

**ITMAT 18th Annual International Symposium
Monday and Tuesday, October 9-10, 2023
Perelman School of Medicine, University of Pennsylvania
Smilow Center for Translational Research (SCTR)
The Arthur H. Rubenstein Auditorium
3400 Civic Center Boulevard, Philadelphia, PA**

Origins, Emergence, Prediction and Perception of Disease: A Quantum of Solace

Monday, October 9 (Day 1)

Introduction

- 8:20 Garret A. FitzGerald, MD, FRS, Director, Institute for Translational Medicine and Therapeutics, McNeil Professor in Translational Medicine and Therapeutics, Perelman School of Medicine, University of Pennsylvania
- 8:25 Jon Epstein, MD, William Wikoff Smith Professor of Medicine (Cardiology) and Cell and Developmental Biology, Executive Vice Dean and Chief Scientific Officer, Perelman School of Medicine, Senior Vice President and Chief Scientific Officer, University of Pennsylvania Health System

Session 1: Genetic Origins, Patterns and Prediction of Disease

Chairs: Frederic D. Bushman, PhD, Professor and Chair, Department of Microbiology, Co-Director Center for Research on Coronaviruses and Other Emerging Pathogens, Co-Director PennCHOP Microbiome Program, Perelman School of Medicine, University of Pennsylvania and Daniel J. Rader, MD, Seymour Gray Professor of Molecular Medicine, Chair of the Department of Genetics, Chief of the Division of Translational Medicine and Human Genetics in the Department of Medicine, Associate Director of the Institute for Translational Medicine and Therapeutics, co-director of the Penn Medicine Biobank, Perelman School of Medicine, University of Pennsylvania

- 8:30 ***Climate Change, Past Epidemics, and Building an Equitable, Sustainable Future***
Gwen Robbins Schug, PhD, Professor of Biology, University of North Carolina Greensboro
- 9:00 ***Tracking a Killer: Using Ancient DNA to Understand the Evolutionary History of Tuberculosis***
Anne Stone, PhD, Regents' Professor, Arizona State University
- 9:30 ***Exploring Evolutionary Immunogenomics: Lessons from Our Ancestors and Past Pandemics***
Luis Barreiro, PhD, Professor, Section of Genetic Medicine, The University of Chicago
- 10:00 ***Coffee Break***

Chairs: Morris J. Brown, MD, FRCP, FMedSci, Professor of Endocrine Hypertension, Queen Mary University of London and Mark Kahn, MD, Edward S. Cooper, M.D./Norman Roosevelt and Elizabeth Meriwether McLure Professor, Perelman School of Medicine, University of Pennsylvania

10:30 ***African Evolutionary Genomics: Reconstructing Human Evolution and the Genetic Basis of Complex Adaptive Traits***

Sarah Tishkoff, PhD, David and Lyn Silfen University Professor, Department of Genetics and Biology, Perelman School of Medicine, University of Pennsylvania

11:00 ***Genetic and Phenotypic Associations with Clonal Hematopoiesis Phenotypes***

Michael D. Kessler, PhD, Manager, Statistical Genetics, Statistical Ophthalmology and Oncology Team, Analytical Genetics and Data Science Group, Regeneron Genetics Center, Regeneron Pharmaceuticals, Inc.

11:30 ***AI for Recognizing Phenotypes in Large Biobanks***

Russ B. Altman, MD, PhD, Kenneth Fong Professor of Bioengineering, Genetics, Medicine, and Biomedical Data Science and, by courtesy, Computer Science, Stanford University

12:00 ***Lunch***

Session 2: *Perception of Pain and Its Consequences*

Chairs: Veena Graff, MD, MS, Assistant Professor of Clinical Anesthesiology and Critical Care, Perelman School of Medicine, University of Pennsylvania and Katherine N. Theken, PharmD, PhD, Assistant Professor, Department of Oral and Maxillofacial Surgery/Pharmacology, School of Dental Medicine, University of Pennsylvania

1:00 ***Tumor-innervating Neurons Tune Cancer Immunity***

Sebastien Talbot, PhD, Tenured Associate Professor, Department of Biomedical and Molecular Sciences and Department of Biomedical and Molecular Sciences, Queen's University, Group Leader (adjunct), Department of Pharmacology and Physiology, Karolinska Institute, Canada Research Chair in Neuro-Immunology, Wallenberg Academy Fellow

1:30 ***Nociception and Pain in Humans Lacking Functional TRPV1 Channel***

Rachel Zaguri, PhD, The Hebrew University, Jerusalem, Israel

2:00 ***With Positive Energy: How Macrophages Control Pain***

Niels Eijkelkamp, PhD, Associate Professor, Group leader Neuroimmunology of Pain, University Medical Center Utrecht, Utrecht University

2:30 **Break**

Session 3: Genes, Environment and the Emergence of Disease

Chairs: Maja Buca, PhD, Professor of Genetics, Co-Director, Asperger Syndrome Program of Excellence, Department of Genetics, Perelman School of Medicine, University of Pennsylvania and Maayan Levy, PhD, Assistant Professor of Microbiology, Perelman School of Medicine, University of Pennsylvania

