3rd Annual Boston Educational and Experiential Event

UNDERSTAND YOUR GENOME®

TUESDAY, NOVEMBER 14, 2017
BROAD INSTITUTE

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HARVARD MEDICAL SCHOOL

BROAD INSTITUTE

BRIGHAM HEALTH
BRIGHAM AND WOMEN'S HOSPITAL

G2P
GENOMES TO PEOPLE

AGENDA

TUESDAY, NOVEMBER 14, 2017

7:00 AM **Registration and Breakfast**

8:00 AM **Welcome and Opening Remarks**
Robert Green, MD, MPH *(BWH, HMS, Broad): Course Director*
Peter Goodhand *(Global Alliance for Genomics and Health)*

8:15 AM **Understanding the Basics of Genetics and Genomics**
Moderator: Bob Handsaker *(Broad)*
Stacey Gabriel, PhD *(Broad):* Overview of Sequencing, Alignment and Variant Calling
Daniel MacArthur, PhD *(MGH, Broad):* Using Large Datasets to Enhance Variant Classification
Heidi Rehm, PhD *(LMM, Broad):* Variant Classification, Laboratory Reporting and Data Sharing
Questions and Discussion

9:25 AM **Sequencing and Informatics in Clinical Care**
Moderator: Joel Krier, MD, MMSc *(BWH)*
Richard Maas, MD, PhD *(BWH, HMS):* Sequencing and Gene Discovery in Undiagnosed Diseases
Eli Van Allen, MD *(DFCI):* Tumor Sequencing and Cancer Precision Medicine
Questions and Discussion

10:20 AM **Networking Break**

10:50 AM **Precision Health: Using Genomics to Eliminate Racial Disparities in Outcomes After Organ Transplants**
Hannah Valantine, MD, MRCP *(NIH, NHLBI)* Chief Officer for Scientific Workforce Diversity

11:10 AM **Diversity Issues in Genomics**
Moderator: Jacquelyn Taylor, PhD, RN *(Yale)* Associate Professor
Remarks and Panel Discussion with:
Hannah Valantine, MD, MRCP *(NIH, NHLBI)* Scientific Workforce Diversity
Tshaka Cunningham, PhD *(DIA)* Associate Director of Scientific Collaboration
Anthony Johnson, MBA *(Empire Genomics)* President/CEO

11:55 AM **Lunch Break**

12:10 PM **Understand Your Genome® Presented in the Auditorium - *Optional***
Moderator: Shervin Kamkar, MS *(Illumina)*
Erica Ramos, MS, LCGC *(Illumina):* Clinical Whole Genome Sequencing in a Healthy Population
Molly McGinniss, MS, LCGC *(Illumina):* MyGenome Web App Revealed & Workshop

1:50 PM **A Conversation About FDA Regulatory Guidelines for Genomics**
Moderator: Glenn Cohen, JD *(Harvard Law School)*
Gail H. Javitt, JD, MPH *(Epstein Becker Green)*

