

Roundtable on Genomics and Precision Health

Fall 2025 Workshop

October 28, 2025

Exploring Applications of AI in Genomics and Precision Health: A Workshop

[Remote Log on Information](#)

Public Workshop (8:30 AM - 5 PM ET)

https://www.nationalacademies.org/event/44932_10-2025_exploring-applications-of-ai-in-genomics-and-precision-health-a-workshop

Roundtable on Genomics and Precision Health

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October 28, 2025

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AGENDA

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

PURPOSE

A planning committee of the National Academies of Sciences, Engineering, and Medicine will organize and conduct a public workshop to explore the role of artificial intelligence (AI) in advancing genomics and precision health. The overarching goal of the workshop is to explore current and potential future applications for AI in genomics and precision health along the continuum from translational research to clinical applications.

The workshop may include invited presentations and panel discussions to:

- Explore how AI has been implemented in genomics and precision health settings to date (e.g., variant interpretation, data integration, patient and participant identification, return of results, treatment selection).
- Discuss ways in which AI may be applied in the near future, including for multi-modal diagnostics and translational genomics research, while considering the potential benefits and challenges related to data harmonization and security, workforce, and usefulness for all.
- Consider how the accuracy of, and bias inherent to, AI technologies are evaluated and their potential impacts on AI applications in genomics-related research and clinical care.
- Examine lessons learned from applications of AI in other fields that may be transferable to genomics and precision health throughout the translational research process.

The planning committee will organize the workshop, develop the agenda, select and invite speakers and discussants, and moderate or identify moderators for the discussions. Proceedings-in brief of the presentations and discussions at the workshop will be prepared by a designated rapporteur in accordance with institutional guidelines.

Tuesday, October 28, 2025

SESSION I: Opening Remarks & Keynote

8:30–8:35 AM ET

Welcoming Remarks

Catherine (Cathy) Wicklund, *Roundtable Co-Chair*
Representing National Society of Genetic Counselors
Senior Manager and Medical Science Liaison, Clinical Strategy Lead
Myriad Genetics
Adjunct Professor of Obstetrics and Gynecology (Clinical Genetics)
Feinberg School of Medicine, Center for Genetic Medicine
Northwestern University

Robert (Bob) Nussbaum, *Roundtable Co-chair*
Clinical Professor of Pediatrics
UCSF School of Medicine

8:35–8:45 AM

Introduction and Charge to the Workshop Speakers and Participants

Kunal Sanghavi, *Workshop Planning Committee Co-Chair*
Associate Director, Genetic Counseling
The Jackson Laboratory (JAX)

Grant Wood, *Workshop Planning Committee Co-Chair*
Former CEO
Global Genomic Medicine Collaborative (until its recent closure)

8:45–9:00 AM

Melissa Haendel
Director of Precision Health & Translational Informatics
Sarah Graham Kenan Distinguished Professor
Professor of Genetics and Pediatrics
School of Data Science and Society
Deputy Director of Computational Science, NC TraCS
University of North Carolina Chapel Hill
Advisor for Research Data Interoperability, UNC Health System

9:00–9:15 AM

Jim Weinstein
Senior Vice President
Microsoft Health

9:15–9:35 AM

Fireside Chat
Moderator: Amanda Perl, ASHG

SESSION II: AI Applications in Translational Genomics Research

Moderator: Zhongming Zhao, UTHealth Houston

Objectives

- Explore current applications of artificial intelligence within translational genomics research.
- Consider how the accuracy of, and bias inherent to, AI technologies are evaluated and its potential impacts.
- Discuss the potential benefits and challenges of AI related to workforce and data harmonization and security.

9:35–9:40 AM

Introduction to the Session

9:40–9:55 AM

Laura Acqualagna
Director of AI/ML Engineering, AI and ML, R&D
GSK

9:55–10:10 AM

Kyle Farh
VP, Distinguished Scientist Artificial Intelligence Lab
Illumina

10:10–10:25 AM

Mark J. Kiel
Chief Science Officer
Genomenon, Inc.

10:25–10:55 AM

Panel Discussion
Key Questions:

- What are some near- and long-term future applications of AI that offer the most promise for researchers?

10:55–11:15 AM

Break

SESSION III: Genomics AI Applications for Clinicians

Moderator: Lee Sanders, Stanford, and Maia Hightower, Veritas Healthcare Insights

Objectives

- Explore current applications of artificial intelligence within clinical genomics and how they have been implemented.
- Consider how artificial intelligence impacts the clinical workflow.
- Discuss the potential benefits and challenges related to data harmonization and security, workforce, and usefulness for all of AI applications in clinical genomics.

11:15–11:20 AM

Introduction to the Session

11:20–11:35 AM

James Chen

Senior Vice President, Medical Informatics

Tempus AI

Associate Professor, Medical Oncology and Bioinformatics

The Ohio State University

11:35–11:50 AM

Nephi Walton

Associate Professor

Wake Forest University

11:50 AM–12:05 PM

Mullai Murugan

Director of Software Engineering

Baylor College of Medicine

12:05–12:35 PM

Panel Discussion

Key Questions:

- What are some near- and long-term future applications of AI that offer the most promise for clinicians?
- How can these applications be utilized in primary care to enable primary care physicians to incorporate genetics into their practice?

12:35–1:35 PM

Lunch Break

SESSION IV: AI Applications for Patient-Centered Care in Genomics and Precision Health

Moderator: Bimal Chaudhari, Nationwide Children's Hospital

Objectives

- Discuss artificial intelligence technologies that are impacting patient experiences within precision health.
- Explore considerations for uptake of these technologies including data privacy, ethics, and education.

1:35–1:40 PM

Introduction to the Session

1:40–1:50 PM

Will Greene

Foundation for Prader-Willi Research

1:50–2:05 PM

Robert R. Freimuth

Associate Professor of Biomedical Informatics

Associate Chair for Academic Affairs and Faculty Development,

Department of Artificial Intelligence and Informatics (AI&I)

Center for Individualized Medicine

Mayo Clinic

2:05–2:20 PM

Tina Hernandez-Boussard

Associate Dean of Research

Professor of Medicine (Biomedical Informatics), of Biomedical Data Science, of Surgery and, by courtesy, of Epidemiology and Population Health

Stanford University

2:20–2:35 PM

Shivani Nazareth

VP Digital Health Strategy

Myriad Genetics

2:35–3:05 PM

Panel Discussion

Key Questions:

- What are some near- and long-term future applications of AI that offer the most promise for patients?

3:05–3:25 PM

Break

SESSION V: Future State of Genomics AI Applications

Moderator: Adriana Huertas-Vazquez, Illumina, and Angela Starkweather, Rutgers University

Objectives

- Consider ways in which emerging AI applications could be applied in the future for multi-modal diagnostics and translational genomics research.
- Explore possible ways to ensure appropriate use of AI technologies in the future.
- Discuss how AI might impact the trustworthiness of researchers and clinicians.

3:25–3:30 PM

Introduction to the Session

3:30–3:45 PM

Leo Anthony Celi

Senior Research Scientist

Massachusetts Institute of Technology

Clinical Research Director, Laboratory of Computational Physiology

Co-Director

MIT Sana

Staff Physician, Division of Pulmonary, Critical Care and Sleep Medicine

Beth Israel Deaconess Medical Center

Associate Professor of Medicine

Harvard Medical School

3:45–4:00 PM

Cora Han

Chief Health Data Officer
University of California Health

4:00–4:15 PM

Ben Busby

Global Alliances Manager, Omics
NVIDIA

4:15–4:45 PM

Panel Discussion

Key Questions:

- How might emerging AI applications change processes throughout the genomics continuum?
- How might patient care and patients' engagement with their care be impacted by AI?

