | **Robert C. Green**, M.D., M.P.H., Director, Genomes2People Research Program, Professor of Medicine (Genetics), Brigham and Women's Hospital, Broad Institute and Harvard Medical School

Sandro Galea, M.D., M.P.H., Dr.P.H., Dean, Robert A. Knox Professor, School of Public Health, Boston University

Tom Miller, M.S., Founder, Managing Partner, GreyBird Ventures LLC

Michael Snyder, Ph.D., Stanford W. Ascherman Professor, Chair, Department of Genetics, Director, Center of Genomics and Personalized Medicine, Stanford University School of Medicine

3:30 pm **Closing Remarks**

SPEAKER | **Edward Abrahams**, Ph.D., President, Personalized Medicine Coalition

"The standard of care is just not good enough."

— Michael Pellini, M.D., M.B.A., Chairman, Board of Directors, Foundation Medicine

Speakers



Amy Abernethy, M.D., Ph.D.

Chief Medical Officer, Chief Scientific Officer, Flatiron Health; Board Member, Personalized Medicine Coalition

Amy P. Abernethy, M.D., Ph.D., is the Chief Medical Officer and Chief Scientific Officer at Flatiron Health, a health care technology and services company focused on accelerating cancer research and improving patient care. She is a hematologist/oncologist and palliative medicine physician, as well as an internationally recognized cancer clinical researcher with more than 400 publications.

Dr. Abernethy is an appointee to the National Academy of Medicine's National Cancer Policy Forum, a member of the Executive Board for the Personalized Medicine Coalition, and Past President of the American Academy of Hospice & Palliative Medicine. Before joining Flatiron, Dr. Abernethy was Professor of Medicine at Duke University School of Medicine, and directed the Center for Learning Health Care in the Duke Clinical Research Institute and Duke Cancer Care Research Program in the Duke Cancer Institute. She is also on the Board of Directors of athenahealth, Inc. and was featured on TEDMED in 2013.



Edward Abrahams, Ph.D.

President, Personalized Medicine Coalition

Edward Abrahams, Ph.D., is the President of PMC. Representing innovators, scientists, patients, providers and payers, PMC promotes the understanding and adoption of personalized medicine concepts, services and products for the benefit of patients and the health system. It has grown from its original 18 founding members in 2004 to more than 225 today.

Previously, Dr. Abrahams was the Executive Director of the Pennsylvania Biotechnology Association, where he spearheaded the successful effort that led to the Commonwealth of Pennsylvania's investment of $200 million to commercialize biotechnology in the state. Earlier he had been Assistant Vice President for Federal Relations at the University of Pennsylvania and held a senior administrative position at Brown University.

The author of numerous essays, Dr. Abrahams serves on the editorial board of *Personalized Medicine* and has taught history and public policy at Brown University and the University of Pennsylvania.



Bonnie J. Addario

Founder, Chair, Bonnie J. Addario Lung Cancer Foundation; Board Member, Personalized Medicine Coalition; Lung Cancer Survivor

Bonnie J. Addario is a lung cancer survivor and the Founder and Chair of the Bonnie J. Addario Lung Cancer Foundation. She has been an activist, advocate, educator and change agent empowering patients and giving them a strong voice in the fight against lung cancer since receiving a stage 3B diagnosis more than a decade ago.

Although thrust into a role that she had never envisioned for herself, she embraced it and now considers it her second career and a personal calling. Recognizing the critical need for education, empowerment, advocacy and research to help patients and families, especially those without resources and support, Bonnie and her family founded the Bonnie J. Addario Lung Cancer Foundation in 2006, and then went on to found the Addario Lung Cancer Medical Institute (ALCMI) with her husband, Tony Addario, in 2008.

Bonnie's business acumen and skills honed in her first career as President of Olympian Oil Company and Commercial Fueling Network, as Past President of the CA Independent Oil Marketers Association and as a community activist serving on diverse boards have all contributed to her work at the Foundation.



Steven D. Averbuch, M.D.

Head, Precision Medicine Research & Development, Bristol-Myers Squibb; Board Member, Personalized Medicine Coalition

Dr. Averbuch is the Head, Precision Medicine within the Translational Medicine Division of R & D at Bristol-Myers Squibb. In this role, Steve leads integrated biomarker and pharmacodiagnostic activities across the BMS R & D portfolio.

Dr. Averbuch joined BMS in 2006 and he has led the Pharmacodiagnostics Center of Excellence since 2008. Other previous responsibilities and roles included: leading the strategy, business development agreements and execution of external clinical collaborations for the company's immuno-oncology pipeline; executive sponsor and oversight for translational research activities for all late development and marketed oncology compounds; leader of corporate-wide strategic initiatives for Translational and Targeted Medicine; co-leader of the oncology early strategy team.

Dr. Averbuch previously held positions at Merck Research Laboratories, AstraZeneca and Mount Sinai School of Medicine. He is currently on the Personalized Medicine Coalition Board of Directors, the Steering Committee of the National Biomarker Development Alliance and the Advisory Board for the University of Kansas Institute for Advancing Medical Innovation. Dr. Averbuch is the 2014 recipient of the University of Illinois College of Medicine Distinguished Alumnus Award. He received his M.D. and internal medicine training from the University of Illinois, Chicago, and his medical oncology training at the National Cancer Institute in Bethesda, MD.



Jeffrey R. Balser, M.D., Ph.D.

Dean, Vanderbilt University School of Medicine; President, CEO, Vanderbilt University Medical Center

Dr. Jeffrey Balser is the President and CEO of Vanderbilt University Medical Center (VUMC). He joined VUMC in 1998 as Associate Dean for Physician Scientist Development before being appointed Chair of the Department of Anesthesiology. In 2004, Dr. Balser was named the Medical Center's Chief Research Officer, and in that capacity he led a period of scientific expansion that moved the Medical Center into the nation's top 10 in NIH funding and stimulated VUMC's national leadership in personalized medicine. In 2008, he was elected to the National Academy of Medicine, and later that year he was named the eleventh dean of Vanderbilt's School of Medicine. In 2009, he was also named Vice Chancellor for Health Affairs, with executive responsibility for all health-related programs including hospitals, clinics, research programs, and medical and nursing schools. Prior to joining VUMC, Dr. Balser practiced cardiac anesthesiology and ICU medicine at Johns Hopkins.

Dr. Balser graduated from Tulane University with an undergraduate degree in engineering, and received his M.D. and Ph.D. in pharmacology at Vanderbilt. He undertook residency training in anesthesiology and fellowship training in cardiac anesthesiology and in critical care medicine at The Johns Hopkins Hospital in Baltimore, MD.



Scott A. Beck, M.B.A.

Administrator, Center for Individualized Medicine, Mayo Clinic

Scott Beck is an Administrator of the Mayo Clinic's Center for Individualized Medicine, which he helped form in 2011, creating a vision and mission to discover, translate and apply new individualized medicine products and services that continually differentiate clinical practice for every life Mayo touches. In 2015, Scott also began providing clinical practice support for the Department of Clinical Genomics, and in 2017, he began supporting research translation, test development and clinical integration for the Department of Laboratory Medicine and Pathology and Mayo Medical Laboratories.

Scott began his career at Mayo Clinic in 1992 in Mayo Medical Ventures, a for-profit diversification activity within Mayo Clinic. From 1998 to 2006, he worked as an Administrator in the Department of Research Services, helping to launch Mayo's Molecular Medicine Program and Genomics Research Center. Scott also facilitated the start-up of the Minnesota Partnership for Biotechnology and Medical Genomics, a public-private initiative with the University of Minnesota and the Minnesota legislature in support of biomedical research. The partnership has since received over $120 million in support from both state and private funding sources. From 2006 to 2011, Scott worked as an Administrator in Information Technology, where he helped initiate and implement data governance and data warehousing strategies for Mayo. Prior to joining Mayo Clinic, Scott worked as a staff consultant for Andersen Consulting.

