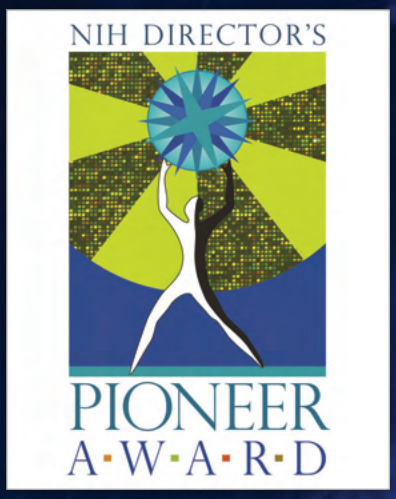
National Institutes of Health
Office of Strategic Coordination - The Common Fund

NIH Common Fund

2024 High-Risk, High-Reward Research Symposium

Program Book



The Bethesdan Hotel, Tapestry Collection by Hilton
8120 Wisconsin Avenue
Bethesda, MD

June 6-7, 2024

Program Description

The NIH Common Fund is a funding entity within NIH that supports bold scientific programs that catalyze discovery across all biomedical and behavioral research. These programs create a space where investigators and multiple NIH Institutes and Centers collaborate on innovative research expected to address high-priority challenges for NIH as a whole and make a broader impact in the scientific community. More information is available at commonfund.nih.gov.

The NIH Common Fund's High-Risk, High-Reward Research program was created to accelerate the pace of biomedical discoveries by supporting exceptionally creative scientists with highly innovative research ideas of unusually broad impact. Four initiatives within this program—the NIH Director's Pioneer, New Innovator, Transformative Research, and Early Independence Awards—serve distinct purposes in achieving this goal.

Pioneer Award: Supports scientists with outstanding records of creativity pursuing new research directions to develop pioneering approaches to major challenges in biomedical, social science, and behavioral research.

New Innovator Award: Supports unusually creative early-career stage investigators with highly innovative research ideas with the potential for broad impact.

Transformative Research Award: Supports individuals or teams proposing exceptionally innovative and/or unconventional research projects that have the potential to create or overturn fundamental paradigms.

Early Independence Award: Supports outstanding junior scientists with the intellect, scientific creativity, drive, and maturity to bypass the traditional postdoctoral training period to launch independent research careers.

Agenda

Thursday, June 6, 2024

Session 1

9:00 a.m.	**Pulin Li,** Massachusetts Institute of Technology *New Innovator Award* Reconstructing Developmental Signaling History of Single Cells Via Deep Learning
9:20 a.m.	**Buck Trible,** Harvard University *Early Independence Award* The Molecular Basis of Caste Development and Evolution in Ants
9:40 a.m.	**Diego Bohorquez,** Duke University *New Innovator Award* The Neural Basis of Sugar Cravings
10:00 a.m.	**BREAK**

Welcome from NIH Leadership

10:15 a.m.	**Tara Schwetz,** Deputy Director for Program Coordination, Planning, and Strategic Initiatives, Office of the Director, National Institutes of Health
10:30 a.m.	**Monica Bertagnolli,** Director, National Institutes of Health

Session 2

10:45 a.m.	**Leor Weinberger,** University of California, San Francisco *Transformative Research Award* Discovery of a New Class of Antivirals: Single-dose, 'drive' Therapies with a High Barrier to Resistance
11:05 a.m.	**Huan Bao,** Scripps Research *New Innovator Award* Designer Nanodiscs to Probe and Reprogram Membrane Biology **National Institute of General Medical Sciences*
11:25 a.m.	**Katherine White,** University of Notre Dame *New Innovator Award* Intracellular pH Regulates Stiffness-associated Cancer Behaviors
11:45 a.m.	**Nicolas Rohner,** Stowers Institute *New Innovator Award* Metabolic Adaptation to Nutrient Limitation in Vertebrates
12:05 p.m.	**LUNCH (ON YOUR OWN)**

Thursday Agenda Continued

Session 3

1:05 p.m.	**Jacob George,** University of Utah *Early Independence Award* Restoring Upper-Limb Function to Hemiparetic Stroke Patients with a Powered Orthosis Controlled by High-Density Electromyography and Machine Learning **Eunice Kennedy Shriver National Institute of Child Health and Human Development*
1:25 p.m.	**Paul Greer,** University of Massachusetts Medical School *New Innovator Award* High-throughput CRISPR Screening Links CAD loci to Endothelial Cell Programs and Causal Pathways
1:45 p.m.	**Cammie Lesser,** Massachusetts General Hospital; Harvard Medical School *Transformative Research Award* Bacterial Delivery Systems: From Pathogenesis to Therapeutics
2:05 p.m.	**Steven Schiff,** Yale University *Transformative Research Award* Neonatal Paenibacilliosis and Predictive Personalized Public Health
2:25 p.m.	**Gregory Corder,** University of Pennsylvania *New Innovator Award* Mimicking Opioid Analgesia in Cortical Pain Circuits **National Institute of General Medical Sciences*
2:45 p.m.	**William Peranteau,** The Children's Hospital of Philadelphia *New Innovator Award* In Utero Gene Editing for A Metabolic Liver Disease in Mice and Nonhuman Primates
3:05 p.m.	**BREAK**
3:20 p.m.	**POSTER SESSION** (Cordell, Wisconsin)
3:20 p.m.	**NIH STAFF OFFICE HOURS** (Bethesdan A, Rosedale, Arlington, Auburn, Rugby)
5:00 p.m.	**NETWORKING HAPPY HOUR** Fialova Bar (Hotel lobby)