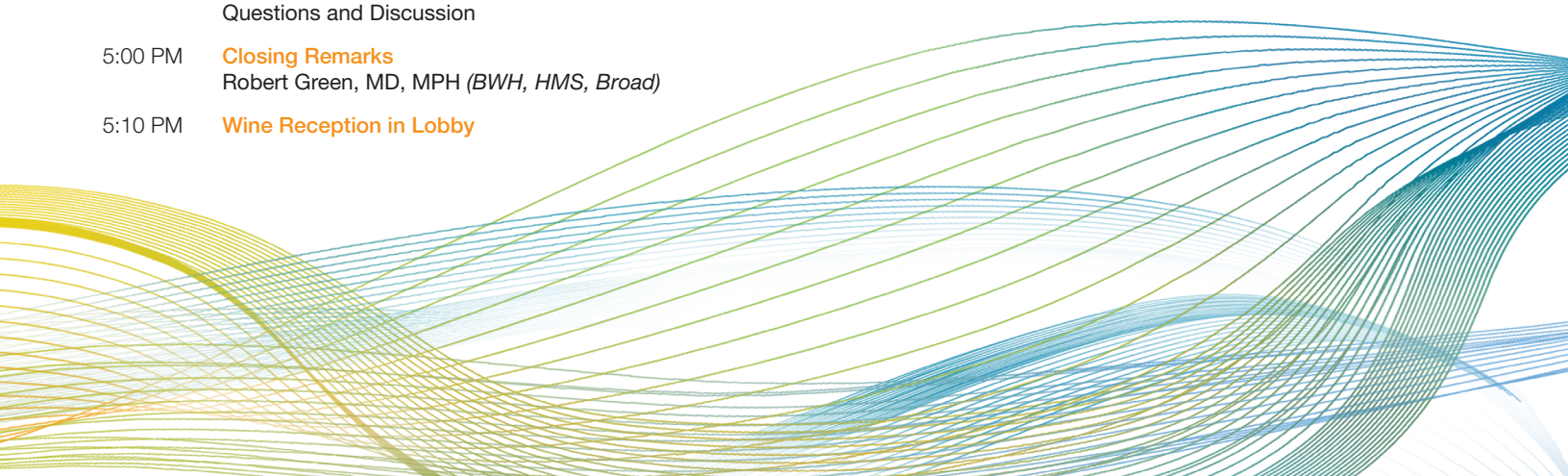
2:10 PM **The Future of Genomics in Medicine**
Moderator: Misha Angrist, PhD *(Duke University)*
Robert Green, MD, MPH *(BWH, HMS, Broad):* Implementing Genomics into Medical Care
Calum MacRae, MD *(BWH):* Global Phenotyping and the Clinic of the Future
George Church, PhD *(HMS):* Gene Editing and the Future of Medicine
Questions and Discussion

3:30 PM **Networking Break**

4:00 PM **Debate: Do Lifestyle Uses of Personal Genetic Information Diminish Medical Genetics?**
Moderator: Manolis Kellis, PhD *(MIT)*
Con: James Lu, MD, PhD *(Helix)*
Pro: Mark Daly, PhD *(MGH)*
Questions and Discussion

5:00 PM **Closing Remarks**
Robert Green, MD, MPH *(BWH, HMS, Broad)*

5:10 PM **Wine Reception in Lobby**



SPEAKERS

Misha Angrist, PhD

@MishaAngrist

Misha Angrist trained in human genetics and genetic counseling, was among the first identifiable humans to have his genome sequenced and made public, and continues to be interested in research participation and its governance. He is an Associate Professor of the practice at Duke University's Social Science Research Institute, and a senior fellow in its Initiative for Science & Society. In 2016, he became Editor-in-Chief of *Genome* magazine.

George Church, PhD

@GeoChurch

George Church is a Professor at Harvard and MIT, co-author of 453 papers, 105 patent publications, and author of the book, Regenesis. He developed methods used for the first genome sequence (1994) and million-fold cost reductions since (via NGS and nanopores), plus barcoding, DNA assembly from chips, genome editing, writing and recoding. He co-initiated the BRAIN Initiative (2011) and Genome Projects (1984, 2005) to provide and interpret the world's only open-access personal precision medicine datasets.

Glenn Cohen, JD

@CohenProf

Professor Cohen is currently a Professor of Law at Harvard Law School, as well as Faculty Director of the Petrie-Flom Center. He is one of the world's leading experts on the intersection of bioethics and the law. Prof. Cohen's current projects relate to big data, health information technologies, mobile health, reproduction/ reproductive technology, research ethics, organ transplantation, rationing in law and medicine, health policy, FDA law, translational medicine, and medical tourism. He is the author of more than 95 articles and chapters, and his award-winning work has appeared in leading legal, medical, and public health journals, as well as Op-Eds in the *New York Times* and *Washington Post*. For his law school teaching, Professor Cohen was awarded the HLS Student Government Teaching and Advising Award in 2017. For the public, he created the free online Harvard X class Bioethics: The Law, Medicine, and Ethics of Reproductive Technologies and Genetics, which was nominated by Harvard for the Japan Prize. Cohen was selected as a Radcliffe Institute Fellow and by the Greenwall Foundation to receive a Faculty Scholar Award in Bioethics.

