

PRECISION  
OPHTHALMOLOGY  
2025

IN OUR DNA  
06.14.25

 COLUMBIA | OPTHALMOLOGY



## KEYNOTE SPEAKERS

### The Future of Ophthalmology Research and Role of NEI



**Michael F. Chiang, MD, Director of the National Eye Institute**

Ulrich Ollendorff, MD Lecture

*“Data Science, AI, and the Future of Ophthalmology:  
Perspectives from the National Eye Institute”*

### Artificial Intelligence in Precision Medicine

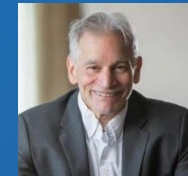


**Cecilia S. Lee, MD, MS, Professor at University of Washington**

George K. Smelser, PhD Lecture

*“Leveraging Big Data and AI for Precision Ophthalmology”*

### Regenerative Biology and Medicine



**Tom Reh, PhD, Professor at University of Washington**

Arthur Gerard DeVoe, MD Lecture

*“Stimulating Retinal Regeneration by Muller Glial Reprogramming  
In Vivo: Towards Clinical Applications in Retinal Disease”*

### Complex Genetics and Inheritance in Ophthalmology and Medicine



**Janey Wiggs, MD, PhD, Vice Chair of Clinical Research at Harvard**

Inaugural Lori Zabar Lecture

*“Using Glaucoma Polygenic Risk Scores to Guide Risk Stratification  
and Therapy”*

### Patient-Specific Therapies



**Andrea Califano, PhD, Professor at Dept. of Systems Biology at CUIMC**

Donald and Barbara Jonas Lecture

*“Targeting Tumor Heterogeneity One Cell at a Time”*

# Precision Ophthalmology™ 2025

## Program Organizers

Aliaa Abdelhakim, MD, PhD

Stephen Tsang, MD, PhD

Irene Maumenee, MD

G. A. “Jack” Cioffi, MD

Simon John, PhD

Xin Zhang, PhD

Jeffrey Liebmann, MD

## The Future of Ophthalmology Research & Role of NEI

Moderator: G. A. “Jack” Cioffi, MD

8:00am-8:05am Welcome Remarks

G. A. “Jack” Cioffi, MD & Aliaa Abdelhakim, MD, PhD

8:05am-8:35am **Ulrich Ollendorff, MD Lecture**

*Data Science, AI, and the Future of Ophthalmology: Perspectives from the National Eye Institute*

Michael F. Chiang, MD

Director of the National Eye Institute

8:35am-8:45am Q&A/Discussions

## Artificial Intelligence in Precision Medicine

Moderators: Xin Zhang, PhD and Tingting Yang, PhD

8:45am-9:15am **George K. Smelser, PhD Lecture**

*Leveraging Big Data and AI for Precision Ophthalmology*

Cecilia S. Lee, MD, MS

University of Washington, Seattle, WA

9:15am-9:30am *Closing the Loop: How Medical-Expert Eyes Inform AI and 3D AI-Attention*

*Mechanisms Elucidate Novel Ocular Biomarkers*

Kaveri Thakoor, PhD

Columbia University Irving Medical Center, New York, NY

9:30am-9:45am *Improving the Clinical Impact of Artificial Intelligence by Combining it with*

*Mathematical Modeling*

Alon Harris, MD, PhD, FARVO

Icahn School of Medicine at Mount Sinai, New York, NY

9:45am-10:00am *Large-Scale Generation of Reliable Evidence*

George M. Hripacsak, MD, MS

Columbia University Irving Medical Center, New York, NY

10:00am-10:10am Q&A/Discussions

10:10am – 10:30am Break

## Regenerative Biology and Medicine

Moderators: Stephen Tsang, MD, PhD and Janet Sparrow, PhD

10:30am-11:00am **Arthur Gerard DeVoe, MD Lecture**

*Stimulating Retinal Regeneration by Muller Glial Reprogramming In Vivo: Towards Clinical Applications in Retinal Disease*

Thomas A. Reh, PhD

University of Washington, Seattle, WA

11:00am-11:15am *Retinal Regeneration and the Hemoglobin Connection: New Frontiers in Treating Age-Related Macular Degeneration*

Tongalp H. Tezel, MD

Columbia University Irving Medical Center, New York, NY

11:15am-11:30am *Adult Human Derived RPE for AMD Cell Therapy*

Timothy A. Blenkinsop, PhD

Icahn School of Medicine at Mount Sinai, New York, NY

11:30am-11:45am *Modeling Early Differentiation, Axon Growth, and Axon Pathfinding of Human Retinal Ganglion Cells*

Wei Liu, PhD

Albert Einstein College of Medicine, New York, NY

11:45am-11:55am Q&A/Discussions

11:55am-1:00pm Lunch

## Complex Genetics and Inheritance in Ophthalmology and Medicine

Moderators: Simon John, PhD and Rando Allikmets, PhD

- 1:00pm-1:30pm **Inaugural Lori Zabar Lecture**  
*Using Glaucoma Polygenic Risk Scores to Guide Risk Stratification and Therapy*  
Janey Wiggs, MD, PhD  
Harvard School of Medicine, Boston, MA
- 1:30pm-1:45pm *Using Spatial Genomics to Study the Central Nervous System in Healthy Aging and Disease*  
Hemali Phatnani, PhD  
Columbia University Irving Medical Center, New York, NY
- 1:45pm-2:00pm *Single Cell Transcriptomics - A Transformative Tool for Precision Medicine in Pediatric Glaucoma*  
Revathi Balasubramanian, PhD  
Columbia University Irving Medical Center, New York, NY
- 2:00pm-2:15pm *New Genetic Insight into Kidney-Eye Syndromes*  
Ali G. Gharavi, MD  
Columbia University Irving Medical Center, New York, NY
- 2:15pm-2:25pm Q&A/Discussions
- 2:25pm-2:40pm Break

## Patient-Specific Therapies

Moderators: Irene Maumenee, MD & Aliaa Abdelhakim, MD, PhD

- 2:40pm-3:10pm **Donald and Barbara Jonas Lecture**  
*Targeting Tumor Heterogeneity One Cell at a Time*  
Andrea Califano, PhD  
Columbia University Irving Medical Center, New York, NY
- 3:10pm-3:25pm *A Patient-Specific Mouse Model with Defective Mitochondrial Function*  
Nan-Kai Wang, MD, PhD  
Columbia University Irving Medical Center, New York, NY

- 3:25pm-3:40pm *Patient-Specific Therapies: They Require Cutting Edge Science & More*  
Alison Bateman-House, PhD, MPH, MA  
NYU Langone Health, New York, NY
- 3:40pm-3:55pm *Beyond the Canon: Rethinking Genetic Logic in Inherited Retinal Disease Diagnosis*  
Winston Lee, PhD  
Columbia University Irving Medical Center, New York, NY
- 3:55pm-4:05pm Q&A/Discussions

*This activity is supported by independent educational grants from:*

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