Friday, June 7, 2024

Session 4

8:30 a.m.	**Jens Schmidt,** Michigan State University *New Innovator Award* Single-molecule Imaging Reveals the Kinetics of Non-Homologous End-Joining in Living Cells **National Institute of General Medical Sciences*
8:50 a.m.	**Bonnie Dittel,** Versiti Blood Research Institute *Transformative Research Award* Building a B Cell Adoptive Cell Therapy for Autoimmunity from the Ground Up
9:10 a.m.	**Jason Shepherd,** University of Utah *Transformative Research Award* Virus-like Intercellular Signaling in the Nervous System
9:30 a.m.	**Mandë Holford,** Hunter College; American Museum of Natural History *Pioneer Award* Decoding and Visualizing Venom Diversity and Neuronal Control of Envenomation in Cephalopods Cephalopods
9:50 a.m.	**Natasha Sheybani,** University of Virginia *Early Independence Award* Immunoengineering Next-Generation Cancer Therapies with Focused Ultrasound
10:10 a.m.	**BREAK**
10:30 a.m.	**POSTER SESSION** (Cordell, Wisconsin)
10:30 a.m.	**NIH STAFF OFFICE HOURS** (Bethesdan A, Rosedale, Arlington, Auburn, Rugby)
12:10 p.m.	**LUNCH (ON YOUR OWN)**

Session 5

1:10 p.m.	**Katherine Aboud,** Vanderbilt University *Early Independence Award* Characterization of Real-Time Brain Networks of Reading Comprehension in Adults Using Convergent fMRI-EEG
1:30 p.m.	**Yonatan Winetraub,** Stanford University *Early Independence Award* Noninvasive Virtual Biopsy Using Micro-Registered Optical Coherence Tomography (OCT) in Human Subjects
1:50 p.m.	**Ariel Furst,** Massachusetts General Hospital *New Innovator Award* Self-assembling Materials to Protect Microbes from Processing Stresses

Friday Agenda Continued

2:10 p.m.	**Alexandra-Chloé Villani,** Massachusetts General Hospital *New Innovator Award* Learning The Rules of Immune Tolerance Through the Lenses of the Achilles Heel of Cancer Immunotherapy
2:30 p.m.	**Ophir Shalem,** Children's Hospital of Philadelphia *New Innovator Award* Proteome-scale Measurements of Localization Dynamics Using Pooled Multiplexed Endogenous Gene Tagging and Optical Barcode Sequencing **National Institute of General Medical Sciences*
2:50 p.m.	**BREAK**
Session 6	
3:10 p.m.	**Rajat Gupta,** Brigham and Women's Hospital; Harvard Medical School *New Innovator Award* High-throughput CRISPR Screening Links CAD loci to Endothelial Cell Programs and Causal Pathways
3:30 p.m.	**Wesley Legant,** University of North Carolina at Chapel Hill *New Innovator Award* Lattice Light Sheet Microscopy – Innovations, Applications and Future Directions
3:50 p.m.	**Brian Brown,** Icahn School of Medicine at Mount Sinai *Transformative Research Award* Spatial Functional Genomics Identifies Regulators of Tumor Immunotherapy
4:10 p.m.	**Sylvie Naar,** Florida State University *Transformative Research Award* Developing Antiracism Interventions in Integrated Primary Care
4:30 p.m.	**Xuebing Wu,** Columbia University *New Innovator Award* Pervasive Noncoding Translation and Its Implications in Cancer, Immunity, Aging, and Evolution
4:50 p.m.	**Trish Labosky,** Program Leader, Office of Strategic Coordination, Office of the Director, National Institutes of Health Closing Remarks

Poster Sessions

Poster Number 1
Jala Ahmed, Icahn School of Medicine at Mount Sinai
Dendritic Cells Accelerate CAR T cells in Irradiated Tumors through Chimeric Synapses

Poster Number 2
Adam Bailey, University of Wisconsin – Madison
Non-occlusive Mesenteric Ischemia Precipitates the Intoxication Phase of Severe Yellow Fever

Poster Number 3
Mariko Bennett, Children's Hospital of Philadelphia
What Controls Microglial Viral Restriction?