SESSION VI: Final Reflections

4:45–5:00 PM

Wrap Up and Adjourn

Kunal Sanghavi, *Workshop Planning Committee Co-Chair*

Grant Wood, *Workshop Planning Committee Co-Chair*

WORKSHOP INFORMATION

Exploring Applications of AI in Genomics and Precision Health: A Workshop

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Planning Committee Member Roster

Co-Chairs

Kunal Sanghavi, M.B.B.S., M.S., CGC
Associate Director, Genetic Counseling
The Jackson Laboratory (JAX)

Grant Wood
Former CEO
Global Genomic Medicine Collaborative (until its recent closure)

Members

Bimal P. Chaudhari, M.D., M.P.H.
Chair, Hospital Ethics
Assistant Professor of Pediatrics
Nationwide Children's Hospital
Associate Director of Biomedical Informatics
Clinical and Translational Sciences Institute
The Ohio State University

Robert R. Freimuth, Ph.D.
Associate Professor of Biomedical Informatics
Associate Chair for Academic Affairs and Faculty
Development, Department of Artificial Intelligence
and Informatics (AI&I)
Center for Individualized Medicine
Mayo Clinic

Maia Hightower, M.D., M.P.H., M.B.A.
Chief Executive Officer
Veritas Healthcare Insights, LLC

Adriana Huertas-Vazquez, Ph.D.
Senior Director, Medical Affairs
Illumina, Inc.

Amanda Perl
CEO
American Society of Human Genetics

Nalini Raghavachari, Ph.D.
Program Officer
Division of Geriatrics and Clinical Gerontology
National Institute on Aging, NIH

Lee Sanders, M.D., M.P.H.
Chief, Division of General Pediatrics
Professor of Pediatrics and Health Policy
Professor (by courtesy) Epidemiology and Population
Health and Freeman-Spogli Institute for
International Studies
Teaching Faculty, Hasso-Plattner Institute of Design
(d.School)
Director, Health Literacy Lab
Stanford University School of Medicine

Angela Starkweather, Ph.D., ACNP-BC, FAANP, FAAN
Representing American Academy of Nursing
Dean and Professor
Division of Nursing Science
Rutgers University School of Nursing

Zhongming Zhao, Ph.D., M.S.
Chair, Professor for Precision Health
Director, Center for Precision Health
UTHealth Houston

Planning Committee Member Biographies

Kunal Sanghavi, M.B.B.S., M.S., CGC, is the Associate Director for Genetic Counseling at the Jackson Laboratory for Genomic Medicine. Kunal leads projects on the strategic growth of ethical, legal, and social implications (ELSI) program and precision medicine translational research at The Jackson Laboratory (JAX) for Genomic Medicine. Kunal has developed and implemented multiple translational research studies including population genomic testing, integrating genetics/genomics into primary care, and genetic service delivery, including AI. Kunal remains interested in genetics beyond borders and continues to contribute to different professional societies and international networks. Kunal completed his medical training in Mumbai, India and genetic counseling program in Boston, USA.

Grant Wood served as the President and CEO of the Global Genomic Medicine Collaborative (GGMC), an international non-profit dedicated to promoting the collaboration of 90+ genomic research cohort organizations, and the implementation of genetic-based medicine, in over 45 countries. His background in healthcare delivery with a large US-based healthcare system included an informatics strategy to link genomic and family health history data to the electronic medical record, providing physicians with powerful diagnostic tools.

Grant is a prolific collaborator, contributing to international groups like HL7 and GA4GH on data standards. He has chaired committees, hosted conferences, and co-authored numerous publications. Grant has served for 15 years on the Board of Directors for AlphaNet, a non-profit that provides disease management services to people with Alpha-1 antitrypsin deficiency. Grant first worked with the NASEM in 2014 with its Action Collaborative titled *Integrating Genomic Information into the Electronic Health Record Ecosystem*.

Bimal P. Chaudhari, M.D., M.P.H., obtained his M.D. and an M.P.H. with concentration in Epidemiology and Bioethics from Boston University. After a pre-doctoral research fellowship in genetic epidemiology at Washington University in St. Louis, he completed clinical training pediatrics (University of Pittsburgh Medical Center), neonatal-perinatal medicine (McGaw Medical Center) and clinical genetics and genomics (Nationwide Children's Hospital). He also completed a post-doctoral fellowship in data science at Northwestern University. Dr. Chaudhari is currently a member of the Sections of Neonatology, Medical Genetics and Genomics and Co-Chair of Hospital Ethics at Nationwide Children's Hospital, a Principal Investigator at the Steve and Cindy Rasmussen Institute for Genomic Medicine as well as an Assistant Professor of Pediatrics at The Ohio State University College of Medicine. Dr. Chaudhari also serves as Associate Director of Biomedical Informatics at the NCH/OSU Clinical and Translational Sciences Institute.

Dr. Chaudhari's research focuses on a learning health systems approach to applications of genomic medicine in acute and critical care pediatric populations. Dr. Chaudhari's work involves transdisciplinary collaboration to design, implement and evaluation clinical informatics

interventions which address the challenge of making genomic medicine salient to non-geneticist health care providers. Overlapping fields and techniques include data visualization, machine learning, natural language processing, ontologies, clustering and distance measures, human computer interaction, computer supported collaborative work, user centered design and clinical decision support. By both generating foundational knowledge necessary to design such interventions and implementing and evaluating them in the real world, Dr. Chaudhari's work seeks to promote safety, improve outcomes and increase value in medically complex pediatric populations.

Robert Freimuth, Ph.D., is Associate Professor of Biomedical Informatics, Associate Chair for Academic Affairs and Faculty Development, and Chair of the Department of AI and Informatics at Mayo Clinic in Rochester, MN. Dr. Freimuth is an internationally recognized expert in genomic data and knowledge management. The goal of his research program is to realize the promise of precision medicine through the development of scalable and interoperable systems and knowledge management platforms, thereby facilitating research and enabling the clinical utilization of genomic data to improve patient health. He is passionate about developing robust, computable representations of data for genomic medicine. Dr. Freimuth is a member of several NIH research networks and a recipient of the 2021 NHGRI Genomic Innovator Award. Within the Center for Individualized Medicine he leads the development of novel systems to enable the integration of genomic data into the EHR and the delivery of genomic data to point of care through EHR-embedded apps. Early in his career, he received the Welch Young Investigator Award to support his research in this area. He has an extensive bibliography that includes original research and international standard specifications that have improved the interoperability and AI-readiness of genomic data. Dr. Freimuth holds leadership positions in several global standards development organizations, including co-chair of the HL7 Clinical Genomics Work Group and co-lead of the GA4GH Genomics Knowledge Standards Work Stream. He earned his Ph.D. degree in Molecular Pharmacology and Experimental Therapeutics from Mayo Clinic Graduate School of Biomedical Sciences, and he completed a post-doctoral fellowship in the Division of Molecular Oncology, Department of Medicine, Washington University.

Maia Hightower, M.D., M.P.H., M.B.A., is CEO & Founder of Veritas Healthcare Insights, LLC, specializing in healthcare AI implementation and digital transformation. A physician-executive with over 15 years of leadership, she previously served as EVP & Chief Digital Technology Officer at University of Chicago Medicine, spearheading digital transformation for the \$4B academic health system. Her prior roles include Chief Medical Information Officer at University of Utah Health and University of Iowa Hospitals & Clinics. Dr. Hightower's research and advocacy focuses on responsible AI and digital transformation, influencing policy at organizations like NCQA, NIH, and WHO. She was the founder and former CEO of Equality AI, an AI quality assurance technology company. She holds degrees from Cornell University (BA), University of Rochester (MD, MPH), UC San Diego (Internal Medicine/Pediatric Residencies), and the Wharton School (MBA).