3:00 ***Toward a More Global Behavior Genetics: The Example of Drug Use***
Scott Vrieze, PhD, Associate Professor, University of Minnesota

3:30 ***Microbiome and Hematopoietic Cell Transplantation Toxicities Are Linked by Mucus***
Robert Jenq, MD, Associate Professor, MD Anderson Cancer Center, University of Texas

4:00 ***The Role of APOE and the Immune Response in tau-mediated Neurodegeneration***
David M. Holtzman, MD, Barbara Burton and Reuben M. Morris III Distinguished Professor, Washington University School of Medicine, St. Louis

4:30 **Conclusion**

6:30 **Reception and Dinner: The College of Physicians of Philadelphia**
19 South 22nd Street, Philadelphia
Dinner speaker: Shirley M. Tilghman, OC FRS, President Emeritus, Princeton University

Transportation will be provided to and from the dinner. Buses will depart from the front of the Perelman Center for Advanced Medicine (circular driveway in front of building that connects to the Smilow Center for Translational Research) at 6:10PM and will return to the Hilton Inn at Penn at approximately 9:00PM.

Speakers and chairs may take a shuttle bus from the Hilton Inn at Penn, Walnut Street entrance, departing at 6:10PM, returning to the hotel at approximately 9:00PM.

Tuesday, October 10 (Day 2)

Session 4: *Novel Approaches, Technologies and Resources*

Chairs: Arjun Raj, PhD, Professor of Genetics, University of Pennsylvania and Aalim M. Weljie, PhD, Associate Professor of Pharmacology, Perelman School of Medicine, University of Pennsylvania

9:00 ***Teaching Cells to Perform New Therapeutic Functions***
Ahmad (Mo) Khalil, PhD, Professor of Biomedical Engineering, Associate Director of the Biological Design Center, Boston University

9:30 ***Unraveling Functional Tissue Heterogeneity at the Single Cell Level by Deep Visual Proteomics***
Matthias Mann, PhD, Director at the Max Planck Institute of Biochemistry, Director of the Proteomics Program, Copenhagen University

10:00 ***The Tumor Ecosystem from Initiation to Spread, Captured by Spatially Resolved Transcriptomics***
Joakim Lundeberg, PhD, Professor, Department of Gene Technology, KTH Royal Institute of Technology, Science for Life Laboratory, Stockholm, Sweden

10:30 ***Coffee break***

Chairs: Brian Litt, MD, Perelman Professor of Neurology, Perelman School of Medicine, University of Pennsylvania and Elisabetta Manduchi, PhD, Department of Genetics, Perelman School of Medicine, University of Pennsylvania

11:00 ***Multi-organ Imaging Genomics: New Resources and Findings***
Bingxin Zhao, PhD, Assistant Professor, Department of Statistics and Data Science, The Wharton School, University of Pennsylvania

11:30 ***Predicting Gene Expression from DNA Sequence for Noncoding Variant Analysis***
David Kelley, PhD, Principal Investigator, Calico Life Sciences

12:00 ***Lunch Break***

Session 5: *A Quantum of Solace; Development, Aging and Regeneration*

Chairs: Emanuela Ricciotti, PharmD, PhD, Research Assistant Professor of Pharmacology, Perelman School of Medicine, University of Pennsylvania and

Shaon Sengupta, MBBS, MPH, FAAP, Assistant Professor of Pediatrics,
Perelman School of Medicine, University of Pennsylvania

1:00

Tour de Macrophages in Pulmonary Infections

Maziar Divangahi, PhD, Professor of Medicine, McGill University

1:30

Targeting Senescence to Improve Age-related Diseases

Makoto Nakanishi, MD, PhD, Professor and Dean, Institute of Medical Science,
University of Tokyo

2:00

Coffee break

Chairs: Amita Sehgal, PhD, John Musser Professor of Neuroscience, Director
Chronobiology and Sleep Institute, Perelman School of Medicine, University
of Pennsylvania and Benjamin Franklin Voight, PhD, Associate Professor of
Pharmacology, Director, Bioinformatics Concentration, ITMAT MSTR Program,
Perelman School of Medicine, University of Pennsylvania

2:30

After the Storm: Maintaining and Regenerating the Respiratory System

Edward E. Morrisey, PhD, Professor of Medicine and Director of the Penn-CHOP
Lung Biology Institute (LBI), University of Pennsylvania

3:00

Immunotoxin, α CD40 Combination Immunotherapy for Glioblastoma

Vidyalakshmi (Vidya) Chandramohan, PhD, MBA, Associate Professor, Duke
University

3:30

The Automation of Solace

Casey Greene, PhD, Chair, Department of Biomedical Informatics, University of
Colorado, Anschutz

4:00

Concluding Remarks

Garret A. FitzGerald, MD, FRS, Director, Institute for Translational Medicine and
Therapeutics, McNeil Professor in Translational Medicine and Therapeutics,
Perelman School of Medicine, University of Pennsylvania