Poster Number 4
Hsiao-Tuan Chao, Baylor College of Medicine
A Syndromic Neurodevelopmental Disorder Caused by Rare Variants in PPFIA3

Poster Number 5
Emily Ferenczi, Massachusetts General Hospital; Harvard Medical School
Pallidal Regulation of Motivated Behavior

Poster Number 6
Sarah Hill, Dana-Farber Cancer Institute
BRCA1 Functions in Replication Origin Regulation as Part of the ORFIUS Complex

Poster Number 7
Chi-Min Ho, Columbia University
In situ CryoET Reveals Translation Dynamics in Malaria Parasites

Poster Number 8
Steven Jonas, University of California, Los Angeles
Cargo-agnostic Lipid Nanoparticles for Correction of Cystic Fibrosis-Causing Mutations in Airway Stem Cells

Poster Number 9
Maia Kinnebrew, Stanford University
Identifying New Genes Controlling Cholesterol Homeostasis at the Cell Surface

Poster Number 10
Sergey Ovchinnikov, Massachusetts Institute of Technology
Protein Language Models Learn Evolutionary Statistics of Interacting Sequence Motifs

Poster Number 11
Margaux Pinney, University of California, San Francisco
The Adaptation of Enzyme Catalysis Across Billions of Years of Evolution

Poster Number 12
Kapil Ramachandran, Columbia University
Neuronal Plasma Membrane-Bound Proteasomes Define a New Paradigm of Proteostasis and Neuromodulation

Poster Number 13
Christina Theodoris, University of California, San Francisco
Transfer Learning Enables Predictions in Network Biology

Poster Number 14
Danielle Arigo, Rowan University
Mapping the Mechanisms Linking Social Comparison to Health Behavior: An Initial 3-Study Series

Poster Number 15
Anindita Basu, University of Chicago
Next Generation Single-Cell 'Omics for In-Operando Studies of Cell Interactions

Poster Number 16
John Blosnich, University of Southern California
Seeing Good People During Their Worst Moments: Pioneering upstream suicide prevention for industries of disruption

Poster Number 17
Carlos Carmona-Fontaine, New York University
Cooperative Nutrient Scavenging is an Evolutionary Advantage in Cancer

Poster Number 18
Calvin Carter, University of Iowa
Remote Control of Blood Glucose: Electromagnetic fields target free radical signaling networks to reprogram carbohydrate metabolism in Type 2 Diabetes

Poster Number 19
Lindsay Case, Massachusetts Institute of Technology
New Insights into the Molecular Regulation of Mechanotransduction

Poster Number 20
Xiaoyin Chen, Allen Institute
Whole-cortex in situ Sequencing Reveals Input-Dependent Area Identity

Poster Number 21
Deeptankar DeMazumder, University of Pittsburgh
Automated Bayesian Analysis of Sinus Rhythm Predicts the Incidence of New-Onset Atrial Fibrillation in Ethnically-Diverse Ostensibly-Healthy Men and Women and Adds Major Independent Prognostic Value to Conventional Risk Factors

Poster Number 22
Justin English, University of Utah
Synthetic Transcriptional Reporters to Map Pharmacological Effects in Receptor Mutations

Poster Number 23
Xiaojing Gao, Stanford University
DNA-free Circuits for Controlling and Probing Biology

Poster Number 24
Jellert Gaublomme, Columbia University
CRISPRmap: Sequencing-free Optical Pooled Screens Mapping Multi-Omic Phenotypes in Cells and Tissue

Poster Number 25
Rachel Goldstein, University of Maryland
Evaluating Antibiotic-Resistant Bacteria Exposures from Sanitary Sewer Overflows and Sewage Backups

Poster Number 26
Adam Granger, Broad Institute
Cell-type Composition and Synaptic Connectivity Changes in Mice Carrying Psychiatric Disease Risk Genes

Poster Number 27
Sinisa Hrvatin, Massachusetts Institute of Technology
A Hypothalamic-skeletal Muscle Pathway Regulating Glucose Metabolism and Insulin Resistance

Poster Number 28
Sung Soo Kim, University of California, Santa Barbara
Visual Processing During Navigation

Poster Number 29
April Kloxin, University of Delaware
Molecularly Engineered Systems for Studying Lung Injury and Disease

Poster Number 30
Erica Korb, University of Pennsylvania
The Epigenetic Encoding of Learning and Memory

Poster Number 31
Aditya Kunjapur, University of Delaware
Nitration of a Foreign Antigen Can Elicit a Stronger Immune Response

Poster Number 32
Zhongwei Li, University of Southern California
Nephron Progenitor Cell-Directed Modeling of Human Kidney Development, Disease, and Cellular Plasticity

Poster Number 33
Nathan Lord, University of Pittsburgh School of Medicine
Decoding the Spatial Grammar of Developmental Signaling

Poster Number 34
Matthew Lovett-Barron, University of California, San Diego
Development of Neural Circuits for Social Motion Perception in Schooling Fish

Poster Number 35
Tyler McCormick, University of Washington
AI Models are Great, but for How Long?