Cynthia A. Bens

Vice President, Public Policy, Personalized Medicine Coalition



Cynthia A. Bens, Vice President, Public Policy at PMC, leads the Coalition's policy development and government relations efforts and serves as the primary liaison with the U.S. Congress and federal regulators. In collaboration with PMC's Senior Vice President, Science Policy, Ms. Bens is responsible for implementing research, regulatory and reimbursement policy strategies that promote the understanding and adoption of personalized medicine concepts, services and products to benefit patients and the health system.

Before joining PMC, she was the Vice President of Public Policy at the Alliance for Aging Research. Ms. Bens guided the Alliance's federal policy work, represented the organization in multiple national coalitions, and directed all aspects of coalitions led by the Alliance. She spent more than a decade at the Alliance advancing policies to expedite the development of interventions for neurological diseases and physical frailty; to remove access barriers for cardiovascular disease treatments; and to enhance the quality of care for older adults living with multiple chronic conditions.

Katrine Bosley

CEO, Editas Medicine



Katrine Bosley is the CEO of Editas Medicine and has been part of the biotechnology industry for more than 25 years. Before joining Editas, Katrine was Entrepreneur-in-Residence at The Broad Institute, as well as CEO of Avila Therapeutics and Vice President of Business Development of Adnexus Therapeutics. Throughout her career, she has worked to advance innovative products and technologies, including Tysabri (natalizumab), covalent drugs and genome editing. She has led and supported a wide range of transactions with an aggregate realized value of over $2 billion and total potential value exceeding $8 billion. Katrine is a graduate of Cornell University, where she received a B.A. as a College Scholar.

Katrine has been recognized as one of the 100 Most Creative People in Business by *Fast Company* (2016), as one of 30 Global Game Changers by *Forbes* (2016), as Entrepreneur of the Year by the New England Venture Capital Association (2013) and as one of the Top Ten Women in Biotech by *FierceBiotech* (2010).

In addition to her role at Editas, Katrine currently serves as Chairman of the Board of Genocea Biosciences and is a Board member of Galapagos NV and BIO — the Biotechnology Innovation Organization.



Timothy Cannon, M.D.

Clinical Director, Inova Schar Cancer Institute Molecular Tumor Board

Dr. Timothy Cannon is a medical oncologist and Clinical Director of the Inova Schar Cancer Institute Molecular Tumor Board (MTB). He specializes in gastrointestinal malignancies and is an assistant professor at Virginia Commonwealth University. He has been the moderator of the MTB since it began in March of 2016. The MTB matches patients with targeted therapies based on molecular diagnostics. Cannon is also the site principal investigator for the Targeted Agent and Profiling Utilization Registry (TAPUR) study, as well as many other clinical trials in immunotherapy.

Dr. Cannon received his M.D. from Rutgers Medical School and completed his residency at George Washington University Medical Center. He completed a fellowship in hematology/oncology at New York University, where he was the chief fellow.



Arthur L. Caplan, Ph.D.

Drs. William F. and Virginia Connolly Mitty Chair, Director, Division of Medical Ethics, New York University Langone Medical Center

Dr. Arthur L. Caplan is the Drs. William F. and Virginia Connolly Mitty Chair and Professor and founding head of the Division of Medical Ethics at NYU School of Medicine in New York City.

Prior to coming to NYU School of Medicine, Dr. Caplan was the Sidney D. Caplan Professor of Bioethics at the University of Pennsylvania Perelman School of Medicine in Philadelphia, where he created the Center for Bioethics and the Department of Medical Ethics. Dr. Caplan has also taught at the University of Minnesota, where he founded the Center for Biomedical Ethics, the University of Pittsburgh, and Columbia University. He received his Ph.D. from Columbia University.

Caplan is currently the ethics advisor to the U.S. Department of Defense's Defense Advanced Research Projects Agency on synthetic biology, a member of the University of Pennsylvania's external advisory committee for its Orphan Disease Center, a member of the Ethics and Ebola Working Group of the World Health Organization, and an advisor to the NIH on organ transplantation.

Dr. Caplan is the author or editor of 35 books and more than 725 papers in peer-reviewed journals. His most recent books are *The Ethics of Sport* (Oxford University Press, 2016 with Brendan Parent) and *Vaccination Ethics and Policy* (MIT Press, 2017 with Jason Schwartz).



George M. Church, Ph.D.

Professor of Genetics, Health Sciences and Technology, Harvard-MIT Division of Health Sciences and Technology; Director, Harvard Medical School NHGRI-Center of Excellence in Genomic Science; Director, Harvard Medical School Personal Genome Project; Founding Member, Wyss Institute for Biologically Inspired Engineering at Harvard University

George Church is Professor of Genetics at Harvard Medical School and Professor of Health Sciences and Technology at Harvard and the Massachusetts Institute of Technology (MIT). He is Director of the U.S. Department of Energy Center on Bioenergy at Harvard and MIT, and Director of the NIH Center of Excellence in Genomic Science at Harvard.

George is widely recognized for his innovative contributions to genomic science and his many pioneering contributions to chemistry and biomedicine. In 1984, he developed the first direct genomic sequencing method, which resulted in the first commercial genome sequence (the human pathogen, H. pylori). He helped initiate the Human Genome Project in 1984 and the Personal Genome Project in 2005. George invented the broadly applied concepts of molecular multiplexing and tags, homologous recombination methods, and array DNA synthesizers.



Kevin Davies, Ph.D.

Co-Author, *DNA: The Story of the Genetic Revolution* (with Jim Watson and Andrew Berry); Executive Editor, *The CRISPR Journal*

Kevin Davies, Ph.D., is a scientific publisher, editor and author. He is the founding editor of *Nature Genetics* and author of four popular science books including *Cracking the Genome* and *The $1,000 Genome*. He is currently Executive Vice President, Strategic Development with Mary Ann Liebert Inc., where he is leading the launch of *The CRISPR Journal*. He is also the recipient of a 2017 Guggenheim Foundation Fellowship.

Kevin studied biochemistry at Oxford University and obtained his Ph.D. in human genetics from St. Mary's Hospital Medical School in London. After postdoc fellowships at MIT and Harvard Medical School, he joined the editorial staff of *Nature* magazine, where he established the leading journal *Nature Genetics*. In 2000, he joined *Cell Press* as Editor-in-Chief, and later was named Founding Editor of *Bio-IT World*. Kevin has also worked at the Howard Hughes Medical Institute and the American Chemical Society, where he was publisher of *Chemical & Engineering News*. He is also a co-author of the recently published *DNA: The Story of the Genetic Revolution* with Nobel Laureate James D. Watson and Andrew Berry.



Dane J. Dickson, M.D.

CEO, Founder, CureOne (formerly MED-C); Director, Precision Medicine Policy and Registries, Knight Cancer Institute at Oregon Health and Science University

Dr. Dickson is a medical oncologist practicing in rural Idaho and the CEO of the nonprofit CureOne (formerly MED-C), as well as the previous Director of Clinical Science at Palmetto's MolDX program, where he helped advance precision medicine through novel coverage approaches for molecular testing. CureOne has launched the N1 Registry which enables payors to cover next-generation sequencing through independent standardization and quality verification through outcome collection at a low cost to laboratories. He also is the Director of Precision Medicine Policy at the Knight Cancer Institute at Oregon Health Science University, where he serves as adjunct faculty.

Dr. Dickson has been an active member of the American Society of Clinical Oncology (ASCO), having served on the Clinical Practice Committee and State Affiliate Council. He was president of Idaho Society of Clinical Oncology (ISCO).



Nicholas C. Dracopoli, Ph.D.

Vice President, Head, Oncology Diagnostics, Janssen Research & Development LLC, Pharmaceutical Companies of Johnson & Johnson

Dr. Nicholas Dracopoli is Vice President, Oncology Diagnostics, at Janssen Research & Development LLC, Pharmaceutical Companies of Johnson & Johnson. In this role, he is responsible for building and leading the Oncology Diagnostics group, which is focused on developing all companion and complementary diagnostics in the oncology development portfolio. Previously, he was Vice President, Oncology Translational Research, where he was responsible for biomarker discovery, development and application for oncology products. Prior to that, he was Vice President of Clinical Discovery Technologies at Bristol-Myers Squibb, and before that he spent five years in the biotechnology industry at Sequana Therapeutics.