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Adriana Huertas-Vazquez, Ph.D., is a Senior Director of Global Medical Affairs at Illumina, where she drives clinical adoption of genetics and genomics through evidence generation studies and medical education programs. She is also the Vice Chair of the Company Constituent Committee at the International Rare Disease Research Consortium, focusing on the efficient execution of rare disease research in the industry space.

Adriana received her Ph.D. in Biomedical Sciences from the National University of Mexico and completed her postdoctoral training in Human Genetics and Molecular Biology at the University of California, Los Angeles (UCLA). Prior to joining Illumina, she served as Senior Genetics Lead for Cardiometabolic Diseases at Merck, where she led a team of scientists applying human genetics, bioinformatics, and functional genomics tools to identify novel drug targets. Before her role at Merck, Adriana was an Associate Professor at UCLA, focusing on investigating the genetic architecture of cardiometabolic diseases across different populations. She is based in Los Angeles, California.

Amanda Perl is an established nonprofit executive with more than 24 years leading medical, scientific, and professional organizations. Perl has spent her career working with nonprofit organizations on educational program development, strategic planning, governance training and international program development. Prior to joining the American Society of Human Genetics (ASHG) as its Chief Executive Officer, Perl was the Executive Director of the American Thyroid Association where she led the staff and partnered with the Board of Directors to fulfill its mission of Optimal Thyroid Health for All. Before that, Perl was the Chief Global Member Engagement Officer at the Endocrine Society, where she led the team responsible for key organizational initiatives including governance, global society partnerships, member engagement, leadership development, and trainee programs. Perl has also served in leadership roles at the Institute of Food Technologists where she led its foundation fundraising and development activities, oversaw the launch and strategic direction for IFT's Certified Food Scientist program, cultivated global partnerships and led board and volunteer leadership development initiatives. Perl received a BA in Interdisciplinary Studies: Communications, Legal Institutions, Economics and Government and in Public Communication from American University in Washington, DC. An active member of the American Society of Association Executives, Perl was named one of the Association Forum's 40 Under 40 in 2014.

Nalini Raghavachari, Ph.D., is a Program Director in the Division of Geriatrics and Clinical Gerontology at the National Institute on Aging (NIA), part of the NIH in Bethesda, Maryland. Her work focuses on the genetics and genomics of exceptional longevity and healthy aging, with an emphasis on integrative multi-omic analyses, translational genomics, and the development of AI/ML approaches for data-driven discovery. She leads initiatives aimed at identifying protective molecular factors, predictive biomarkers, therapeutic targets, and interventions to enhance human healthspan and lifespan. Dr. Raghavachari earned her Ph.D. in Biochemistry from the

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University of Madras, India, where she studied lipid metabolism in coronary heart disease. She pursued postdoctoral training in genetic engineering and genomics at institutions including Baylor College of Medicine and Texas A&M University. Her industry experience includes roles at Procerus BioPharma—developing therapeutics for chemotherapy-induced alopecia—and Corning Life Sciences, where she advanced microarray-based genomic and proteomic technologies. She began her NIH career in 2003 at the Clinical Center, directing the Sickle Cell Genomics Program within the Critical Care Medicine Department. In 2005, she joined the intramural program of the National Heart, Lung, and Blood Institute (NHLBI), where she directed the Genomics Core Facility and contributed to genetic studies of vascular diseases, including the Framingham Heart Study. Since 2013, she has been with the extramural division of the NIA, leading programs that explore the molecular underpinnings of longevity and healthy aging.

Lee M. Sanders, MD, MPH is Professor of Pediatrics and Health Policy, and Division Chief for General Pediatrics at Stanford University. He holds joint appointments in the Department of Health Policy, Department of Epidemiology and Population Health and the Freeman Spogli Institute for International Studies. He teaches in the Human Biology Program and at the Hasso Plattner Institute of Design (Stanford d.School). With funding from NIH, CDC, PCORI and FDA -- Dr. Sanders founded and directs the Stanford Health Literacy Design Lab, which leverages AI and other novel technologies, alongside human-centered design, clinical-trial approaches and population science, to address health disparities. Working with colleagues across disciplines, he leads multi-disciplinary studies that aim to prevent obesity during early childhood, to mitigate the impact of immigration policy on child health, to inform education policy on the long-term consequences of preterm birth, and to improve coordinated care for people with chronic conditions. Dr. Sanders' newest venture is an initiative to build an "AI Design Studio for Population Health" -- applying novel analytic tools in support of front-line public health providers in underserved communities. As a multi-lingual primary-care physician -- Dr. Sanders cares for medically and socially complex children at Stanford Children's Health and at a federally qualified health center.

Angela Starkweather, PhD, ACNP-BC, FAANP, FAAN, is Dean and Professor at Rutgers School of Nursing and serves as the American Academy of Nursing representative. As an adult acute care nurse practitioner and nurse scientist, Dr. Starkweather has an ongoing program of research focused on identifying the biopsychosocial mechanisms of chronic pain and other comorbid symptoms and developing multi-level interventions to optimize symptom management and quality of life. Integrating multi-omic measures, her research uses artificial intelligence to examine longitudinal profiles and determine treatment targets. She works with interdisciplinary teams to implement evidence into practice and systems of care. Dr. Starkweather has been continuously NIH-funded over the past decade, has over 200 peer-reviewed publications, is editor of three books, and chief editor of *Cancer Nursing*, an international journal focused on oncology nursing research and practice.

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Dr. Zhongming Zhao holds University Chair for Precision Health. He is the founding director of the Center for Precision Health, and currently serves as the Vice President for Cancer Genomic Medicine, the University of Texas Health Science Center at Houston (UTHealth). Before he joined UTHealth in 2016, he was Ingram Endowed Professor of Cancer Research, Professor (tenured) in the Departments of Biomedical Informatics, Psychiatry, and Cancer Biology at Vanderbilt University Medical Center, Chief Bioinformatics Officer of the Vanderbilt-Ingram Cancer Center (VICC), Director of the VICC Bioinformatics Resource Center, and the Associate Director of the Vanderbilt Center for Quantitative Sciences. Dr. Zhao has a unique, interdisciplinary educational and research background. He completed his master's degrees in Genetics (1996), Biomathematics (1998), and Computer Science (2002), Ph.D. degree in Human and Molecular Genetics (2000), and Postdoctoral Fellowship in Bioinformatics (2001-2003). Dr. Zhao has broad interests in bioinformatics, genomics, data science/AI, population genetics, and precision medicine, and has co-authored over 500 total publications in these areas (cited by >30,000 times, H-index = 84). Dr. Zhao is the founding president of The International Association for Intelligent Biology and Medicine (IAIBM, 2018). He was elected as a fellow in the American College of Medical Informatics (ACMI, 2021), the American Medical Informatics Association (FAMIA, 2022), and the American Institute for Medical and Biological Engineering (AIMBE, 2023). Dr. Zhao has received several awards, including the Keck Foundation Post-doctoral Fellowship (twice: 2002, 2003), the NARSAD Young Investigator Award (twice: 2005, 2008), a NIH-funded VPSD Career Development Award in GI Cancer (2009), an Outstanding Achievement Award from the International Society of Intelligent Biological Medicine (2011), the Dean's Excellence Award for Research (SBMI, 2022), and the 2023 President's Scholar Award for Excellence in Research with the honorary title of President's Scholar.

Throughout his career, he has collaborated with numerous researchers while also pursuing his own independent research, funded by numerous federal, state, and foundation grants. He has trained more than 85 students and postdoctoral fellows (29 have become academic faculty, including department chair and assistant dean), mentored 14 junior faculty, and co-mentored/collaborated with five NIH K awardees.