Tshaka Cunningham, PhD

@Tshakac

Dr. Tshaka Cunningham is the Associate Director of Scientific Collaboration for the Drug Information Association (DIA). In this role, he coordinates the DIA Communities Program, which provides a neutral forum and online platform where experts from across the spectrum of diverse disciplines within the healthcare ecosystem can convene to discuss prominent issues and solutions. Prior to his joining DIA, he served as the Scientific Program Manager for the Aging and Neurodegenerative Diseases Rehabilitation Research Program at the U.S. Department of Veterans Affairs within the Veterans Health Administration's Office of Research & Development (VHA ORD). He earned a B.A. degree in molecular biology from Princeton University in New Jersey and his doctoral degree in the same discipline from Rockefeller University in New York, completing postdoctoral training at the Pasteur Institute in Paris, France, and at the National Institutes of Health in Bethesda, MD. Dr. Cunningham has served as a subject matter expert (SME) in Genomics and Precision Medicine for the VHA ORD Genomic Medicine Implementation Program (GMIP) and convened the MVP-Diversity Working Group, which presented recommendations to the VA Genomic Medicine Program Advisory Committee (GMPAC) on patient recruitment strategies to ensure that minority Veteran participation in the VA's Million Veteran Program is maximized. He also created the VA's Historically Black College and University Research Scientist Training Program (VA HBCU-RSTP), the major diversity outreach initiative sponsored by VHA ORD. He remains an active member of the non-profit Minority Coalition for Precision Medicine, where he serves as a scientific advisor and community advocate.

Mark Daly, PhD

@Dalygene

Mark Daly is an institute member of the Broad Institute and Co-Director of the Program in Medical and Population Genetics. His research primarily focuses on the development and application of statistical methods for the discovery and interpretation of genetic variation responsible for complex human disease. As founding Chief of the Analytic and Translational Genetics Unit at Massachusetts General Hospital, he also has an expanded focus on the interpretation of genome sequence and the use of genome information in clinical settings.

Stacey Gabriel, PhD

Dr. Stacey Gabriel leads the Genomics Platform, one of the largest producers of human genomic data in the world. Under Dr. Gabriel's guidance, the Genomics Platform is responsible for exploring, validating, optimizing, and implementing new technologies, methods, and analysis tools to meet the scientific needs of the Broad community and beyond. In addition to her activities with the Genomics Platform, Dr. Gabriel's research interests lie in using genomic techniques to understand the genetic components of common disease. She has represented the Institute in many large national projects, including providing foundational research for the International HapMap Project; serving on the steering committee for the 1000 Genomes Project; serving on the steering committee for The Cancer Genome Atlas; serving as principal investigator on the National Heart, Lung and Blood Institute's Exome Sequencing Project and TransOmics for Precision Medicine Project; and co-principal investigator of the National Human Genome Research Institute's large-scale sequencing center. She has also served as principal investigator on numerous NIH grants and contracts related to large-scale genotyping, sequence production, and analysis. Dr. Gabriel has been ranked #1 in Thomson Reuters' list of "The World's Most Influential Scientific Minds" in 2014 and 2015 based on citation of research articles.

Peter Goodhand

@Peter_pcg

Peter Goodhand is a leader in the global health sector as a senior executive and board member. Goodhand played a key role in the creation of the Global Alliance for Genomics and Health (GA4GH) and was appointed as its founding Executive Director in 2014. Since May 2016, he has also served as the President of the Ontario Institute for Cancer Research (OICR). Prior to the GA4GH and OICR, he was the President and CEO of the Canadian Cancer Society, Canada's largest health charity. Before joining the charitable sector, Goodhand had a 20 year career in the global medical technology industry, including strategic leadership roles with multinational healthcare companies such as American Cyanamid and Johnson & Johnson; Board Chair and President of Canada's Medical Device Industry association (MEDEC); and as the founding Managing Director and then Board Chair of the Health Technology Exchange (HTX). He is currently Chair of the Steering Committee of the Occupational Cancer Research Center, Co-chair of the Medical and Scientific Advisory Board of Global Genes, board member of the AGE-WELL Network Center of Excellence, and on the Steering Committee of the Global Genomic Medicine Collaboration (G2MC). He also chaired the Government of Canada's Expert working group on the future of medical isotope production, and was a member of the Canadian delegation to the UN summit on non-communicable diseases.