Dr. Dracopoli obtained his B.Sc. and Ph.D. degrees from the University of London, and completed post-doctoral fellowships at the Memorial Sloan-Kettering Cancer Center and MIT. Subsequently, he served as an Assistant Director at the Whitehead/MIT Genome Center and as a Section Chief at the National Center for Human Genome Research at the NIH before moving to the biotechnology industry. Dr. Dracopoli has authored more than 70 scientific publications, and has extensive experience in the fields of genomics, molecular biology and cancer research.



Robert Dubois, M.D., Ph.D.

Executive Vice President, Chief Science Officer, National Pharmaceutical Council

Robert W. Dubois, M.D., Ph.D., is the Chief Science Officer and Executive Vice President of the National Pharmaceutical Council (NPC). In this role at NPC, he oversees the company's research on policy issues as they relate to the role of real-world evidence in decision making, how to determine the value of health care services, the relationship between access and health outcomes, and the approaches to maintaining an environment that supports health innovation.

Dr. Dubois has more than 25 years of experience in health care research, with a key focus on ensuring that patients receive high value health care. Dr. Dubois is also a member of the Medicare Evidence Development and Coverage Advisory Committee and the Advisory Board of the Institute for Clinical and Economic Review (ICER), as well as the Associate Editor of the *Journal of Comparative Effectiveness Research*. Dr. Dubois is also on the editorial boards for *Health Affairs* and *The American Journal of Managed Care*. He has published more than 150 peer-reviewed articles.



Stephen L. Eck, M.D., Ph.D.

President, CEO, Aravive Biologics; Board Chairman, Personalized Medicine Coalition

Dr. Eck has over 15 years of leadership experience in the development of oncology drugs and related biomarkers. Prior to joining Aravive Biologics, he was Vice President of Oncology Medical Sciences at Astellas Pharma Global Development, Inc. Previous to that, he served as Vice President, Translational Medicine & Pharmacogenomics at Eli Lilly and Company, where his group developed the biomarkers and companion diagnostics needed for study-specific decision making and for tailoring biotherapeutics to unique patient populations. Prior to joining Lilly, he served in a variety of oncology and neuroscience drug development leadership roles at Pfizer, Inc.

Dr. Eck is a board-certified hematologist who holds a Ph.D. in chemistry from Harvard University and received his M.D. degree from the University of Mississippi School of Medicine. He serves on the Board of Directors of Luminex Corporation and is a Fellow of the American Association for the Advancement of Science. He is also a member of the Central Pennsylvania Clinic Board of Directors and a Trustee of the Keck Graduate Institute.



Andrea Stern Ferris, M.B.A.

President, Chairman of the Board, LUNGevity Foundation

Andrea became involved with lung cancer advocacy following her mother's death from the disease in 2008. After receiving a diagnosis of stage 4 lung cancer in 2006, Andrea's mother underwent numerous treatments and clinical trials at several major academic institutions to no avail. Together with her father, Andrea was her mother's primary caregiver during this time. Determined to drive more money into lung cancer research, Andrea left the successful software company that she helped launch, to found Protect Your Lungs, an organization focused 100 percent on funding early detection research. In 2010, Andrea merged Protect Your Lungs with LUNGevity, a Chicago-based organization, to form the nation's leading lung cancer focused nonprofit.

Andrea's strong business background combined with her connections to the worlds of research and advocacy have enabled her to build the pre-eminent patient advocacy organization in the lung cancer space. LUNGevity funds translational research into both early detection and more effective treatments of lung cancer as well as a highly coveted Career Development Awards program. LUNGevity also fills unmet needs for people diagnosed with lung cancer by providing education, support and survivorship programs. Recognizing the need to build awareness and understanding about lung cancer, LUNGevity has built the largest grassroots network of events and advocates across the country.



Jay T. Flatley, M.S.

Executive Chairman, Illumina

Jay led Illumina as CEO from 1999 until 2016 and now serves as Executive Chairman of the Board of Directors. During his tenure as CEO, he took the company from $1.3 million in sales in 2000 to $2.2 billion in 2015, representing a compound annual growth rate of 64 percent. He oversaw the company's expansion from microarrays into next-generation sequencing with the acquisition of Solexa in 2006, and from research into clinical and applied markets. Under his leadership, Illumina was named multiple times to the Deloitte & Touche Fast 50 and Fast 500 lists, as well as to the *Forbes 25* Fastest-Growing Tech Companies (2007, 2009 and 2010), the *Fortune 100* Fastest-Growing Companies (2010 and 2011) lists, and recognition by *MIT Technology Review* as the World's Smartest Company in 2014.

Jay also chairs the Board of Directors for Illumina subsidiary, Helix. In addition to his work at Illumina, he is an Advisory Board member for UC San Diego's Moore Cancer Center, and serves on the Boards of Directors at Coherent and Denali.

Previously, Jay served as President and CEO of Molecular Dynamics, Vice President of Engineering and Strategic Planning for Plexus Computers, Executive Vice President for Manning Technologies, and held various positions at Spectra Physics. Jay received a B.A. in economics from Claremont McKenna College and a B.S. and M.S. (summa cum laude) in industrial engineering from Stanford University.

Sandro Galea, M.D., M.P.H., Dr.P.H.



Dean, Robert A. Knox Professor, School of Public Health, Boston University

Dr. Sandro Galea, a physician and an epidemiologist, is Dean and Robert A. Knox Professor at Boston University School of Public Health. He previously held academic and leadership positions at Columbia University, the University of Michigan and the New York Academy of Medicine. In his scholarship, Galea is centrally interested in the social production of health of urban populations, with a focus on the causes of brain disorders, particularly common mood-anxiety disorders and substance abuse.

Dr. Galea was named one of *Time* magazine's epidemiology innovators, and has been listed by Thomson Reuters as one of the World's Most Influential Scientific Minds for the social sciences. He is past President of the Society for Epidemiologic Research and an elected member of the National Academy of Medicine and the American Epidemiological Society. Galea has received several lifetime achievement awards for his research, including the Rema Lapouse Award from the American Public Health Association and the Robert S. Laufer, Ph.D., Memorial Award from the International Society for Traumatic Stress Studies. Galea holds a medical degree from the University of Toronto and graduate degrees from Harvard University and Columbia University. He also holds an honorary doctorate from the University of Glasgow.

Joydeep Goswami, Ph.D., M.B.A., M.S.



President, Clinical Next-Generation Sequencing, Oncology, Thermo Fisher Scientific

Joydeep Goswami has been President, Clinical Next-Generation Sequencing and Oncology Division (CSD) at Thermo Fisher since July 2016. CSD is focused on serving the targeted sequencing needs of customers in research and clinical applications, with an emphasis on oncology.

Prior to his current role, Dr. Goswami was the Vice President/General Manager of the Protein and Cell Analysis (PCA) business at Thermo Fisher, between April 2015 and July 2016. He joined Thermo Fisher as President of Asia Pacific and Japan, Life Sciences Solutions, in 2014 through the acquisition of Life Technologies. Dr. Goswami had held various executive positions at Life Technologies, including President of Life Technologies Japan, Vice President and General Manager of Primary and Stem Cell Systems, and Vice President of Stem Cells and Regenerative Medicine. He joined Life Technologies (then Invitrogen) in 2003 as Director, Corporate Development, Global Head of Licensing.

Before joining Life Technologies, he worked at McKinsey & Company, serving clients in the pharmaceutical, medical products, chemical, and technology industries in the U.S., Europe, Asia and Latin America.

Joydeep has a Ph.D. and M.S. in chemical engineering from the Massachusetts Institute of Technology, and an M.B.A. from the Sloan School of Management. He also holds a bachelor's in chemical engineering from the Indian Institute of Technology.



Robert C. Green, M.D., M.P.H.