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Speaker Biographies

Laura Acqualagna, Ph.D., is Director of AI and Machine Learning Engineering at GSK, where she leads the development of advanced machine learning-based products focused on computational pathology for precision medicine, clinical biomarker discovery, and companion diagnostics. With 15 years of experience, she specializes in applying AI and machine learning methods to solve complex biomedical challenges. Prior to joining GSK, Laura was a Research Associate at Technische Universität Berlin in the departments of Machine Learning and Neurotechnology. There, she developed novel Brain-Computer Interfaces for communication and control, as well as machine learning models to identify neural correlates of perception, attention, relevance, and motor imagination. Laura earned her PhD in Computer Science and Electrical Engineering from TU Berlin, Germany, and holds a MSc (first-class honours) in Neuroengineering from the University of Genoa, Italy.

Ben Busby, Ph.D., is the Global Alliances Manager for Omics at NVIDIA, with a deep interest in prototyping, disease subtyping, deep learning, and knowledge graphs. He is also an Adjunct Faculty member in the Computational Biology Department at Carnegie Mellon University. With over two decades of experience in the field, Ben has held various leadership and advisory roles, including Principal Scientist at DNAnexus, Data Science Advisor for Deloitte, and multiple positions at the National Center for Biotechnology Information (NCBI), where he served for over ten years. He is also an advisor for The Johns Hopkins University and Research to the People, and has a strong background in technical leadership and innovation in teaching. His work has focused on developing novel methods to evaluate large-scale genomic, phenotype and imaging data, driving advancements in computational biology and data science education.

Leo Anthony Celi, M.D., M.P.H., MSc, is the principal investigator behind the Medical Information Mart for Intensive Care (MIMIC) and its offsprings, MIMIC-CXR, MIMIC-ED, MIMIC-ECHO, and MIMIC-ECG. With close to 100k users worldwide, an open codebase, and close to 10k publications in Google Scholar, the datasets have undoubtedly shaped the course of machine learning in healthcare in the United States and beyond. His group has written 3 open-access textbooks: "Secondary Analysis of Electronic Health Records" in 2016, "Global Health Informatics: Principles of eHealth and mHealth to Improve Quality of Care" in 2017, and "Leveraging Data Science for Global Health" in 2020. The first has been downloaded close to 2 million times and translated into Mandarin, Spanish, Korean and Portuguese. The group has created two open online courses, "Global Health Informatics" and "Collaborative Data Science for Healthcare". Finally, in partnership with hospitals, universities and professional societies across the globe, Dr. Celi and his team have organized close to 100 health data science events in 29 countries, bringing together students, clinicians, researchers, and engineers to leverage data routinely collected in the process of care.

James L. Chen, M.D. is the Senior Vice President for Medical Informatics at Tempus. He is a recognized expert in rare cancers/sarcomas and a translational bioinformatician. In addition, Dr. Chen is an Associate

Professor, with a dual appointment in Medical Oncology and in Biomedical Informatics, at The Ohio State University (OSU). He is the former Clinical/Research Informatics Medical Director for the James Cancer Hospital and has chaired the Translational Bioinformatics group for the ALLIANCE clinical trials group. During his tenure as the chair of the ASCO Health IT Task Force, he named and led the initial development of the mCODE (minimal clinical oncology data element) standards initiative and currently is a champion with the FHIR/GenomeX initiative. He has served as Principal Investigator for several investigator-initiated rare disease trials and has over 60 peer reviewed publications. At OSU, he has trained multiple generations of bioinformaticians as course director for their translational bioinformatics graduate courses. Dr. Chen completed his undergraduate training at Harvard University and oncology training at the University of Chicago.

Kyle Farh, M.D., Ph.D., is Vice President at Illumina's Artificial Intelligence (AI) Lab for Genome Interpretation, where he deciphers the clinical impact of genetic variants in rare and common diseases. Towards this goal, Kyle leads a multidisciplinary research team of deep learning scientists, statistical geneticists, and molecular biologists. Prior to joining Illumina, Kyle was an attending physician at Boston Children's Hospital. Kyle completed his postdoc fellowship in Medical and Population Genetics at the Broad Institute, and received his PhD in Molecular Biology at MIT, MD at Harvard Medical School, and BS in Computer Science from Rice University.

Robert Freimuth, Ph.D., is Associate Professor of Biomedical Informatics, Associate Chair for Academic Affairs and Faculty Development, and Chair of the Department of AI and Informatics at Mayo Clinic in Rochester, MN. Dr. Freimuth is an internationally recognized expert in genomic data and knowledge management. The goal of his research program is to realize the promise of precision medicine through the development of scalable and interoperable systems and knowledge management platforms, thereby facilitating research and enabling the clinical utilization of genomic data to improve patient health. He is passionate about developing robust, computable representations of data for genomic medicine. Dr. Freimuth is a member of several NIH research networks and a recipient of the 2021 NHGRI Genomic Innovator Award. Within the Center for Individualized Medicine he leads the development of novel systems to enable the integration of genomic data into the EHR and the delivery of genomic data to point of care through EHR-embedded apps. Early in his career, he received the Welch Young Investigator Award to support his research in this area. He has an extensive bibliography that includes original research and international standard specifications that have improved the interoperability and AI-readiness of genomic data. Dr. Freimuth holds leadership positions in several global standards development organizations, including co-chair of the HL7 Clinical Genomics Work Group and co-lead of the GA4GH Genomics Knowledge Standards Work Stream. He earned his Ph.D. degree in Molecular Pharmacology and Experimental Therapeutics from Mayo Clinic Graduate School of Biomedical Sciences, and he completed a post-doctoral fellowship in the Division of Molecular Oncology, Department of Medicine, Washington University.

Will Greene is a rare disease researcher and patient advocate based in the San Francisco Bay Area. He serves on the board of the Foundation for Prader-Willi Research (FPWR), where he provides strategic oversight and supports efforts to accelerate research, advocacy, and community engagement. He is also lead author of a forthcoming white paper with the World Economic Forum exploring the case for greater societal investment in rare disease research. Before moving full-time into rare disease, Will spent more than a decade in strategic and commercial roles across the pharmaceutical, diagnostics, and digital health sectors, primarily in the Asia Pacific region. He has worked in corporate, startup, and nonprofit settings worldwide, leading initiatives that connect science, technology, and patient needs. His experience includes

projects in artificial intelligence, genomics, and precision health. Will holds a B.A. in Political Science from Amherst College.

Melissa Haendel, Ph.D., FACMI originally trained in molecular genetics, neuroscience, and developmental biology, is currently the Director of Precision Health & Translational Informatics at the University of North Carolina at Chapel Hill and Sarah Graham Kenan Distinguished Professor in the Departments of Genetics and Pediatrics. She also serves as Deputy Director of Computational Science at the NC Translational and Clinical Sciences Institute and Advisor for Research Data Interoperability at UNC Health. Her work advances genomic and translational medicine initiatives locally and globally, with a focus on data standards, healthcare integration, and community development. Dr. Haendel co-founded the Monarch Initiative, an international consortium that focuses on integrating diverse biomedical knowledge across species to aid genetic disease diagnosis and mechanism discovery. Monarch's standards such as Phenopackets and the Mondo disease ontology reconcile rare disease knowledge to help clinicians and AI tools utilize global rare disease knowledge to prioritize variants and identify drugs for repurposing. Dr. Haendel is also passionate about "putting the patient back together again," i.e. linking and integrating the varied sources about an individual in order to aid their precision health. Towards this vision, she co-founded the National Clinical Cohort Collaborative (N3C) - now the largest publicly available HIPAA-compliant electronic health record dataset in the U.S., as well as co-leading the NIH All of Us Center for Linkage and Acquisition of Data (CLAD). Melissa's expertise spans knowledge engineering, genetics, reproducibility, and biomedical ethics, with a long-standing commitment to team science and training. She actively mentors postdoctoral fellows and interdisciplinary trainees, helping prepare the next generation of researchers to advance precision medicine and responsible applications of AI in healthcare.