Robert C. Green, MD, MPH—Course Director

@RobertCGreen

Robert C. Green is a Professor of Medicine within the Division of Genetics and Department of Medicine at Brigham and Women's Hospital (BWH) and Harvard Medical School, and Director of the Genomes2People Research Program in translational genomics at BWH and the Broad Institute. He conducts empirical research on the medical, behavioral, and economic outcomes around the implementation of genomic medicine.
Dr. Green currently leads and co-leads the first randomized trials to explore the implementation of medical sequencing in adults (MedSeq Project) and newborns (BabySeq Project). With support from the Air Force, and in collaboration with military medicine colleagues, he is developing an exome sequencing implementation study to be conducted on active duty military personnel (MilSeq Project). Scientific contributions include publication of the first randomized trials to assess the impact of common complex genetic risk markers, empirically measuring the outcomes of DTC genetic testing, design of a variant interpretation pipeline, and single page summary for reporting clinical results of whole genome sequencing. Dr. Green was lead author on the original recommendations for managing incidental findings in clinical sequencing from the American College of Medical Genetics and Genomics and led the first study of aggregate penetrance of genomic variants in an unselected population. He recently published the first randomized trial to assess whole genome sequencing in primary care.

SPEAKERS

Bob Handsaker

Bob Handsaker is a senior principal software engineer working under the direction of Steve McCarroll in the Stanley Center for Psychiatric Research at the Broad Institute of MIT and Harvard. He is the principal author of Genome STRiP, a suite of software analysis methods for the discovery and analysis of structural variation/copy number variation from sequencing data. Handsaker's research focuses on genome structural variation, large scale changes in a person's DNA that rearrange genes or lead to an increase or decrease in the number of copies of a gene in different individuals. Handsaker develops new computational methods to accurately characterize and measure these complex variants, to understand their distribution and evolutionary history in the human population, and to elucidate their contributions to many diverse human diseases. Prior to joining the Broad Institute, Handsaker worked as a software architect/developer and technology consultant. He has been affiliated with the Broad Institute and the Whitehead Institute Center for Genome Research since 2002, joining the Broad full time in 2010. He was awarded the Broad Institute's Excellence Award in Science/Engineering in 2014. Handsaker holds a bachelor's degree in computer science from MIT.

Gail H. Javitt, JD, MPH

Gail H. Javitt is a Member of the Firm in the Health Care and Life Sciences practice, in the Washington, DC, office of Epstein Becker Green. Ms. Javitt provides strategic FDA regulatory advice for leading life sciences companies at both the pre- and post-market stage, and also has significant experience advising clinical laboratories on FDA and CLIA requirements for laboratory developed tests. She has spoken and written extensively on issues at the intersection of law, genetics, policy, and bioethics. Earlier in her career Ms. Javitt was a law and policy director at the Genetics and Public Policy Center, part of Johns Hopkins University. At the Center, she was responsible for developing policy options to guide the development and use of reproductive and other genetic technologies. Ms. Javitt is currently adjunct faculty at the Johns Hopkins Berman Institute of Bioethics.

Anthony Johnson, MBA

Anthony Johnson is the President and CEO of Empire Genomics, a leading molecular diagnostic firm specializing in the delivery of precision medicine in the oncology arena. Since the firm's founding, Anthony has raised multiple rounds of funds, signed numerous licensing and distribution deals, and has developed many companion diagnostic assays that are in clinical development as therapeutic selection markers. Anthony is also a founding partner of Buffalo Biosciences, a life science strategic management services firm, where he consults on healthcare IT, medical devices, gene therapy, and drug discovery. Previously, Anthony worked for Invitrogen Corporation, where he created and led the firm's stem cell and regenerative medicine franchise. Anthony serves on several boards and is the Secretary of the Board of Trustees of Paul Smith's College. He is a mentor with numerous technology startups and a volunteer with the Big Brothers Big Sisters of America. He earned an MBA from the Alliance Manchester Business School in Manchester, England, and a B.S. in Biology from Fisk University in Nashville, Tennessee. Anthony is a Fellow of the second class of the Health Innovators Fellowship and a member of the Aspen Global Leadership Network.