Director, Genomes2People Research Program, Professor of Medicine (Genetics), Brigham and Women's Hospital, Broad Institute and Harvard Medical School

Robert C. Green, M.D., M.P.H., is a medical geneticist, physician-scientist and Director of the Genomes2People Research Program in translational genomics and health outcomes in the Division of Genetics at Brigham and Women's Hospital, Broad Institute and Harvard Medical School. He is also the Associate Director for Research of Partners Personalized Medicine. Dr. Green received his M.D. from the University of Virginia Medical School and his M.P.H. from the Emory University School of Public Health.

Dr. Green has led numerous NIH-funded clinical trials to explore emerging themes in translational genomics of both medically mediated and direct-to-consumer genetic testing. Dr. Green is the principal investigator of the MedSeq Project, the first NIH-funded randomized trial to explore the use of whole genome sequencing in the clinic, and co-directs the BabySeq Project, the first NIH-funded trial of genetic sequencing in newborns. He led the development of ACMG policies for return of secondary findings in clinical sequencing and is currently co-leading the strategy and implementation for return of genomic results for the *All of Us*/Precision Medicine Initiative and the Verily Baseline Project.



Richard Hamermesh, D.B.A.

Co-Faculty Chair, Harvard Business School Kraft Precision Medicine Accelerator

Richard Hamermesh is a Senior Fellow at the Harvard Business School, where he was formerly the MBA Class of 1961 Professor of Management Practice. Currently, Richard is the Faculty Co-Chair of the Kraft Precision Medicine Accelerator. Richard created and teaches the second-year MBA elective, Building Life Science Businesses. Previously, he was the course head for the required first-year course, The Entrepreneurial Manager.

From 1987 to 2001, Richard was a co-founder and a Managing Partner of The Center for Executive Development, an executive education and development consulting firm. Prior to this, from 1976 to 1987, he was a member of the faculty of the Harvard Business School.

Richard is also an active investor and entrepreneur, having participated as a principal, director and investor in the founding and early stages of more than 20 organizations. He was the founding president of the Newton Schools Foundation and served on the editorial board of the *Harvard Business Review*.

Richard is the author or co-author of five books, including *New Business Ventures* and *The Entrepreneur*. His best-known book, *Fad-Free Management*, was published in 1996. He has published more than 100 case studies and numerous articles, including his recent publications "What Precision Medicine Can Learn from the NFL" and "One Obstacle to Curing Cancer: Patient Data isn't Shared."



Peter Hulick, M.D., M.M.Sc.

Medical Director, Center for Personalized Medicine, NorthShore University HealthSystem

Peter Hulick, M.D., M.M.Sc., is the Medical Director of the Center for Personalized Medicine and Medical Director for the Center for Medical Genetics at NorthShore University HealthSystem, which applies genetic analysis to the prevention, diagnosis and treatment of inherited diseases and disorders. He joined NorthShore as an attending physician in medical genetics in 2008 and became Division Head of Medical Genetics in 2012.

Dr. Hulick also serves as a Clinical Assistant Professor in the Department of Human Genetics at the University of Chicago Pritzker School of Medicine. Previously, he served as an attending physician in medical genetics at Massachusetts General Hospital in Boston. He has authored or co-authored more than 20 peer-reviewed journal articles.

Dr. Hulick earned his medical degree from Jefferson Medical College in 2001. He completed a residency in internal medicine at St. Luke's Hospital – Mayo Clinic, and completed a clinical fellowship in medical genetics at Harvard Medical School. He also earned a master's degree in medical science from Harvard Medical School in 2007.



Marcia A. Kean, M.B.A.

Chairman, Strategic Initiatives, Feinstein Kean Healthcare

Marcia A. Kean is Chairman, Strategic Initiatives, of Feinstein Kean Healthcare, a leading strategy and communications firm dedicated to advancing innovation in the life sciences and health care. For more than three decades, Marcia has consistently identified and helped drive adoption of new waves of technology that have transformative impact on health care. Marcia founded the first personalized medicine communications practice in the U.S., and has been active in the field for 15 years. Most recently, she co-authored with Daryl Pritchard, Ph.D., Senior Vice President, Science Policy, Personalized Medicine Coalition, a study of adoption at eight leading health care organizations, entitled "Emerging Models for Clinical Adoption of Personalized Medicine," published in *The Journal of Precision Medicine* in August 2017.

Marcia led communications for the National Cancer Institute's first-generation data exchange and bioinformatics program for seven years. She served as Co-Vice Chair of the Advisory Committee of the Institute of Medicine's Cancer Informatics Workshop. She founded and chairs the Advisory Committee of Turning the Tide Against Cancer Through Sustained Medical Innovation, a national initiative on policy co-convened by PMC, the American Association for Cancer Research and Feinstein Kean Healthcare. She leads Feinstein Kean's partnership in iConquerMS™, a novel patient-powered research initiative to accelerate multiple sclerosis research with an online data collection and analysis platform. Marcia holds an M.B.A. from New York University and a B.A. from the University of California at Berkeley.



Sean Khozin, M.D., M.P.H.

Associate Director (Acting), Oncology Center of Excellence, FDA

Dr. Khozin is a thoracic oncologist, Acting Associate Director at FDA's Oncology Center of Excellence, and the Founding Director of Information Exchange and Data Transformation (INFORMED), a data science and technology incubator focused on supporting innovations that enhance FDA's mission of promotion and protection of the public health. Drawing from the expertise of a diverse group of oncologists, data scientists, statisticians and entrepreneurs-in-residence, INFORMED is expanding organizational and technical infrastructure for big data analytics and examining modern approaches in evidence generation to support regulatory decisions. The research portfolio of INFORMED includes investigations into real-world data for clinical evidence generation, biosensors and the internet of things to quantify intrinsic and extrinsic factors influencing the patient's experience, machine learning and artificial intelligence, and blockchain to enable secure exchange of health data at scale.

Previously, Dr. Khozin was in private practice in New York City, an attending physician at St. Vincent's Hospital in Manhattan, and an entrepreneur specializing in building health information technology systems with virtual patient management (including video, structured email, short message service and remote biometric monitoring) and point-of-care data visualization and analytics capabilities.



Eric G. Klein, Pharm.D.

Senior Director, Oncology, Global Patient Outcomes and Real-World Evidence, Eli Lilly and Company

Dr. Klein is currently Senior Director, Oncology, in the Global Patient Outcomes and Real-World Evidence Department at Eli Lilly and Company. In this role, Dr. Klein leads the Outcomes Research team supporting the Oncology Business Unit and is responsible for the health economic, outcomes research, and real-world evidence capabilities supporting Lilly's early and late phase drug development efforts in oncology.

Dr. Klein has spent the last 20 years in leadership roles responsible for various aspects of the Outcomes Research and Real-World Evidence organization at Lilly. Dr. Klein joined the Outcomes Research organization of Lilly USA in January of 1998, where he spent six years focused on building the organization's capabilities. In September 2004, Dr. Klein transitioned to Lilly's Global Health Outcomes organization, where over the next six years he held leadership roles associated with development across product and program phase research as well as the development of business management and operations capabilities including quality, capacity planning, capability management and development, strategic planning, and project management. In January of 2010, Dr. Klein returned to Lilly USA to assume responsibilities for strategic transformation efforts within the Outcomes Research organization, and then in 2011, he took on responsibility for the Regional Outcomes Research teams globally. Dr. Klein assumed his current responsibilities in oncology drug development in 2014.



Thomas J. Lynch, Jr., M.D.

Executive Vice President, Chief Scientific Officer, Research & Development, Bristol-Myers Squibb

Dr. Thomas Lynch joined Bristol-Myers Squibb in March 2017 as Executive Vice President and Chief Scientific Officer of Research & Development, bringing broad leadership experience, significant experience in drug development and a deep understanding of the patient perspective as a treating oncologist. He previously served as a Director on Bristol-Myers Squibb's, Board from 2013–2017.

