

# 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

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*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**  
Vice President and Distinguished Scientist, AI 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

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*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

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*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  
Executive Director  
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

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4:45–5:00 PM

**Wrap Up and Adjourn**

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

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