Poster Number 36
Aaron McKenna, Dartmouth College
Tracing the Evolution of Tumor Drug Resistance and Metastasis

Poster Number 37
Mustafa Mir, The Children's Hospital of Philadelphia
Molecular Kinetics of Gene Regulation During Embryonic Development

Poster Number 38
Ryuji Morizane, Massachusetts General Hospital
Advancing Disease Modeling and Therapeutics: Kidney Organoids and Organoid-on-a-Chip

Poster Number 39
JT Neal, Broad Institute
Building A Genome-Wide Atlas of Cell Morphology

Poster Number 40
Thomas Norman, Memorial Sloan-Kettering Cancer Center
Engineering the Transcriptome Using CRISPR Activation

Poster Number 41
Michael O'Donnell, Yale University
Gut-brain Communication Via Microbial Metabolites

Poster Number 41
Viviana Risca, The Rockefeller University
Regulation of Sub-kilobase Chromatin Folding

Poster Number 42
Danielle Schmitt, University of California, Los Angeles
Malibu: A Genetically Encoded Malonyl-CoA Intracellular Biosensor to Understand Dynamics

Poster Number 43
Lindsay Schwarz, St. Jude Children's Research Hospital
A Novel Single Vector Intersectional AAV Strategy for Interrogating Cellular Diversity and Brain Function

Poster Number 44
Jason Shepherd, University of Utah
Virus-like Intercellular Signaling in the Nervous System

Poster Number 45
Xiaoyu Shi, University of California, Irvine
Contacts Between Nuclear Invaginations and Nucleoli Upregulate Ribosome Biogenesis

Poster Number 46
Amy Shyer, The Rockefeller University
Supracellular Organization of Morphogenesis

Poster Number 47
Joanna Smeeton, Columbia University
Dynamic Cell Plasticity During Synovial Joint Regeneration in Adult Zebrafish

Poster Number 48
Colenso Speer, University of Maryland
Activity-dependent Development of a Retinohypothalamic Circuit Essential for Circadian Photoentrainment

Poster Number 49
Hadi Tavakoli Nia, Boston University
Crystal ribcage: A Platform for Probing Real-Time Lung Function at Cellular Resolution in Health and Disease

Poster Number 50
AJ te Velthuis, Princeton University
Aberrant Influenza Virus Transcription Termination Plays a Key Role in Innate Immune Activation

Poster Number 51
Chao Wang, Arizona State University
Nanoparticle-Supported, Rapid, Electronic Detecting System for Accessible Infectious Disease Diagnosis

Poster Number 52
Peter Washington, University of Hawaii at Manoa
Human-In-The-Loop Machine Learning to Diagnose ASD and ADHD in Adolescents from Digital Social Interactions

Poster Number 53
Jessica Weaver, Arizona State University
Immunosuppression-free Transplantation Through Placental Mimicry

Poster Number 54
Lu Wei, California Institute of Technology
Functional Bond-Selective Microscopy for Subcellular Bioanalysis

Poster Number 55
Jing Yan, Yale University
Single-cell Imaging Reveals Phenotypic Variation and Segregation in a Bacterial Biofilm

Poster Number 56
Aaron Young, Georgia Institute of Technology
End-to-end AI Learning for Personalized Generalization of Control for Wearable Robotics

Poster Number 57
Peter Dedon, Massachusetts Institute of Technology
Phosphorothioate Epigenetics of the Human Gut Microbiome

Poster Number 58
Qun Lu, East Carolina University; University of South Carolina
Towards Holistic Cdc42 Homeostatic Modulation to Broaden Therapeutic Landscape

Poster Number 59
Michael Roukes, California Institute of Technology
Next-generation Spatial-omics: High-throughput, Single-molecule Proteomic Imaging with Sub-Cellular Resolution

Poster Number 60
Fang Tian, Brigham and Women's Hospital
Flipping Germinal Centers for Vaccine Design

Poster Number 61
Patricia Clark, University of Notre Dame
Synonymous Codon Substitutions Modulate Transcription and Translation of a Divergent Upstream Gene by Modulating Antisense RNA Production

Poster Number 62
James Heyes, University of Utah
Circuit Dynamics in Medial Entorhinal Cortex Support Learning of Unique Trajectories Through Temporal Experience

Poster Number 63
John Ray, Benaroya Research Institute
Fine-mapping Autoimmune Genetic Risk with High Throughput Perturbations in Primary T Cells