Cora Han, J.D., is Chief Health Data Officer for University of California Health. As a strategic leader at the intersection of healthcare, technology, and governance, Han directs the Center for Data-driven Insights and Innovation (CDI2), a systemwide data platform that leverages health data to improve care, drive research, and foster innovation. She also directs UC-wide data governance initiatives, including the responsible development and application of AI in healthcare. Previously, Han served as a senior attorney in the Federal Trade Commission's Division of Privacy and Identity Protection, where she played a leading role on health privacy matters in both enforcement and policy. She is a frequent speaker on artificial intelligence, data governance, and data privacy.

Tina Hernandez-Boussard, Ph.D., is the Associate Dean of Research and Professor of Medicine (Biomedical Informatics) at Stanford University. Her work is at the intersection of informatics and population health, promoting responsible AI across populations. She utilizes diverse, multimodal data to develop rigorous criteria and guidelines that steer the development of responsible AI, aiming to bridge gaps in health care and enhance patient outcomes. Dr. Hernandez-Boussard advocates for practices that ensure the benefits of digital technologies are realized across all segments of society.

Mark Kiel, M.D., Ph.D. completed his M.D., Ph.D. and Molecular Genetic Pathology Fellowship at the University of Michigan, where his research focused on stem cell biology, genomic profiling of hematopoietic malignancies, and clinical bioinformatics. He is the founder and chief scientific officer of Genomenon, a genomic intelligence company, where he oversees the company's scientific direction and product development. Dr. Kiel founded Genomenon in 2014 to address the challenge of connecting pharma researchers and clinicians with evidence in the genomic literature to help diagnose and treat patients with rare genetic diseases and cancer.

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Mullai Murugan, M.S., is Director of Software Engineering at Baylor College of Medicine's Human Genome Sequencing Center (HGSC). She leads the development of secure, HIPAA-compliant software for clinical genomic data management and reporting, including EHR integration using HL7 standards. Mullai has also architected and deployed scalable genomic and clinical datalake platforms for large-scale data analysis. Her recent focus is on leveraging generative AI and large language models to advance genomic medicine, developing AI-powered tools for personalized pharmacogenomics and variant interpretation aligned with ACMG and ClinGen guidelines.

Shivani Nazareth is a board-certified genetic counselor with direct patient experience in oncology and prenatal care. After 10+ years of clinical work, she noticed a frustrating pattern “genetic testing is typically offered only after a life-changing diagnosis. She ventured into the world of startups and health technology to build products that simplify earlier access to genetic information. She currently leads the digital health strategy at Myriad Genetics, where she vets technology platforms to seamlessly incorporate genetics into routine medicine. Shivani lives with her husband and twin daughters in Jersey City, where life revolves around soccer and snarky wit.

Nephi Walton, M.D., M.S., FACMG, is a clinical geneticist and clinical informaticist with a mission to integrate genomic information into everyday medical practice and scale precision medicine across all healthcare domains, particularly primary care. Dr Walton combines expertise in clinical genetics, informatics, software engineering, and artificial intelligence to implement genomic solutions at scale. He has experience with the of the largest population sequencing initiatives, including Geisinger's MyCode and Intermountain Healthcare's HerediGene™ where he spearheaded the return-of-results program aiming to deliver genomics-based care to over a million individuals across Utah, Idaho, and Nevada. Dr Walton is recognized for his work on embedding genomic data into electronic health records and clinical workflows. With formal training in both medicine and artificial intelligence he led the American Medical Informatics Association (AMIA) Genomics and Translational Bioinformatics Workgroup to develop recommendations for use of artificial intelligence in genomics. Recently he has served as a program director at the National Human Genome Research Institute (NHGRI) overseeing initiatives like AnVIL and eMERGE, as well as SBIR/STTR programs. He currently serves as a consultant in genomics and AI and continues his patient care as adjunct faculty at the University of Utah School of medicine.

James N. Weinstein, M.S., D.O., joined Microsoft in July 2018 SVP, leading strategy, and innovation. He has served 3 US Presidents regarding health strategy, worked on the ACA and helped establish the CMS/CMMI center for innovation. He was nominated by President Obama as an advisor to the VA system and served three VA secretaries. He is a pioneer in remote care delivery via telemedicine and remote sensor technologies. Dr. Weinstein is the immediate past Chief Executive Officer and President of Dartmouth-Health. He led national efforts in Patient Reported Outcome Measures (PROM's). Before becoming CEO/President of Dartmouth Health, he served as the inaugural Director of The Dartmouth Institute for Health Policy and Clinical Practice (TDI), home of the Dartmouth Atlas and held an endowed chair at Dartmouth. He is a Clinical Professor in the Kellogg School of Business, Northwestern and TUCK Business Schools. His Kellogg course is, "CEO Playbook for Health System Success". He has received more than \$70 million in federal funding and published 330 peer-reviewed articles. He has several podcasts and many national interviews including documentaries on Health care, Bill Moyers, Money Driven Medicine. He is a leader in advancing "informed choice". Dr. Weinstein is the longest standing editor-in-chief of major journal, Spine. His book, Unraveled, prescriptions to Repair a Broken Health Care System, 2016 served as a road map for many of the changes occurring in Health Care, globally and contributed to "The AI Revolution in Medicine: GPT-4 and Beyond," March 2023, and HBR, Ecosystem Transformation as a necessary part of health care reform.

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

SESSION I: Opening Remarks & Keynote

Session Objectives:

- Explore how AI is and could, in the future, be used in translational genomics research and genomics clinical care.

Questions to frame the keynote talk:

1. How is AI currently being used in genomics (translational research or clinical care)?
2. What are key challenges and opportunities for implementing AI technologies into genomics?

Key Questions for fireside chat:

3. What are some near- and long-term future applications of AI that offer the most promise for researchers?
4. How can researchers and clinicians consider and mitigate bias and data privacy issues prior to implementing new technologies?
5. How do we understand and address public “trust in AI” in the context of the clinical genomics continuum?
6. What are the benefits and risks of applying AI across the clinical genomics continuum?

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

SESSION II: AI Applications in Translational Genomics Research

Session Objectives:

- Explore current applications of artificial intelligence within translational genomics research.
- Consider how the accuracy of, and bias inherent to, AI technologies are evaluated and its potential impacts.
- Discuss the potential benefits and challenges of AI related to workforce and data harmonization and security.

Questions to frame speakers' talks:

1. What problems are AI currently solving in translational genomics research?
2. What are the benefits and challenges of AI in translational genomics research? Consider workforce, data harmonization, and data security issues.
3. How can these AI technologies and applications impact the outcome of the translational genomics research pipeline/workflow?

Key Questions for Speakers:

4. How are accuracy and bias of AI models evaluated and mitigated prior to implementation in genomics research?
5. What are some near- and long-term future applications of AI that offer the most promise for researchers? How might predictive modeling and digital twins impact the field?

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

SESSION III: Genomics AI Applications for Clinicians

Session Objectives:

- Explore current applications of artificial intelligence within clinical genomics and how they have been implemented.
- Consider how artificial intelligence impacts the clinical workflow.
- Discuss the potential benefits and challenges related to data harmonization and security, workforce, and usefulness for all of AI applications in clinical genomics.

Questions to frame speakers' talks:

1. What problems are AI solving currently for clinicians' genomic decision making?
2. What are the benefits and challenges of AI in clinical genomics care? Consider workforce needs, data harmonization, and data security issues.
3. How has AI impacted the clinical workflow in genomic test ordering, processing, and interpretation in primary care and subspecialty care? How do you foresee it impacting the workflow in the future?