Tom has more than 30 years of medical, management and leadership experience, including more than 23 years at Massachusetts General Hospital (MGH). He served as Chairman and CEO of Massachusetts General Physicians Organization and as a member of the MGH Board from 2015 to 2017. Before his roles as Chairman and CEO at MGH, Tom served as the Director of Yale Cancer Center and was the Richard and Jonathan Sackler Professor of Internal Medicine at the Yale School of Medicine from 2009 to 2015. He also served as the Physician in Chief of Smilow Cancer Hospital, Yale New Haven, from 2009 to 2015. Prior to 2009, he served as Professor of Medicine at Harvard Medical School and Chief of Hematology/Oncology at MGH. While at MGH in 2004, Tom was part of the team credited with the significant discovery that certain genetic mutations in lung cancer patients caused therapies to work for some individuals and not for others.

Tom is a member of the American Association for Cancer Research, the American Society of Clinical Oncology and the International Association for the Study of Lung Cancer.



Jeffrey D. Marrazzo, M.B.A., M.P.A.

CEO, Spark Therapeutics

Jeff Marrazzo has led the creation and growth of Spark Therapeutics from a research center within Children's Hospital of Philadelphia to a fully integrated gene therapy company that is challenging the inevitability of genetic disease by discovering, developing and delivering potential treatments in ways unimaginable — until now. He serves on Spark's Board of Directors.

Under Jeff's leadership, Spark has successfully completed the first application for marketing authorization of an investigational gene therapy for a genetic disease in the U.S. while establishing human proof-of-concept of Spark's gene therapy platform in both the retina and liver. In the four years since founding Spark, Jeff has secured more than $1 billion in capital and built an organization of 300+ colleagues.

During a career that has spanned the public and private sectors, Jeff has consistently championed the potential benefits of precision medicine and health care reform for patients. Jeff currently serves as a Board Member of the Biotechnology Innovation Organization (BIO).

Jeff received a B.A. in economics and B.S.E. in systems science and engineering from the University of Pennsylvania. He also holds a dual M.B.A. / M.P.A. from The Wharton School of the University of Pennsylvania and Harvard University, a program which he founded.



Susan McClure

Founder, Publisher, *Genome* magazine; Board Member, Personalized Medicine Coalition

Susan brings over 30 years of journalistic experience to her role as Publisher for *Genome* magazine — the first consumer magazine exclusively devoted to personalized medicine and genomics. With over 100,000 copies distributed across the U.S. each quarter, *Genome* covers the personalized medicine stories of today and the breakthroughs of tomorrow, so that patients have the information they need to get the targeted treatments they deserve.

In 2016, Susan was honored by *Folio* as one of the Top Women in Media for her entrepreneurial efforts in magazine publishing and media. She has over 20 years of experience delivering first-class sales and management strategies to leading and start-up media and health care organizations, and is especially skilled at creating partnerships that result in highly respected educational offerings for patients and health care providers.



Howard McLeod, Pharm.D.

Medical Director, The DeBartolo Family Personalized Medicine Institute, Chair, Department of Individualized Cancer Management, Senior Member, Division of Population Sciences, Moffitt Cancer Center; Board Member, Personalized Medicine Coalition

Dr. Howard McLeod is Medical Director of the DeBartolo Family Personalized Medicine Institute at the Moffitt Cancer Center. He is Chair of the Department of Individualized Cancer Management and a State of Florida Endowed Chair in Cancer Research. He is also a Senior Member of the Division of Population Sciences and Professor at the University of South Florida.

Dr. McLeod is Chair of the NHGRI eMERGE network external scientific panel and a recent member of the FDA committee on clinical pharmacology and the NHGRI Advisory Council. Since 2002, Dr. McLeod has been Vice Chair for Pharmacogenomics for the NCI clinical trials group CALGB/ALLIANCE, overseeing the largest oncology pharmacogenomics portfolio in the world. Dr. McLeod is also a 1000 Talent Scholar of China and a Professor at Central South University in Changsha, China. Dr. McLeod is an active entrepreneur, serving on the Boards of Directors, Scientific Advisory Boards and as a domain expert consultant to publically traded and privately held companies. He has also founded both for-profit and nonprofit companies in the USA and China. Howard has published more than 500 peer-reviewed papers on pharmacogenomics, applied therapeutics or clinical pharmacology, and continues to work to advance individualized medicine.

Tom Miller, M.S.



Founder, Managing Partner, GreyBird Ventures LLC

Tom Miller is the Founder and Managing Partner of GreyBird Ventures LLC, an investment firm focused on emerging technologies for precision medicine diagnosis.

Tom began his career at Siemens Medical Systems where, after nine years, he became the first non-German CEO of a German factory and business unit. After Siemens, he served as the CEO of the global medical operations of Carl Zeiss, the CEO of Analogic Corporation, and as Chairman and CEO of LightLab Imaging, a start-up he helped to establish and sell. Tom then re-joined Siemens in 2002, serving as a member of the Global Operating Board and as CEO of the Customer Solutions Division, responsible for 26,000 employees in more than 130 countries. Since 2013, Tom has served as Managing Partner at GreyBird Ventures.

Tom is a frequent speaker on health care technology at conferences around the world and serves as director or chairman on the boards of five medical technology companies. He received his graduate degree from the Harvard/MIT Health Sciences and Technology program.

Lincoln Nadauld, M.D., Ph.D.



Executive Director, Precision Medicine, Precision Genomics, Intermountain Healthcare

Dr. Lincoln Nadauld is the Executive Director of Precision Medicine and Precision Genomics at Intermountain Healthcare. His team is extending the lives and improving quality of life for late-stage cancer patients locally, nationally and internationally. Dr. Nadauld helped to develop technologies at Stanford University that identify DNA changes in cancer to predict whether or not a targeted cancer drug might be effective for a specific patient.

Originally from Utah, Dr. Nadauld attended Brigham Young University for his undergraduate degree and went on to complete medical and doctoral degrees followed by an internship and residency at the University of Utah. He completed a clinical fellowship in medical oncology and Ph.D. program at Stanford University, where he continues to be involved in research collaborations. He was awarded the prestigious Young Investigator Award by the American Society of Clinical Oncology and the Career Development Award of NCI. His research has been featured in many publications, including the *Journal of Oncology Practice*, a publication of the American Society of Clinical Oncologists.



Joshua Ofman, M.D., M.S.H.S.

Senior Vice President, Global Value, Access and Policy, Amgen

Joshua Ofman is currently the Senior Vice President of Global Value, Access and Policy at Amgen. He received his advanced medical training in gastroenterology from UCLA and his health services research training from the RAND/UCLA/VA program. He formally was a member of the academic faculty in the Department of Medicine, UCLA School of Medicine, Cedars-Sinai Medical Center. Dr. Ofman also served as the Senior Vice President of Zynx Health Inc., a consulting company focused on evidence-based clinical information for quality improvement, reimbursement and health economics strategy for life sciences companies.

Dr. Ofman currently represents Amgen on the Boards of Directors of the California Life Sciences Association (CLSA) and the Biotechnology Innovation Organization (BIO). He is also Chairman of the Board of Directors for the National Pharmaceutical Council for 2017.



Bryce Olson

Global Marketing Director, Health and Life Sciences Group, Intel Corporation

Bryce Olson is the Global Marketing Director for Intel's Health and Life Sciences group. One of the areas he focuses on is bringing technology and science together in the exciting area of genomics and precision medicine with a powerful message on how this saves lives. Genomic sequencing and precision medicine gave him a life he didn't think he'd get to live.

Bryce is inspired by connecting the advances in life sciences into clinical settings and helping patients understand these new opportunities. He is a sought after keynote speaker both locally and nationally, and his story has been covered by both local and national media. Bryce also started FACTS (Fighting Advanced Cancer Through Songs), a movement that uses the power of music to build awareness for a new way to fight cancer and bring molecular testing and precision medicine to other advanced cancer patients. In 2017, Bryce wrote and co-produced a rock-n-roll album with proceeds going towards the FACTS movement, that brought together a variety of Portland-based musicians and singers including Jenny Conlee from the Decemberists, Martha Davis from the Motels, Pete Krebs and Michelle DeCourcy — all four of whom are also cancer survivors.