2023 Awardees

NIH Director's Pioneer Awardees

Polly Fordyce, Ph.D., Stanford University
Using Microfluidics to Realize Patient-Specific Anti-Cancer Immunotherapies

William James Greenleaf, Ph.D., Dip. Comp. Sci., Stanford University
Combinatorial Cell State Engineering

Mandë Holford, Ph.D., Hunter College
Charting the Evolutionary Development of Novel Genes and the Molecular Mechanisms of Gland Tissue Organization in Cephalopods

Kevin B. Johnson, M.D., M.S., University of Pennsylvania
Helping Doctors Doctor: Using AI to Automate Documentation and De-Autonomate Health Care
**National Library of Medicine*

Tânia Reis, Ph.D., University of Colorado Anschutz Medical Campus
Food for Thought: A Virus-Like Signal for the Energetic Demands of Higher Cognitive Functions

Lei Stanley Qi, Ph.D., Stanford University
Manipulating and Interrogating Spatial Transcriptomics

Fan Wang, Ph.D., Massachusetts Institute of Technology
Unraveling the Neural Bases of Body Schema

Ilana Witten, Ph.D., Princeton University
Individual Differences Through Self-Reinforcement of Suboptimal Strategies

New Innovator Awardees

Brian A. Aguado, Ph.D., University of California, San Diego
Probing Sex Differences in Myocardial Fibrosis at Multiple Length Scales Using Biomaterials

Danielle (Dani) Arigo, Ph.D., Rowan University
A Paradigm Shift in Health Behavior Change: Understanding When and How Social Comparison Supports Healthy Behavior

Mustafa G. Aydogan, Ph.D., University of California, San Francisco
Decoding the Fundamental Principles of Autonomous Clocks: Mechanism, Design and Function

Katherine T. Baldwin, Ph.D., University of North Carolina at Chapel Hill
The Facts of the Matter: Decoding the Molecular Properties of Brain White Matter Using Cell-Type-Specific Quantitative Proteomics

Steven M. Banik, Ph.D., Stanford University
Mapping and Therapeutic Hijacking of Lysosomal Transport
**National Institute of General Medical Sciences*

Benjamin B Bartelle, Ph.D., Arizona State University
Bioengineering Tools to Resolve and Manipulate Neuroimmune Signaling
**National Institute of Mental Health*

Rohit Bose, M.D., Ph.D., University of California, San Francisco
Simulating Ancestrally Unbiased Tumor Evolution to Interrogate Drug Resistance

Nick Burton, Ph.D., Van Andel Institute
Identifying Microbial Mechanisms that Regulate Animal Insulin Signaling

Calvin Carter, Ph.D., University of Iowa Carver College of Medicine
Targeting Evolutionarily Encoded Molecular Antennae to Wirelessly Reprogram Systemic Metabolism

Scott M. Coyle, Ph.D., University of Wisconsin – Madison
Cellular FM-Radios: Seeing, Probing, and Perturbing Single-Cell Protein Activity Dynamics in Biological Systems with Frequency-Barcoded Spatiotemporal Signaling Circuits

Nathan Crook, Ph.D., North Carolina State University
Brewing Anti-Toxin Drugs Using Probiotic Yeast

Elizabeth E. Crouch, M.D., Ph.D., University of California, San Francisco
Vascular Mural Cells in the Development of the Blood Brain Barrier
**National Institute of Mental Health*

Felix Dietlein, M.D., Ph.D., Boston Children's Hospital; Dana-Farber Cancer Institute; Broad Institute; Harvard Medical School
Defining the Universal Genomic Language of Hallmarks in Tumor Development

Elizabeth (Lizzy) Draganova, Ph.D., Emory University School of Medicine
Under Pressure: Biophysical Mapping of Herpesvirus Capsid Assembly and Genome Packaging

Lucas Farnung, Ph.D., Harvard Medical School
Visualizing Mechanisms at the Intersection of Chromatin, Transcription, and Epigenetics

Antonio Fernandez-Ruiz, Ph.D., Cornell University
How Do Animals Learn the Structure of Their Natural Environment?
**National Institute of Mental Health*

Ariel L. Furst, Ph.D., Massachusetts Institute of Technology
Protecting Microbes So They Can Protect Us
**National Institute of General Medical Sciences*

Ruixuan Gao, Ph.D., University of Illinois Chicago
A Biochemical Approach Towards Subcellular, Label-Free Molecular Imaging
**National Institute of Mental Health*

Xiaojing Gao, Ph.D., Stanford University
A Novel Class of Synthetic Receptors to Empower the Age of mRNA Therapies

Christine Grienberger, Ph.D., Brandeis University
Unraveling the Synaptic and Circuit Mechanisms Underlying a Plasticity-Driving Instructive Signal