Key Questions for Speakers:

4. How do we understand and address public "trust in AI" in the context of clinical genomics?
5. How are accuracy and bias of AI models evaluated and mitigated prior to implementation in clinical genomics?
6. What are some near- and long-term future applications of AI that offer the most promise for clinicians?
7. How can these applications be utilized in primary care to enable primary care physicians to incorporate genetics into their practice?
8. In your experience, what concerns and opportunities do patients most often raise regarding the use of AI in genetic and genomic testing and precision medicine treatment—particularly around issues like data privacy, interpretation of results, and personalized care?

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

SESSION IV: AI Applications for Patient-Centered Care in Genomics and Precision Health

Session Objectives:

- Discuss artificial intelligence technologies that are impacting patient experiences within precision health.
- Explore considerations for uptake of these technologies including data privacy, ethics, and education.

Questions to frame speakers' talks:

1. What problems are AI solving currently for patients, specifically related to genomics?
2. What are the benefits and challenges of AI in patient care, related to genomics? Consider workforce, educational resources, data harmonization, and data security issues.
3. How might patient care and patients' engagement with their care be impacted by AI? How do you foresee it impacting patient experiences in the future?
4. In your experience, what concerns and opportunities do patients most often raise regarding the use of AI in genetic and genomic testing and precision medicine treatment—particularly around issues like data privacy, interpretation of results, and personalized care?

Key Questions for Speakers:

5. How are accuracy and bias of AI models evaluated and mitigated prior to implementation?
6. What are some near- and long-term future applications of AI that offer the most promise for patient experience?
7. How can we best include the “patient voice and perspective” in new technologies to advance AI genomics?

Exploring Applications of AI in Genomics and Precision Health: A Workshop

October 28, 2025

SESSION V: Future State of Genomics AI Applications

Session Objectives:

- Consider ways in which emerging AI applications could be applied in the future for multi-modal diagnostics and translational genomics research.
- Explore ways to ensure appropriate use of AI technologies in the future.
- Discuss how AI might impact the trustworthiness of researchers and clinicians.

Questions to frame speakers' talks:

1. How might tools being currently used outside of the field of genomics be applied to the field in the future?
2. As new models and tools are designed, how could accuracy and bias be considered from the beginning of development? How can bias be mitigated?
3. How might AI impact the trustworthiness of researchers and clinicians?

Key Questions for Speakers:

4. How can appropriate use of AI technologies be ensured?
5. What are some near- and long-term future applications of AI that offer the most promise for the field of genomics and precision health?
6. What are the benefits and risks of applying AI across the clinical genomics continuum?
7. Who do we need at the table to imagine the future of AI application in genomics that have not yet been invited to the table?

Preventing Discrimination, Harassment, and Bullying: Policy for Participants in National Academies Activities

Purpose

To prohibit discrimination, harassment, and bullying for all participants in National Academies activities.

Applicability

All participants in all settings and locations in which the National Academies work and activities are conducted.

Preventing Discrimination, Harassment, and Bullying: Policy for Participants in National Academies Activities

The National Academies of Sciences, Engineering, and Medicine (National Academies) are committed to the principles of integrity, civility, and respect in all of our activities. We look to you to be a partner in this commitment by helping us to maintain a professional and cordial environment. **All forms of discrimination, harassment, and bullying are prohibited in any National Academies activity.** This policy applies to all participants in all settings and locations in which the National Academies work and activities are conducted, including committee meetings, workshops, conferences, and other work and social functions where employees, volunteers, sponsors, vendors, or guests are present.

Definitions

Discrimination is prejudicial treatment of individuals or groups of people based on their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature that creates an intimidating, hostile, or offensive environment.

Other types of harassment include any verbal or physical conduct directed at individuals or groups of people because of their race, ethnicity, color, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws, that creates an intimidating, hostile, or offensive environment.

Bullying is unwelcome, aggressive behavior involving the use of influence, threat, intimidation, or coercion to dominate others in the professional environment.

Reporting and Resolution

Any violation of this policy should be reported. If you experience or witness discrimination, harassment, or bullying, you are encouraged to make your unease or disapproval known to the individual at the time the incident occurs, if you are comfortable doing so. You are also urged to report any incident by:

- Filing a complaint through the National Academies Complaint Intake Form (<https://nas.hracity.net/webform/index/a5ed0226-f5e5-4da4-be0d-1daf8976f594>), and/or
- Filing a complaint with the Office of Human Resources at 202-334-3400 or hrservicecenter@nas.edu, or
- Reporting the incident to an employee involved in the activity in which the member or volunteer is participating, who will then file a complaint with the Office of Human Resources.

Complaints should be filed as soon as possible after an incident. To ensure the prompt and thorough investigation of the complaint, the complainant should provide as much information as is possible, such as names, dates, locations, and steps taken. The Office of Human Resources will investigate the alleged violation in consultation with the Office of the General Counsel.

If an investigation results in a finding that an individual has committed a violation, the National Academies will take the actions necessary to protect those involved in its activities from any future discrimination, harassment, or bullying, including in appropriate circumstances **the removal of an individual from current National Academies activities and a ban on participation in future activities.**

Confidentiality

Information contained in a complaint is kept confidential, and information is revealed only on a need-to-know basis. The National Academies will not retaliate or tolerate retaliation against anyone who makes a good faith report of discrimination, harassment, or bullying.

Responsible Party

The NRC Executive Officer is responsible for oversight of and substantive changes to the policy.

ANNOUNCEMENTS

Upcoming Workshop!

Developing Regenerative Medicine Therapies with Artificial Intelligence: A Workshop

November 18, 2025

Washington D.C.

Statement of Task:

A planning committee of the National Academies of Sciences, Engineering, and Medicine will organize and conduct a public workshop to explore the potential applications of AI as a tool in regenerative medicine throughout the product development pipeline. The overarching goal of this workshop is to consider the opportunities and challenges with using AI to enhance the translation of regenerative medicine therapies.

The public workshop may include invited presentations and discussions to:

- Explore how AI can be used to improve the discovery of regenerative medicine therapies and the development of related technologies that improve therapy efficacy.
- Consider the applications of AI with pre-clinical models in translational research to more effectively optimize these systems and analyze large data sets derived from these systems, including opportunities to provide supplemental nonclinical data.
- Examine the potential uses of AI to support regenerative medicine clinical trials and regulatory processes by understanding the role of AI in informing innovative trial designs and predicting and evaluating clinical outcomes, such as in pharmacovigilance.
- Explore the growing opportunities to leverage AI in the manufacturing process for regenerative medicine products, including in combination with other advanced biomanufacturing methods.
- Discuss the ethical and legal implications for AI in regenerative medicine and the ways AI can improve safe and effective regenerative medicine therapies.

Planning Committee Member Roster:

Co-Chairs

Anne Plant, Ph.D.

Emeritus Fellow
National Institute of Standards and
Technology

Nabiha Saklayen, Ph.D.

CEO & Co-Founder
Cellino

Members

Ronald Bartek

President and Co-Founder
Friedreich's Ataxia Research Alliance (FARA)

Kapil Bharti, Ph.D.

Scientific Director
Senior Investigator
Ocular and Stem Cell Translation Research
Center
NIH National Eye Institute

Timothy Chan, M.D., Ph.D.

Chair, Center for Immunotherapy & Precision
Immuno-Oncology
Director, Global Center for Immunotherapy,
Cleveland Clinic
Co-Director, National Center for Regenerative
Medicine
Program Leader, Immune Oncology Program,
Case Comprehensive Cancer Center
Sheikha Fatima bint Mubarak Endowed Chair
in Immunotherapy
Cleveland Clinic

Christopher Hartshorn, Ph.D.