Ronald A. Paulus, M.D., M.B.A.

President, CEO, Mission Health

Ronald A. Paulus, M.D., M.B.A., is President and CEO of Mission Health, a $1.7 billion integrated health system serving all of western North Carolina — a region older, poorer, sicker and less likely to be insured than state and national averages. During his tenure, Mission Health has reduced inpatient mortality by more than half, achieved six-sigma medication safety results, improved patient experience to above the 90th percentile and become the only health system ever designated as one of the nation's Top 15 Health Systems for four consecutive years and five of six years (Thomson Reuters in 2012, and its successor Truven Health Analytics/IBM Watson in 2013–2015 and 2017).

Before joining Mission Health, Dr. Paulus served as Executive Vice President, Clinical Operations and Chief Innovation Officer for Geisinger Health System as well as Co-Founder, President and later CEO of CareScience, Inc., later acquired by Premier, Inc.

Dr. Paulus has been named one of *Modern Healthcare*'s Top 50 Most Influential Physician Executives and Leaders several times, and was recently among the top 15 on that list. Dr. Paulus received his M.D. degree from The School of Medicine, University of Pennsylvania, and his M.B.A., concentration in health care management, and a B.S. in economics from The Wharton School, University of Pennsylvania.



Steven D. Pearson, M.D., M.Sc.

Founder, President, Institute for Clinical and Economic Review (ICER)

Steven D. Pearson is the Founder and President of the Institute for Clinical and Economic Review (ICER), an independent, nonprofit organization that evaluates the evidence on the value of medical tests, treatments and delivery system innovations to encourage collaborative efforts to improve patient care and control costs. Prominent among its evidence reports are ICER reviews of new drugs that include full assessments of clinical and cost-effectiveness along with suggested "value-based price benchmarks" to inform policymakers and guide price and coverage negotiation.

Dr. Pearson is a lecturer in the Department of Population Medicine at Harvard Medical School and also serves as Visiting Scientist in the Department of Bioethics at the NIH. He received his medical degree from UCSF and completed an internal medicine residency and research fellowship at Brigham and Women's Hospital. From 2005 - 2006, he served during the Bush administration as Special Advisor on Technology and Coverage Policy within the Coverage and Analysis Group at the Centers for Medicare and Medicaid Services. Dr. Pearson has also been a Senior Visiting Fellow at England's National Institute for Health and Care Excellence (NICE), a Board Director of HTAi, the international society of health technology assessment agencies, and the Vice Chair of the Medicare Evidence Development and Coverage Advisory Committee (MedCAC).



Michael Pellini, M.D., M.B.A.

Chairman, Board of Directors, Foundation Medicine; Board Member, Personalized Medicine Coalition

Michael Pellini, M.D., M.B.A., joined Foundation Medicine as President and CEO in May 2011 and transitioned to Chairman in February 2017. As a physician with more than 20 years of operating experience with companies at the forefront of the clinical diagnostics and laboratory industries, Dr. Pellini brings a breadth of understanding in personalized medicine, with a particular interest and focus in oncology. He currently serves as a member of the Board of Directors for Tango Therapeutics, Singular Genomics, the Personalized Medicine Coalition and MassBio, in addition to his Board Chair position with Foundation Medicine. Dr. Pellini is a member of the President's Leadership Council for the Sydney Kimmel Medical School at Thomas Jefferson University.



Eleanor M. Perfetto, Ph.D., M.S.

Senior Vice President, Strategic Initiatives, National Health Council

Dr. Eleanor M. Perfetto was named Senior Vice President of Strategic Initiatives for the National Health Council (NHC) in July of 2015, and holds a part-time faculty appointment at the University of Maryland, Baltimore School of Pharmacy where she is Professor of Pharmaceutical Health Service Research. Her research and policy work primarily focus on patient engagement in comparative effectiveness and patient centered-outcomes research, medical product development; patient-reported outcome selection and development; and health care quality. Dr. Perfetto holds B.S. and M.S. degrees in pharmacy from the University of Rhode Island, and a Ph.D. from the University of North Carolina School of Public Health with concentrations in health policy and epidemiology.



Kristin Pothier, M.S.

Global Head, Life Sciences, Parthenon-EY

Kristin Ciriello Pothier is the Global Head of Life Sciences for the Parthenon-EY practice of Ernst & Young LLP and the creator of EY Precision Medicine™. She has more than 20 years of experience in management consulting and research in the life sciences industry. She is a noted speaker, workshop leader and writer in life sciences. She is also a clinical laboratory and life sciences innovation expert, helping develop product and service strategies worldwide for investors, corporations and medical institutions. Her book, *Personalizing Precision Medicine: A Global Voyage From Vision To Reality*, was released in August of 2017. Earlier in her career, Kristin was a partner and owner of Health Advances, a health care consulting firm, and a research scientist at Genome Therapeutics and at Genzyme. She earned a B.A. in biochemistry from Smith College and an M.S. in epidemiology, health management, and maternal and child health from the Harvard School of Public Health.



Daryl Pritchard, Ph.D.

Senior Vice President, Science Policy, Personalized Medicine Coalition

Daryl Pritchard, Ph.D., is the Senior Vice President of Science Policy at the PMC, where he leads PMC's efforts to increase awareness and understanding of personalized medicine; identify and address barriers to the adoption of personalized medicine into the health care system; and develop and promote appropriate clinical, health care infrastructure, regulatory and payment policies.

Before coming to PMC, Dr. Pritchard served as the Director of Policy Research at the National Pharmaceutical Council. Prior to joining NPC, he served as the Director of Research Programs Advocacy and Personalized Medicine at the Biotechnology Innovation Organization (BIO).

Dr. Pritchard received his Ph.D. and master's degree in genetics from the George Washington University, and completed a post-doctoral research fellowship at the Children's National Medical Center. He was awarded the first American Society of Human Genetics/ NHGRI Fellowship in Genetics and Public Policy, where he worked as a health legislative assistant in the House of Representatives.



David B. Roth, M.D., Ph.D.

Simon Flexner Professor Chair, Pathology and Laboratory Medicine, Perelman School of Medicine at University of Pennsylvania; Director, Penn Center for Precision Medicine

David B. Roth is Simon Flexner Professor Chair of Pathology and Laboratory Medicine at the Perelman School of Medicine at the University of Pennsylvania, and is the Director of Penn's Center for Precision Medicine. He joined Penn in 2011 when he became Chair of Pathology and Laboratory Medicine, before founding Penn's Center for Personalized Diagnostics in 2012.

Prior to joining the University of Pennsylvania, Dr. Roth served on the faculty of Baylor College of Medicine, where he was a Professor and investigator. He also worked at NYU, where he was Chair of the Department of Pathology and directed the Medical Scientist Training Program. Dr. Roth has spent more than 20 years as an NIH-funded researcher, with more than 100 published papers. He is anelected member of the Association of American Physicians, past President of the American Association of University Pathologists and is Secretary-Treasurer of the Association of Pathology Chairs. He was recently featured in *Pathologist* magazine's Top 100 Power List.

Dr. Roth obtained his M.D. and Ph.D. from Baylor College of Medicine and completed a pathology residency and postdoctoral fellowship at NCI.



Deborah Schrag, M.D., M.P.H.

Chief, Division of Population Sciences, Medical Oncology, Dana-Farber Cancer Institute

Deborah Schrag is the Chief of the Division of Population Sciences within the Department of Medicine at Dana-Farber Cancer Institute. She also is a Professor of Medicine at Harvard Medical School and a Senior Physician in the center for gastro-intestinal oncology at Dana-Farber, where she focuses on the care of patients with tumors of the lower gastrointestinal tract, particularly colorectal cancer.

Dr. Schrag consults for the Center for Medicare and Medicaid Services and state health departments, and has testified before Congressional panels on improving care quality and efficiency. She serves as a member of the National Cancer Policy Forum and the NCI standing study section on Health Services Organization and Delivery, and is a founding member of the American Society of Clinical Oncology's Committee on Cancer Value. She is an Associate Editor of the *Journal of the American Medical Association*.