Alex Holehouse, Ph.D., Washington University School of Medicine in St. Louis
Uncovering the Regulatory Logic of Gene Expression Encoded by Disordered Regions

Krishna Jayant, Ph.D., Purdue University
Massively Scalable 3D Electrophysiology and Two-Photon Imaging in Freely-Moving Animals
**National Institute of Mental Health*

Marco Jost, Ph.D., Harvard Medical School
Capturing, Quantifying, and Understanding Combinatorial Effects in Small Molecule Signaling

Christina K. Kim, Ph.D., University of California, Davis
Activity-Dependent Probes for Spatially-Defined Proteomics

Jina Ko, Ph.D., University of Pennsylvania
Droplet-Based Spatially Encoded Live Cell Digital Extraction
**National Institute of General Medical Sciences*

Cheri A. Levinson, Ph.D., University of Louisville
Innovations in Personalizing Treatment for Eating Disorders Using Idiographic Methods and the Impact of Personalization on Psychological, Physical, and Sociodemographic Outcomes
**National Institute of Mental Health*

Jiahe Li, Ph.D., University of Michigan, Ann Arbor
Enzymatic and Genetic Strategies for Targeting Disease-Associated Microbial Metabolites
**National Institute of General Medical Sciences*

Michael Lodato, Ph.D., University of Massachusetts Chan Medical School
Spatial Single-Cell Analysis of Somatic Mutation in Human Brain During Aging and Neurodegeneration
**National Institute on Aging*

Nathan Lord, Ph.D., University of Pittsburgh
Decoding the Spatial Grammar of Developmental Signaling

Matthew Lovett-Barron, Ph.D., University of California, San Diego
Functional Maturation of Neural Circuits for Biological Motion Perception and Social Engagement

Ravi Maddipati, M.D., University of Texas Southwestern Medical Center
Optogenetic Engineering of Tumor Topography in Native Tissue Environments

Megan Martik, Ph.D., University of California, Berkeley
Reactivating Regulatory Programs for Regeneration

Michael Miller, M.D., Ph.D., Boston Children's Hospital; Dana-Farber Cancer Institute; Broad Institute; Harvard Medical School
Illuminating Neurodegenerative Tauopathy from Somatic Genomic Landscapes of Single Human Brain Cells
**National Institute on Aging*

Akankshi Munjal, Ph.D., Duke University
Multi-Scale Feedbacks for Robust Organ Development

Samira Musah, Ph.D., Duke University
Harnessing Stem Cells and Synthetic Gene Circuits to Repair Glomerular Injury

Mike O'Donnell, Ph.D., Yale University
Molecular Determinants of Host-Feeding Manipulation and Microbial Colonization
**National Institute of General Medical Sciences*

Kaspar Podgorski, Ph.D., Allen Institute
Measuring Input-Output Operations of Cortical Neurons with Large-Scale Neurotransmitter Imaging

John P. Ray, Ph.D., Benaroya Research Institute
Investigating Genetic and Epigenetic Control of T Cell Function in Autoimmunity

Filipa Rijo-Ferreira, Ph.D., University of California, Berkeley
Defining and Exploiting the Circadian Clocks in Malaria Parasites
**National Institute of General Medical Sciences*

Natalia M. Rodriguez, Ph.D., M.P.H., Purdue University
Addressing Cervical Cancer Disparities Among People Experiencing Homelessness

Rachel E. Rosenberg Goldstein, Ph.D., M.P.H., University of Maryland School of Public Health
Water Emergency Team (WET): Community-Driven Rapid Response Team to Evaluate Antibiotic-Resistant Bacteria Exposures and Household Environmental Health Risks from Sewer Overflows and Basement Flooding

Danielle L. Schmitt, Ph.D., University of California, Los Angeles
Imaging Spatiotemporal Regulation of Acetyl-CoA
**National Institute of General Medical Sciences*

Amy Shyer, Ph.D., The Rockefeller University
Studying the Cellular Ecology of Organ Formation Using a Novel Tissue Reconstitution System

Param Priya Singh, Ph.D., University of California, San Francisco
Decoding Natural Protective Mechanisms During Diapause and Longevity to Counter Aging

Mahdi Soltanolkotabi, Ph.D., University of Southern California
Reliable AI for Medical Image Reconstruction

Sarah Stern, Ph.D., Max Planck Florida Institute for Neuroscience
Identifying Neurons for Interoception Using Simultaneous Profiling of Activity- and Projection- Specific Populations

Jerzy O. Szablowski, Ph.D., Rice University
Monitoring Neuronal Activity with a Blood Test - Released Markers of Activity (RMA)

Geoffrey Tison, M.D., M.P.H., University of California, San Francisco
A Physiologically-Focused Approach to Training Multi-Modality AI Algorithms in Medicine

Christina Towers, Ph.D., Salk Institute for Biological Studies
Tracking the Mechanisms of Adaptation to Autophagy Inhibition