Chief of Digital & Mobile Technologies Section
NIH National Center for Advancing
Translational Sciences

Rosario Isasi, J.D., M.P.H.

Associate Professor of Human Genetics
Adjunct Professor of Law
Director, Program in Genome Ethics and
Policy
Dr. John T. Macdonald Foundation
Department of Human Genetics

John P. Hussman Institute for Human
Genomics
Interdisciplinary Stem Cell Institute
Leonard M. Miller School of Medicine
University of Miami

Amritha Jaishankar, Ph.D.

Executive Director, Cell and Gene Therapy
Center
Global Head, Cell and Gene Therapy
Lifecycle Strategy
IQVIA

John Knighton, Ph.D.

Vice President, Cell & Gene Therapy API
Development
Johnson & Johnson

Jagdeep Podichetty, Ph.D.

Senior Director of Predictive Analytics (AI/ML),
Quantitative Medicine
Critical Path Institute

Scott Steele, Ph.D.

Senior Advisor
US Food and Drug Administration

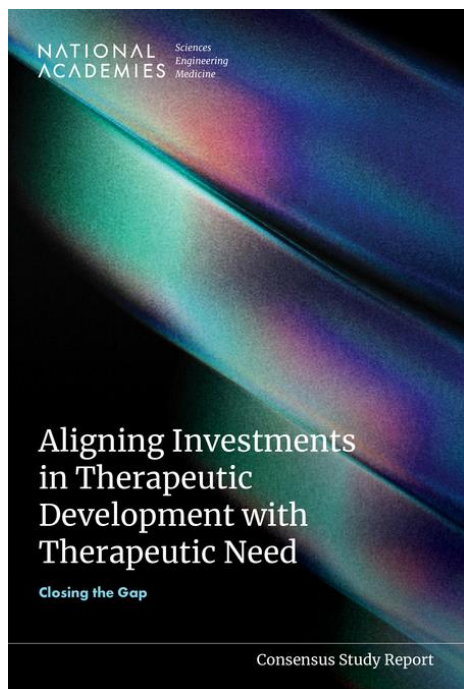
Claudia Zylberberg, Ph.D.

Executive Chair
Akron Biotech, LLC

New NASEM Consensus Study Report!

Aligning Investments in Therapeutic Development with Therapeutic Need: Closing the Gap

Link: <https://nap.nationalacademies.org/catalog/29157/aligning-investments-in-therapeutic-development-with-therapeutic-need-closing-the-gap>



The United States is a global leader in biomedical research, generating therapeutic breakthroughs that advance the health of the nation and the world. The public and private sectors contribute to this advancement by funding biomedical research and development. The current level of investment in pharmaceutical development in the United States, while substantial, does not always yield desired health outcomes or meet the needs of patients. Public and private funders face a myriad of challenges that affect their funding decisions and hinder the ability of the drug development system to prioritize disease burden and unmet need - often leaving critical gaps in available treatment options.

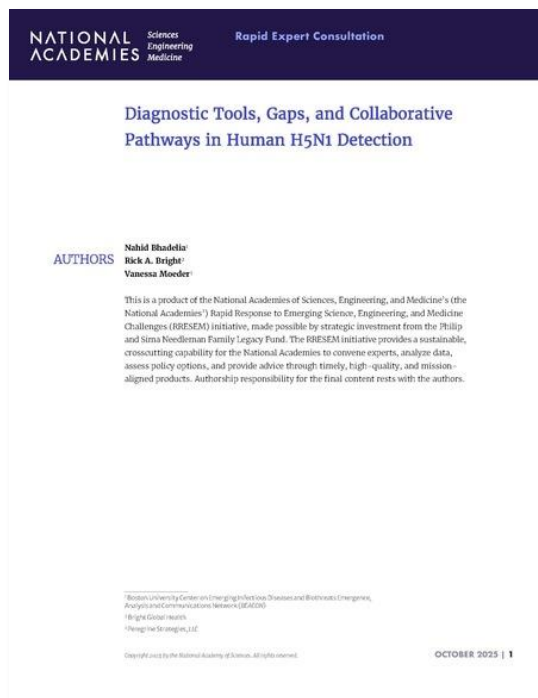
To better understand these gaps, Gates Ventures and the Peterson Center on Healthcare asked the National Academies to examine current challenges and offer strategies and recommendations for improvement. The resulting report emphasizes that current research prioritization does not systematically account for disease burden and unmet needs, and describes how a robust, timely, accessible data system is needed. It also explores the ways in which implementing recommended policy changes could deliver better health outcomes.

More resources are available through the [project page](#)
A recording of the report release webinar can be found [here](#)

New Rapid Expert Consultation Release

State of Human H5N1 Diagnostics

<https://nap.nationalacademies.org/catalog/29273/diagnostic-tools-gaps-and-collaborative-pathways-in-human-h5n1-detection>



The Overview of the Rapid Expert Consultation can be found here:

https://nap.nationalacademies.org/resource/29273/H5N1_Diagnostics_One_Pager.pdf

Diagnostics are the first line of defense to infectious disease outbreaks. The rapid spread of Influenza A (H5N1) or "Bird Flu" into U.S. dairy cattle, poultry, and humans underscores the urgent need for stronger diagnostic readiness. While sustained human-to-human transmission has not yet occurred with H5N1, the risk is growing. Currently there are knowledge gaps around early case identification measures, clinical management, and coordinated public health efforts.

In response, the National Academies produced a rapid expert consultation providing a strategic and actionable analysis for strengthening domestic diagnostic capacity and infrastructure. This is the first publication of the institution's new Rapid Response to Emerging Science, Engineering, and Medicine Challenges initiative, which provides a formal platform for proactively building sustainable, crosscutting rapid response capabilities.

New NASEM Consensus Study Report!

Simplifying Research Regulations and Policies: Optimizing American Science

Link: <https://nap.nationalacademies.org/catalog/29231/simplifying-research-regulations-and-policies-optimizing-american-science>



The U.S. scientific enterprise has produced countless discoveries that have led to significant advances in technology, health, security, safety, and economic prosperity. However, concern exists that excessive, uncoordinated, and duplicative policies and regulations surrounding research are hampering progress and jeopardizing American scientific competitiveness. Estimates suggest the typical U.S. academic researcher spends more than 40 percent of their federally funded research time on administrative and regulatory matters, wasting intellectual capacity and taxpayer dollars. Although administrative and regulatory compliance work can be vital aspects of research, the time spent by researchers on such activities continues to increase because of a dramatic rise in regulations, policies, and requirements over time.

To better ensure that the research community is maximally productive while simultaneously ensuring the safety, accountability, security, and ethical conduct of publicly funded research, *Simplifying Research Regulations and Policies: Optimizing American Science* examines current federal research regulations. This report identifies ways to improve regulatory processes and administrative tasks, reduce or eliminate unnecessary work, and modify and remove policies and regulations that have outlived their purpose while maintaining necessary and appropriate integrity, accountability, and oversight. *Simplifying Research Regulations* provides a roadmap for establishing a more agile and resource-effective regulatory framework for federally funded research.

More resources are available through the [project page](#)

A recording of the report release webinar can be found [here](#)

New NAS, NAM, & NAE Presidents



Neil H. Shubin to be the next NAS President. He will succeed Marcia McNutt when her second and final term ends on June 30, 2026.



Monica Bertagnolli to be the next NAM President. Bertagnolli will succeed Victor J. Dzau when his second and final term as president ends on June 30, 2026.



Tsu-Jae King Liu began her term as the 13th president of the NAE on July 1, 2025.