Shervin Kamkar, MS

Shervin Kamkar is the Market Development and Commercial Business Director for Understand Your Genome® (UYG) within Illumina's Clinical Genomics division. His responsibilities include expansion of the UYG host program, development of new clinical markets for whole genome sequencing and the expansion of Illumina's physician network. Shervin has been with Illumina for nearly 5 years in both Strategic Account Management and Market Development roles and has over 16 years of experience in both commercial sales and research across a diverse spectrum of biotech companies. Shervin holds a Bachelor's degree in Microbiology from the University of California, Santa Barbara and a Master's degree in Molecular Biology from San Francisco State University. Shervin holds a Bachelor's degree in Microbiology from the University of California, Santa Barbara and a Master's degree in Molecular Biology from San Francisco State University and the University of California, San Francisco.

Manolis Kellis, PhD

@ManolisKellis

Manolis Kellis is a Professor of Computer Science at MIT, an Institute Member of the Broad Institute of MIT and Harvard, and a member of the Computer Science and Artificial Intelligence Lab at MIT where he directs the MIT Computational Biology Group (compbio.mit.edu). His research has spanned an unusually broad spectrum of areas, including disease genetics, epigenomics, gene circuitry, non-coding RNAs, comparative genomics, and phylogenetics. He has authored more than 140 journal publications that have been cited more than 36,000 times. He has helped direct several large-scale genomics projects, including the Roadmap Epigenomics project, the comparative analysis of 29 mammals, the human and the Drosophila Encyclopedia of DNA Elements (ENCODE) project, and the Genotype Tissue-Expression (GTEx) project. He received the US Presidential Early Career Award in Science and Engineering (PECASE), the NSF CAREER Award, and the Alfred P. Sloan Fellowship. He obtained his Ph.D. from MIT, where he received the Sprowls Award for the best doctorate thesis in computer science. He lived in Greece and France before moving to the US.

Joel Krier, MD, MMSc

Dr. Joel Krier is a clinical geneticist and translational genomics researcher. He is Clinical Chief of the Genetics and Genomic Medicine Service in the Division of Genetics at Brigham and Women's Hospital, and is the director of Brigham Genomic Medicine, a multidisciplinary rare disease gene discovery initiative. He is a member of Dr. Robert Green's Genomes2People Translational Genomics Research Program. Dr. Krier completed his fellowship in Clinical Genetics at the Harvard Medical School (HMS) Genetics Training Program and holds a Master's Degree in Biomedical Informatics from HMS.

James Lu, MD, PhD

James is a co-founder and SVP of Applied Genomics at Helix, a consumer genomics company that is empowering every person to discover insights into his or her own DNA through an ecosystem of high-quality partners. Helix believes in a world where every person benefits from their biological information and is able to help all of humanity lead better lives. At Helix, James has responsibility for the scientific teams. Prior to Helix, James was an Associate in Research at Duke University where he focused on translational genomics and applying machine learning methodologies to electronic medical records. He holds an M.D. and Ph.D. from Baylor College of Medicine, and a B.S. and M.S. in Chemical Engineering from Stanford University.

Richard Maas, MD, PhD

Richard Maas is a Professor of Medicine at Harvard Medical School and Chief of the Division of Genetics at Brigham and Women's Hospital. He earned his undergraduate degree in chemistry from Dartmouth College before matriculating in the Vanderbilt M.D., Ph.D. program. Dr. Maas then pursued his internship and residency in Internal Medicine at Brigham and Women's Hospital and completed his postdoctoral training with Dr. Philip Leder in the Department of Genetics at Harvard Medical School. He joined the HMS faculty in the Division of Genetics at Brigham in 1989. Dr. Maas' research has focused on the molecular mechanisms of genes that control vertebrate organogenesis. Most recently, he has helped lead the implementation of genomic medicine at Brigham Women's Hospital, which involves the application of whole exome and whole genome sequencing and data interpretation to challenging human diseases. His honors include an NIH MERIT Award; election to membership in ASCI and as an AAAS Fellow; and appointments as NIH Study Section Chair, to an NIH Board of Scientific Counselors, and as an HHMI Investigator.