Dr. Schrag earned her medical degree from Columbia University College of Physicians and Surgeons and her master's degree in public health from the Harvard School of Public Health. She completed her residency in internal medicine at Brigham and Women's Hospital and a fellowship in medical oncology at Dana-Farber.

Michael Sherman, M.D., M.B.A., M.S.



Chief Medical Officer, Senior Vice President, Harvard Pilgrim Health Care; Board Member, Personalized Medicine Coalition

Dr. Michael Sherman serves as Chief Medical Officer and Senior Vice President for Harvard Pilgrim Health Care. Dr. Sherman has been a leader in driving adoption of outcomes-based provider and pharmaceutical contracts, and is responsible for Harvard Pilgrim's medical trend management, provider engagement strategy, medical informatics, wellness and health promotion initiatives, care and disease management services, pharmacy services, NCQA accreditation and quality and utilization management programs. He serves on the faculty of Harvard Medical School's Department of Population Medicine, as Chair of the Board of Managers of the Harvard Pilgrim Health Care Institute, on the Advisory Board of the Institute for Clinical and Economic Review (ICER), and on the Board of Directors for PMC. Dr. Sherman also is the current chair for AHIP's CMO Leadership Council, comprising chief medical officers from health plans throughout the United States.

Prior to joining Harvard Pilgrim, Dr. Sherman held leadership roles at Humana, UnitedHealth Group and Thomson Medstat (now IBM Truven). He holds a B.A. and an M.S. in biomedical anthropology from the University of Pennsylvania and received his M.D. from Yale and M.B.A. from the Harvard Business School.

Jennifer Snow, M.P.H.



Director, Health Policy, Xcenda

Jennifer Snow, M.P.H., is a Director of Health Policy at Xcenda and keeps clients and stakeholders informed on the latest legislative and regulatory updates and their commercial impact. Her team analyzes the health care environment and provides strategic guidance on how to best navigate challenges to coverage and access. Ms. Snow is a subject matter expert on the Affordable Care Act, quality measures, medication adherence and federal health programs, particularly the Medicare Prescription Drug Benefit (Part D). She has experience with reimbursement and policy strategy launch plans for various therapeutic areas including cardiology, respiratory health, mental health, diabetes, oncology and rheumatoid arthritis.

Before joining Xcenda, Ms. Snow was a Director of Policy at a large pharmaceutical manufacturer. Ms. Snow also worked at the Centers for Medicare & Medicaid Services in the Office of Exchanges, where she developed and formulated policies on essential health benefits, oversight, essential community providers and basic health plans. She also has expertise in health care coverage and access issues from her time with Avalere as well as her experience at Stanford University as a Senior Benefits Analyst.

Ms. Snow holds an M.P.H. from the University of North Carolina-Chapel Hill and a B.S. in Russian from Georgetown University.



Michael Snyder, Ph.D.

Stanford W. Ascherman Professor, Chair, Department of Genetics, Director, Center of Genomics and Personalized Medicine, Stanford University School of Medicine

Dr. Snyder received his Ph.D. training at the California Institute of Technology and carried out postdoctoral training at Stanford University. He is a leader in the field of functional genomics and proteomics, and one of the major participants of the ENCODE project.

His laboratory study was the first to perform a large-scale functional genomics project in any organism, and he has developed many technologies in genomics and proteomics. These include proteome chips, high-resolution tiling arrays for the entire human genome, methods for global mapping of transcription factor binding sites (ChIP-chip, now replaced by ChIP-seq), paired end sequencing for mapping of structural variation in eukaryotes, de novo genome sequencing of genomes using high throughput technologies and RNA-Seq. These technologies have been used for characterizing genomes, proteomes and regulatory networks.

Seminal findings from the Snyder laboratory include the discovery that much more of the human genome is transcribed and contains regulatory information than was previously appreciated, and a high diversity of transcription factor binding occurs both between and within species.



Lotte Steuten, Ph.D., M.Sc.

Associate Faculty Member, Hutchinson Institute for Cancer Outcomes Research (HICOR), Fred Hutchinson Cancer Research Center; Affiliate Associate Professor, Pharmaceutical Outcomes Research and Policy Program, School of Pharmacy at University of Washington, Seattle

Dr. Lotte Steuten is an Associate Member at the Hutchinson Institute for Cancer Outcomes Research (HICOR). She is an entrepreneurial academic, striving to accelerate patient access to high-value health care innovations. She has deep expertise in health economics that she applies to identifying, building and articulating the clinical, humanistic and economic value of medical technologies and precision medicine.

As an Associate Member at Fred Hutch and Affiliate Associate Professor at the University of Washington, Seattle, Dr. Steuten conducts an active research program in comparative effectiveness research and health economics. She is an advisor to various research organizations, policy boards and health care industries, an editorial board member for several health economic journals and a member of the International Society for Pharmacoeconomic Outcomes Research (ISPOR). She is also co-founder and Chief Scientific Officer of Panaxea – an innovation research firm based in the European Union. Previously, she served on the Scientific Advisory Board of the Global Initiative for Translational Health Economics (GITHE) and led the Cost-Benefit Committee of the Organisation for European Cancer Institutes (OECI).

Dr. Steuten accrued her global expertise at leading health economic groups in the U.S., the U.K. and the Netherlands. She obtained an M.Sc. in health sciences and a Ph.D. (cum laude) in health economics from Maastricht University, the Netherlands.



Meg Tirrell, M.S.J.

Reporter, CNBC

Meg Tirrell joined CNBC in April 2014 as a general assignment reporter focusing on biotechnology and pharmaceuticals. She appears on CNBC's Business Day programming, contributes to CNBC.com and is based at the network's global headquarters in Englewood Cliffs, NJ.

Tirrell has covered development of new drugs for Alzheimer's, cancer and rare diseases, and tracked public health emergencies from Ebola to Zika. Her work has explored why fewer drugs are developed for children, chronicled the sequencing of her own genome and followed the manufacturing of a flu shot from egg to pharmacy. In 2014, she revealed the agonizing decision-making behind Compassionate Use of unapproved drugs, and in 2016, she reported extensively on drug pricing controversies and the impact of politics on the development of new medicines.

Prior to joining CNBC, Tirrell covered the biotechnology industry for *Bloomberg News*, where she also contributed to Bloomberg Television and *Bloomberg Businessweek*. She holds a master's degree in journalism from Northwestern University and a bachelor's degree in English and music from Wellesley College.



Stephen J. Ubl

President, CEO, PhRMA

Stephen Ubl is President and CEO of Pharmaceutical Research and Manufacturers of America (PhRMA), which represents America's leading biopharmaceutical research companies. Mr. Ubl leads PhRMA's work preserving and strengthening a health care and economic environment that encourages medical innovation, new drug discovery and access to life-saving medicines.

"If anyone can find areas of agreement with the critics, or at least work productively with them, it may be Mr. Ubl," the *New York Times*' Robert Pear wrote in February 2016. "He is more conversant with the intricacies of health policy, and more adept at the politics." Ubl is routinely recognized as one of Washington's most effective advocates, and, in 2017, was named for the second year in a row to *Modern Healthcare*'s 100 Most Influential People in Healthcare. In 2016, he was named a Top Lobbyist by *The Hill* and a top health influencer by *Medical Marketing & Media* and *PR Week* magazines.



Alexander Vadas, Ph.D.

Managing Director, L.E.K. Consulting

Alexander Vadas, Ph.D., is a Managing Director in L.E.K. Consulting's Life Sciences practice. He joined L.E.K. in 2000 and leads the diagnostics, research tools and personalized medicine practice area. Within those areas, Dr. Vadas has worked with a range of established and emerging clients in the areas of corporate strategy, product strategy, and planning and transaction support.

Alex has deep experience working for clients across diagnostics and personalized medicine, including IVD product companies, research tools and technology enablers, clinical laboratories, pharmaceutical companies with personalized medicine drugs, and innovative providers and health systems seeking to implement personalized medicine approaches.