BACKGROUND MATERIALS

Links to Additional Resources

Session I: Opening Remarks & Keynote

- Solomon, et al. 2025. Perspectives on the Current and Future State of Artificial Intelligence in Medical Genetics. *American Journal of Medical Genetics Part A*.
<https://onlinelibrary.wiley.com/doi/pdf/10.1002/ajmg.a.64118>
- Boyle. 2024. Can AI fundamentally improve patient care?
<https://www.aamc.org/news/can-ai-fundamentally-improve-patient-care>
- NAM. 2025. An Artificial Intelligence Code of Conduct for Health and Medicine: Essential Guidance for Aligned Action. *The National Academies Press*
<https://nap.nationalacademies.org/catalog/29087/an-artificial-intelligence-code-of-conduct-for-health-and-medicine>

Session II: AI Applications in Translational Genomics Research

- Kurant. 2023. Opportunities and Challenges with Artificial Intelligence in Genomics. *Clinics in Laboratory Medicine* <https://doi.org/10.1016/j.cll.2022.09.007>
- Serrano, et al. 2024. Artificial Intelligence (AI) Applications in Drug Discovery and Drug Delivery: Revolutionizing Personalized Medicine. *Pharmaceutics*.
<https://doi.org/10.3390/pharmaceutics16101328>
- Wu & Xie. 2025. AI-drive multi-omics integration for multi-scale predictive modeling of genotype-environment-phenotype relationships. *Computational and Structural Biotechnology Journal*.
<https://www.sciencedirect.com/science/article/pii/S2001037024004513>
- Nam, et al. 2025. Harnessing AI in Multi-Modal Omics Data Integration: Paving the Path for the Next Frontier in Precision Medicine. *Annu Rev Biomed Data Sci*.
<https://doi.org/10.1146/annurev-biodatasci-102523-103801>
- Abdelwahab & Torkamaneh. 2025. Artificial intelligence in variant calling: A review. *Front. Bioinform*.
<https://www.frontiersin.org/journals/bioinformatics/articles/10.3389/fbinf.2025.1574359/full>

Session III: Genomics AI Applications for Clinicians

- Walton, et al. 2024. Enabling the clinical application of artificial intelligence in genomics: A perspective of the AMIA Genomics and Translational Bioinformatics Workgroup. *Journal of the American Medical Informatics Association*
<https://doi.org/10.1093/jamia/ocad211>
- Gomes & Ashley. 2023. Artificial Intelligence in Molecular Medicine. *NEJM*
<https://www.nejm.org/doi/full/10.1056/NEJMra2204787>

- Chen, Stumpe, & Cohen. 2024. Evolving from Discrete Molecular Data Integrations to Actionable Molecular Insights within the Electronic Health Record. *JCO Clinical Cancer Informatics*. <https://ascopubs.org/doi/full/10.1200/CCI.24.00011>
- Murugan, et al. 2024. Empowering personalized pharmacogenomics with generative AI solutions. *J Am Med Inform Assoc*. <https://doi.org/10.1093/jamia/ocae039>

Session IV: AI Applications for Patient-Centered Care in Genomics and Precision Health

- Nitibhon. 2023. Navigating AI Integration in Genetic Counseling: A Guide for the Profession. <https://perspectives.nsgc.org/Article/navigating-ai-integration-in-genetic-counseling-a-guide-for-the-profession>
- Ayers, et al. 2023. Comparing Physician and Artificial Intelligence Chatbot Responses to Patient Questions Posted to a Public Social Media Forum. *JAMA Intern Med*. <https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2804309>
- Greene. 2025. Three Ways AI is Changing Pediatric Genomic Medicine. <https://www.linkedin.com/pulse/three-ways-ai-changing-pediatric-genomic-medicine-will-greene-jczic/>
- CDSIC. 2025. Artificial Intelligence-Supported Patient-Centered Clinical Decision Support: A Summary of Considerations. <https://cdsic.ahrq.gov/cdsic/AI-topic-highlight>
- Kim, et al. 2025. Artificial intelligence tools in supporting healthcare professionals for tailored patient care. *npj Digital Medicine*. <https://www.nature.com/articles/s41746-025-01604-3>
- Nazareth, et al. 2021. Hereditary Cancer Risk Using a Genetic Chatbot Before Routine Care Visits. *Obstet Gynecol*. https://journals.lww.com/greenjournal/fulltext/2021/12000/hereditary_cancer_risk_using_a_genetic_chatbot.7.aspx

Session V: Future State of Genomics AI Applications

- Smith. 2024. The future of AI and precision health: What stands in the way. <https://www.ama-assn.org/practice-management/digital-health/future-ai-and-precision-health-what-stands-way>
- Collins, et al. 2024. TRIPOD+AI statement: updated guidance for reporting clinical prediction models that use regression or machine learning methods. *BMJ*. <https://doi.org/10.1136/bmj-2023-078378>
- Yeung, et al. 2023. The promise of digital healthcare technologies. <https://doi.org/10.3389/fpubh.2023.1196596>
- Abulibdeh R, Celi LA, Sejdić E. 2025. The illusion of safety: A report to the FDA on AI healthcare product approvals. *PLOS Digit Health* 4(6): e0000866. <https://doi.org/10.1371/journal.pdig.0000866>

GENOMICS ROUNDTABLE INFORMATION

Roundtable on **GENOMICS** and **PRECISION HEALTH**

The sequencing of the human genome is rapidly opening new doors to research and progress in biology, medicine, and health care. At the same time, these developments have produced a diversity of new issues to be addressed.

The National Academies of Sciences, Engineering, and Medicine has convened a Roundtable on Genomics and Precision Health (previously the Roundtable on Translating Genomic-Based Research for Health) that brings together leaders from academia, industry, government, foundations and associations, and representatives of patient and consumer interests who have a mutual concern and interest in addressing the issues surrounding the translation of genome-based research for use in maintaining and improving health. The mission of the Roundtable is to advance the field of genomics and improve the translation of research findings to health care, education, and policy. The Roundtable will discuss the translation process, identify challenges at various points in the process, and discuss approaches to address those challenges.

The field of genomics and its translation involves many disciplines, and takes place within different economic, social, and cultural contexts, necessitating a need for increased communication and understanding across these fields. As a convening mechanism for interested parties from diverse perspectives to meet and discuss complex issues of mutual concern in a neutral setting, the Roundtable: fosters dialogue across sectors and institutions; illuminates issues, but does not necessarily resolve them; and fosters collaboration among interested parties.

To achieve its objectives, the Roundtable conducts structured discussions, workshops, and symposia. Workshop summaries will be published and collaborative efforts among members are encouraged (e.g., journal articles). Specific issues

and agenda topics are determined by the Roundtable membership, and span a broad range of issues relevant to the translation process.

Issues may include the integration and coordination of genomic information into health care and public health including encompassing standards for genetic screening and testing, improving information technology for use in clinical decision making, ensuring access while protecting privacy, and using genomic information to reduce health disparities. The patient and family perspective on the use of genomic information for translation includes social and behavioral issues for target populations. There are evolving requirements for the health professional community, and the need to be able to understand and responsibly apply genomics to medicine and public health.

Of increasing importance is the need to identify the economic implications of using genome-based research for health. Such issues include incentives, cost-effectiveness, and sustainability.

Issues related to the developing science base are also important in the translation process. Such issues could include studies of gene-environment interactions, as well as the implications of genomics for complex disorders such as addiction, mental illness, and chronic diseases.

Roundtable sponsors include federal agencies, pharmaceutical companies, medical and scientific associations, foundations, and patient/public representatives. For more information about the Roundtable on Genomics and Precision Health, please visit our website at nationalacademies.org/GenomicsRT or contact Sarah Beachy at 202-334-2217, or by e-mail at sbeachy@nas.edu.

Roundtable on Genomics and Precision Health Membership

Robert Nussbaum, M.D. (Co-chair) UCSF Medical Center

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Health Resources and Services Administration

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