SPEAKERS

Daniel MacArthur, PhD

@DGMacarthur

Daniel MacArthur is an institute member at the Broad Institute of MIT and Harvard, and Co-Director of the Broad's Program in Medical and Population Genetics. In addition to his roles at the Broad, MacArthur is a group leader in the Analytic and Translational Genetics Unit at Massachusetts General Hospital and an Assistant Professor at Harvard Medical School. His work revolves around the extraction of functional information from large-scale genomic data.

Calum MacRae, MD

Dr. Calum MacRae is the Chief of Cardiovascular Medicine at Brigham and Women's Hospital and Associate Professor of Medicine at Harvard Medical School. He is also an Associate Member at the Broad Institute and a Principal Faculty Member at the Harvard Stem Cell Institute. A cardiologist, geneticist, and developmental biologist, he has trained in Edinburgh, London and Boston. He came to Harvard Medical School for a fellowship in cardiovascular genetics in 1991 and continued his research training at Massachusetts General Hospital in 1996 with a focus on developmental biology. He returned to Brigham and Women's Hospital in 2009 and rose to chief of cardiovascular medicine in 2014.

In October 2016, Dr. MacRae became the recipient of One Brave Idea, a $75 million 5-year research award to study coronary heart disease and its consequences. This unique team based program is funded by the American Heart Association, Verily Life Sciences, and AstraZeneca. His proposal was chosen amongst a group of 349 applicants from 22 countries who sought the project to identify an entirely new approach to eradicate the number one killer of Americans. His visionary approach holds promise for addressing a broad set of diseases.

Molly McGinniss, MS, LCGC

@MollyMcGinnis

Molly McGinniss, MS, LCGC is a Senior Market Development Manager with the Illumina Precision Health and Screening team. Her role focuses on advancing the use of whole genome sequencing in clinical care by providing access and education to healthy individuals through the Understand Your Genome (UYG) programs, MyGenome visualization software, and other research initiatives. Molly began her career at UC Davis Medical Center as a pediatric genetic counselor, developing a specialty in metabolic genetics and neurodevelopmental disorders. Later, she worked at Kaiser Permanente in Sacramento where she provided prenatal, pediatric, and adult genetic counseling services. Molly received her B.S in Biology from Loyola Marymount University in 2005 and her M.S. in Genetic Counseling from Boston University in 2009. Since graduation, she has maintained an active role in student education and mentoring. Molly is an Adjunct Professor in the Genetic Counseling Department at Augustana University and holds leadership roles within the National Society of Genetic Counselor's Precision Medicine and Industry Special Interest Groups.

Erica Ramos, MS, LCGC

@ERamosSD

Erica Ramos, MS, LCGC is an Associate Director, Market Development and Clinical Head of Illumina's Precision Health & Screening team and President-Elect for the National Society of Genetic Counselors, the leading professional organization for genetic counselors more than 3500 members strong. After 11 years in patient care, ranging from prenatal to cancer and adult, Ms. Ramos joined Illumina in the Clinical Services Laboratory, where she managed the clinical group that implemented interpretation and reporting processes for clinical whole genome sequencing (cWGS). Currently, she focuses on advancing the use of cWGS by providing access and education to healthy individuals through the Understand Your Genome program, MyGenome visualization software and other collaborations. Her focus on education extends to genetic counseling students and she is an Adjunct Professor in the Genetic Counseling Department at Augustana University. She also tweets from @ERamosSD about genomics and genetic counseling, music, travel and other interests.