Neil Vasan, M.D., Ph.D., Columbia University Irving Medical Center
Base-Editing the Cancer Kinome to Enable Drug Discovery

Humsa Venkatesh, Ph.D., Brigham and Women's Hospital; Harvard Medical School
Unraveling Neural Circuitry in Peripheral Cancer Pathogenesis: From Local Innervation to Systemic Influences

Julea Vlassakis, Ph.D., Rice University
Deep Phenotyping of Fusion Oncoprotein-Driven Pediatric Cancer Metastasis with Single-Cell Proteomics

Peter Washington, Ph.D., University of Hawaii at Manoa
Crowd-Powered Machine Learning to Diagnose ASD and ADHD in Adolescents from Digital Social Interactions

Liangqi Frank Xie, Ph.D., Cleveland Clinic Lerner Research Institute
Live-Cell Chromatin Imaging and Biology: Application to Extrachromosomal DNA
**National Institute of General Medical Sciences*

Amol P. Yadav, Ph.D., Indiana University School of Medicine; University of North Carolina at Chapel Hill
Sensory Augmentation, Restoration, and Modulation Using a Spinal Neuroprosthesis

Xinzhu Yu, Ph.D., University of Illinois at Urbana-Champaign
Functional, Structural and Molecular Decoding of Astrocyte-Neuron Interaction

Xin Zhou, Ph.D., Dana-Farber Cancer Institute; Harvard Medical School
Engineering Programmable Enzymes for Proteome Editing
**National Institute of General Medical Sciences*

Chenxu Zhu, Ph.D., New York Genome Center; Weill Cornell Medicine
Studying the Regulatory Dynamics with Single-Cell Multiomics
**National Institute of General Medical Sciences*

NIH Director's Transformative Research Awardees

Aerielle M. Allen, Ph.D., Tufts University
Effects of Racism on Brain and Physiological Pathways to Health Disparities
**National Institute of Mental Health*

Maninjay K. Atianand, M.B.B.S., Ph.D., University of Pittsburgh School of Medicine
Unraveling Microprotein Biology with an Evolutionary-Immunological Framework

Anne-Ruxandra Carvunis, Ph.D., University of Pittsburgh
Unraveling Microprotein Biology with an Evolutionary-Immunological Framework

Alok V. Joglekar, Ph.D., University of Pittsburgh School of Medicine
Unraveling Microprotein Biology with an Evolutionary-Immunological Framework

Thomas Kodadek, Ph.D., Scripps Research
Development of Ubiquitin-Independent Degraders

Dmitry Rinberg, Ph.D., New York University, Grossman School of Medicine
Odorprint Based Disease Diagnostics

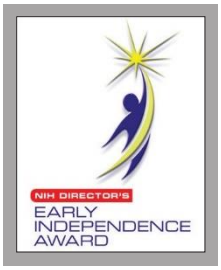
Michael Lee Roukes, Ph.D., California Institute of Technology
Next-Generation Spatial -Omics: High-Throughput, Single-Molecule Proteomic Imaging with Subcellular Resolution

Lisa Shin, Ph.D., Tufts University; Massachusetts General Hospital; Harvard Medical School
Effects of Racism on Brain and Physiological Pathways to Health Disparities
**National Institute of Mental Health*

Samuel R. Sommers, Ph.D., Tufts University
Effects of Racism on Brain and Physiological Pathways to Health Disparities
**National Institute of Mental Health*

Arvind R. Subramaniam, Ph.D., Fred Hutchinson Cancer Center
Unraveling Microprotein Biology with an Evolutionary-Immunological Framework

Brendesha Tynes, Ph.D., University of Southern California
Using Immersive Virtual Reality and Media Literacy to Enhance Adolescents Coping Skills in the Face of Traumatic Online Experiences



Early Independence Awardees

Mariko L. Bennett, M.D., Ph.D., Children's Hospital of Philadelphia; University of Pennsylvania
Unlocking Microglia Targeting for Neurotherapeutics

Anya Bershad, M.D., Ph.D., University of California, Los Angeles
MDMA as a Treatment for Social Deficits in Schizophrenia

Ryan S. Dhindsa, M.D., Ph.D., Baylor College of Medicine; Texas Children's Hospital
Identifying Transcriptomic and Epigenomic Convergence in Intellectual and Developmental Disorders

Emily A. Ferenczi, M.D. (BMBCh), Ph.D., Massachusetts General Hospital; Brigham and Women's Hospital; Harvard Medical School
Deciphering Neuronal Control of Behavioral Initiation and Suppression

Mohammed O. Gbadamosi, Ph.D., University of Florida
Decoding the Heterogeneity in Chemo-Immunomodulation to Unlock the Potential of Chemoimmunotherapy in Metastatic Triple-Negative Breast Cancer