Dr. Vadas received his B.S., cum laude, and Ph.D. in chemical engineering with a bioengineering emphasis from UCLA. His doctoral work focused on the discovery and applications of novel enzymes derived from organisms that thrive in extreme environments.



Jacob S. Van Naarden

Chief Business Officer, Loxo Oncology

Jacob S. Van Naarden serves as Chief Business Officer of Loxo Oncology Inc. In his previous roles, Mr. Van Naarden served in various biotechnology investing, operating and advisory capacities. He served as a public equity biotechnology analyst at HealthCor Management, a multi-billion dollar health care-dedicated investment firm based in New York City. Prior to HealthCor, Mr. Van Naarden was an Associate at Aisling Capital, a multi-strategy health care investment firm also based in New York. Mr. Van Naarden started his career in the Healthcare Group of the Investment Banking Division at Goldman Sachs.

Mr. Van Naarden received his degree in molecular biology from Princeton University, graduating magna cum laude and Phi Beta Kappa.

Marc S. Williams, M.D., F.A.A.P., F.A.C.M.G., F.A.C.M.I.



Director, Genomic Medicine Institute, Geisinger

Marc S. Williams is a clinical geneticist and informaticist, and is the Director of the Genomic Medicine Institute of the Geisinger Health System in Danville, PA. He is the Co-Principal Investigator of the Geisinger Electronic Medical Records in Genomics (eMERGE) project and is the Medical Director of the whole genome sequencing clinical research project.

Dr. Williams has participated in the Personalized Medicine Workgroup of the Department of Health and Human Services' American Health Information Community Task Force, chaired the CDC's EGAPP Stakeholder's Group and was a member of the Secretary's Advisory Committee for Genetics, Healthand Society. He is a current member of the EGAPP working group and is a past member of the ACMG Board of Directors. He previously served as Vice President for Clinical Genetics, and is past Chair of the ACMG Committee on the Economics of Genetic Services and founded the ACMG Quality Improvement Special Interest Group. Dr. Williams serves on the Scientific Advisory Boards of the Clinical Pharmacogenetic Implementation Consortium and the NIH Undiagnosed Diseases Project. Dr. Williams was also elected a fellow of the American College of Medical Informatics in 2016.

He has authored more than 130 articles on a variety of topics including the economic evaluation and value of genetic services, implementation of genomic medicine and the use of informatics to facilitate genomic medicine.

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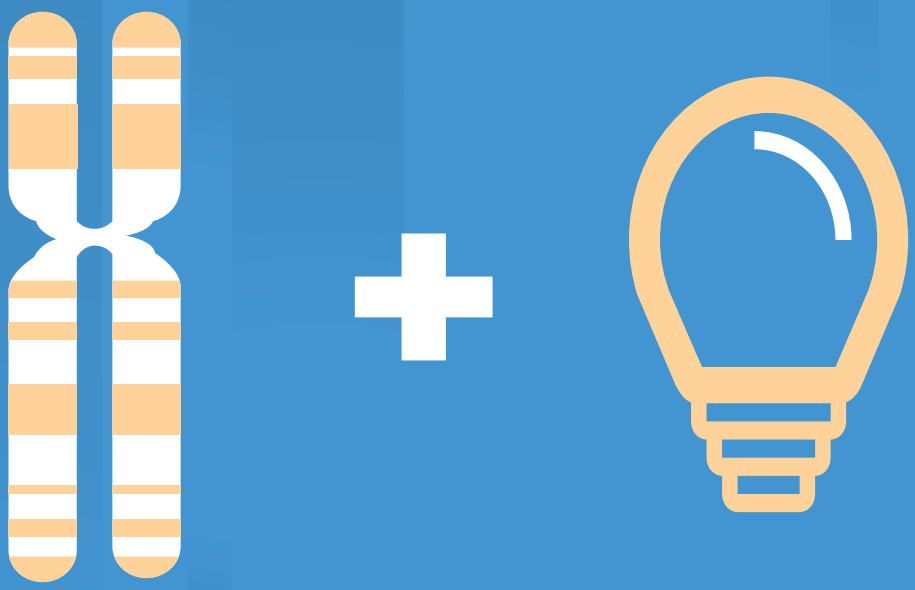
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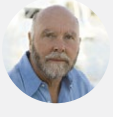


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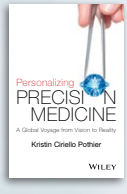
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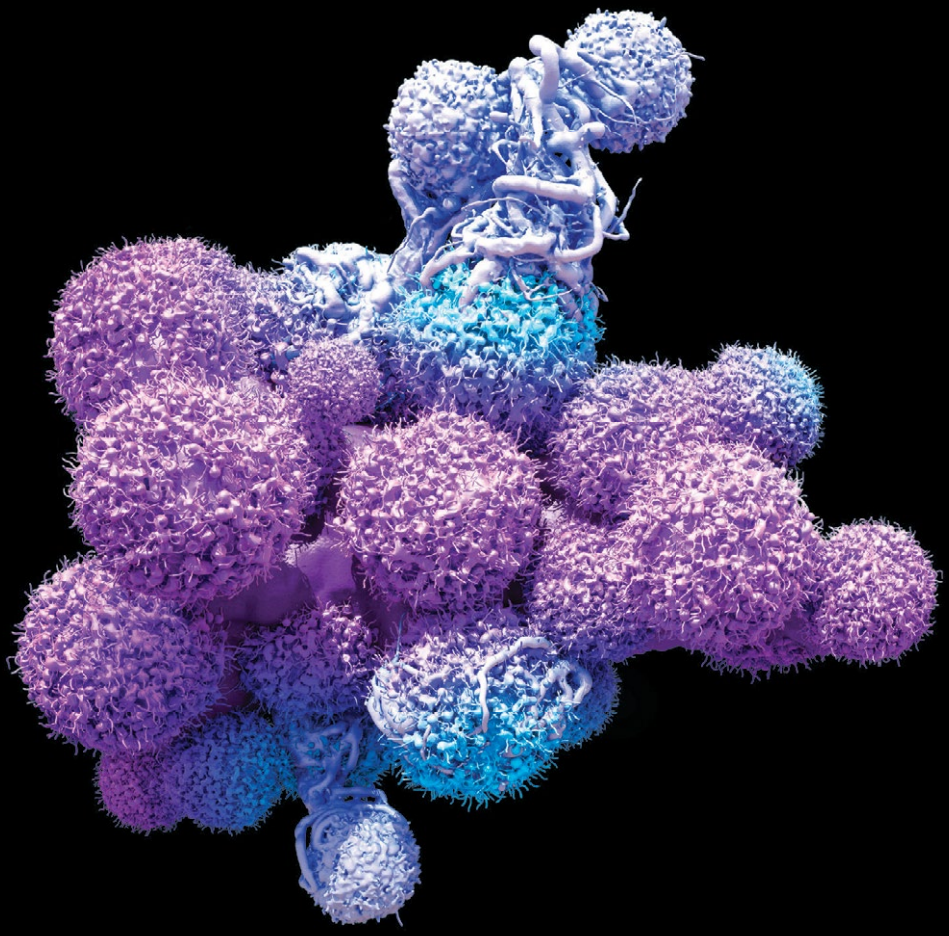
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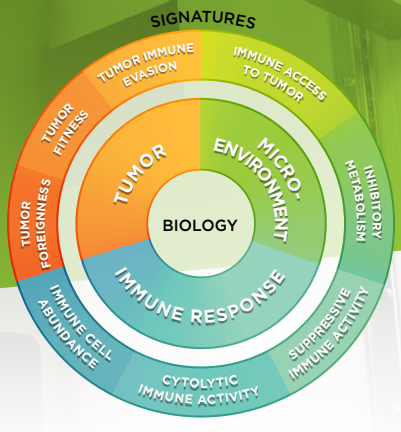
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*Ayers, Mark, et al. "IFN-γ-related mRNA profile predicts clinical response to PD-1 blockade." The Journal of Clinical Investigation 127.8 (2017).

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