Heidi L. Rehm, PhD, FACMG

@HeidiRehm

Heidi L. Rehm is a board-certified clinical laboratory geneticist and genomic medicine researcher. She is the Chief Laboratory Director at the Partners Laboratory for Molecular Medicine (LMM), the Medical Director of the Broad Institute Clinical Research Sequencing Platform, and Associate Professor of Pathology at Brigham & Women's Hospital and Harvard Medical School. She is a leader in defining standards for the interpretation of sequence variants and a principal investigator of ClinGen, providing free and publicly accessible resources to support the interpretation of genes and variants. Dr. Rehm also co-leads the Broad Center for Mendelian Genomics with Daniel MacArthur, focused on discovering novel rare disease genes, and co-leads the Matchmaker Exchange to also aid in rare disease gene discovery. She is a strong advocate and pioneer of open science and data sharing, working to extend these approaches through her role as a member of the steering committee of the Global Alliance for Genomics and Health. Dr. Rehm is also a co-investigator of the BabySeq Project, exploring the clinical use of genome sequencing as an adjunct to newborn screening, principal investigator in the eMERGE consortium supporting genomic discovery and genomic medicine implementation research, and a principal investigator on a project to develop i2b2 into a Health Innovation Platform for clinical decision support.

Jacquelyn Taylor, PhD, RN

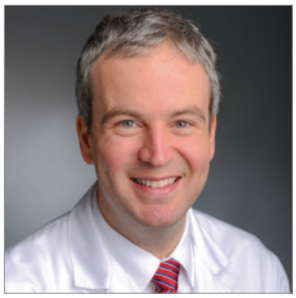
@JYTaylor007

Jacquelyn Taylor is an Associate Professor and Associate Dean of Diversity and Inclusion at the Yale University School of Nursing. Taylor's work focuses on the genomics of chronic disease among Black populations. Her current R01 examines the gene-environment and DNAm-environment interactions of perceived racism and discrimination, parenting stress, and maternal mental health on blood pressure on African American mothers and their young children. Dr. Taylor is also conducting a study on the genomics of lead poisoning in Flint, MI. She was recently awarded the Presidential Early Career Award for Scientists and Engineers (PECASE) by President Barack Obama, the highest honor awarded by the federal government to scientists and engineers. Her long-term goals are to develop nursing interventions to prevent and reduce omic-environment risks associated with health disparities.

Hannah Valantine, MD, MRCP

@HannahValantine

Hannah Valantine is the first NIH Chief Officer for Scientific Workforce Diversity, and a Senior Investigator in the Intramural Research Program at the National Heart, Lung, and Blood Institute. Prior to starting this position in April 2014, Dr. Valantine was Professor of Cardiovascular Medicine and the Senior Associate Dean for Diversity and Leadership at Stanford, a leadership position she held since November 2004. She is nationally recognized for her transformative approaches to diversity and is a recipient of the NIH Director's Pathfinder Award for Diversity in the Scientific Workforce. She is currently leading NIH efforts to promote diversity through innovation across the NIH-funded biomedical workforce through a range of evidence-based approaches. Dr. Valantine maintains an active clinical research program that continues to have high impact on patient care. Current research extends her previous finding that an organ transplant is essentially a genome transplant, and that monitoring the level of donor DNA in a recipient's blood as a marker of organ damage will detect early stages of rejection. She is currently overseeing a multi-site consortium of mid-Atlantic transplant centers to validate these findings clinically toward the development of a non-invasive tool for detecting early signs of organ rejection.



Eliezer Van Allen, MD

Dr. Van Allen is an Assistant Professor of Medicine at Harvard Medical School, a clinician at Dana-Farber/Partners Cancer Care, and an Associate Member at the Broad Institute of MIT and Harvard. His research focuses on computational cancer genomics, the application of new technologies such as massively parallel sequencing to precision cancer medicine, and resistance to targeted therapeutics. As both a computational biologist and medical oncologist, he has specific expertise in clinical computational oncology and the development of algorithms to analyze and interpret genomic data for clinically focused questions. Overall, his research will make important contributions to the field of precision cancer medicine and resistance to targeted therapeutics via expertise and study in translational and clinical bioinformatics. Originally from Los Angeles, CA, he studied Symbolic Systems at Stanford University, obtained his M.D. from UCLA, and completed a residency in internal medicine at UCSF before coming to Boston and completing a medical oncology fellowship at the Dana-Farber/Partners Cancer Care program.