Susan E. Gueble, M.D., Ph.D., Yale School of Medicine
Therapeutic Potential of a Novel MGMT-Dependent DNA Interstrand Crosslinking Agent in the Treatment of DNA Repair Deficient Cancer

Maia Kinnebrew, Ph.D., Stanford University
Deciphering the Lipid Composition of Primary Cilia in Human Metabolic Disease

Sudarshan Pinglay, Ph.D., University of Washington
Dissecting the Logic of Mammalian Gene Regulation Using Synthetic Biology and Single-Cell Sequencing

Ronald R. Seese, M.D., Ph.D., Northeast Ohio Medical University; Akron Children’s Hospital
Defining the Autonomic Cerebellum in Autism

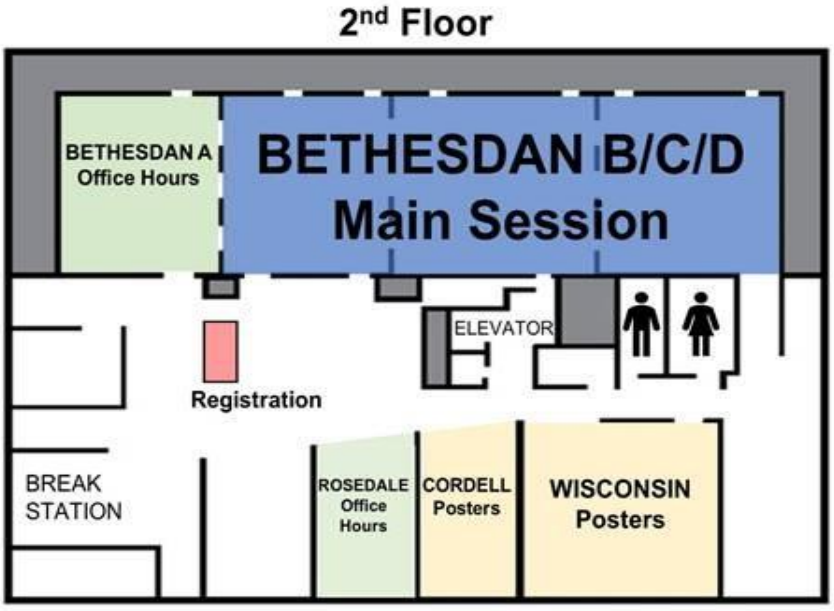
Sheila Shanmugan, M.D., Ph.D., University of Pennsylvania
Using Person-Specific Networks to Uncover Sex Differences in Vulnerability to Internalizing Disorders

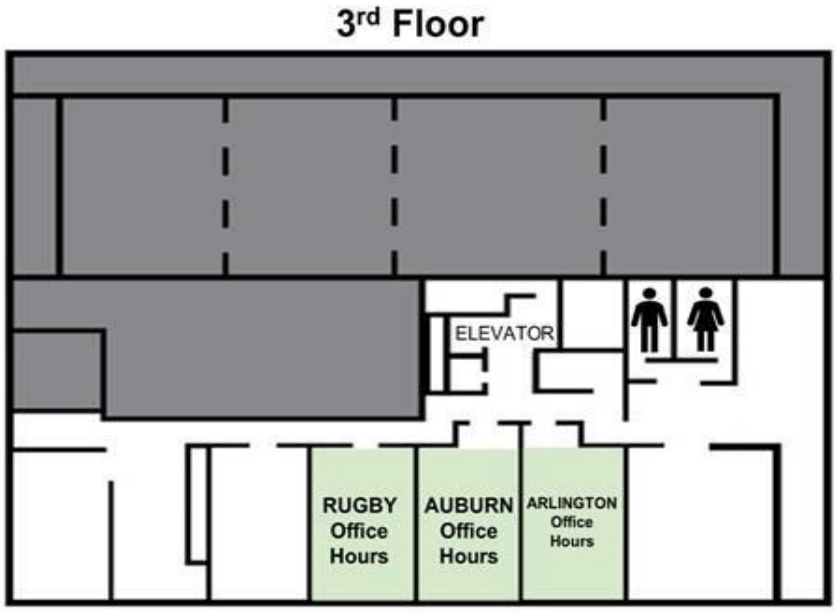
Katherine Susa, Ph.D., University of California, San Francisco
Identifying, Characterizing, and Targeting Regulators of B Cell Activation

Christina V. Theodoris, M.D., Ph.D., University of California, San Francisco
Transfer Learning Leveraging Large-Scale Transcriptomics to Map Disrupted Gene Networks in Cardiovascular Disease

Jonathan M. Tsai, M.D., Ph.D., Brigham and Women's Hospital; Harvard Medical School
Characterizing a Common Degradation Pathway for Nuclear Hormone Receptors

Hotel Floorplan





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