



2014 NIH COMMON FUND HIGH RISK-HIGH REWARD RESEARCH PROGRAM SYMPOSIUM DECEMBER 15-17 | BETHESDA, MARYLAND

DAY 1 DECEMBER 15, 2014

- 8:30 am** **Larry Tabak**, Principal Deputy Director, NIH
Opening remarks and announcement of 2014 High-Risk High-Reward Awardees
- 8:45 am** **James Anderson**, Director, Division of Program Coordination, Planning, and Strategic Initiatives (DPCSI), Office of the Director, NIH
Remarks

SESSION 1:

- 9:00 AM** **Adah Almutairi** (University of California San Diego, New Innovator Awardee)
Light-triggered release of drugs in vivo: amplification strategies, response to new wavelengths, and application to a clinical challenge
- 9:20 AM** **Jacquín Niles** (Massachusetts Institute of Technology, New Innovator Awardee)
Engineering direct control of protein-RNA interactions for synthetic biology and functional genetics applications
- 9:40 AM** **Hidde Ploegh** (Whitehead Institute for Biomedical Research, Pioneer Awardee)
Single domain antibodies as tools to perturb protein interactions
- 10:00 AM** **Alexander Travis** (Cornell University, Pioneer Awardee)
From sperm to stroke: the science of tethering enzymes with applications from nanoscale energy production to handheld diagnostics for neural injury
- 10:20 AM** **BREAK**

SESSION 2:

- 10:40 AM** **David Markovitz** (University of Michigan, Transformative Research Awardee)
Transformative but not the way we planned: new approaches to centromere biology
- 11:00 AM** **Leona Samson** (Massachusetts Institute of Technology, Pioneer Awardee)
Multiplexed DNA repair assays for multiple lesions and multiple doses via transcription inhibition and transcriptional mutagenesis
- 11:20 AM** **Bo Huang** (University of California, San Francisco; New Innovator Awardee)
Imaging the genome with CRISPR
- 11:40 AM** **Photo shoots for awardees**
- 12:10 PM** **LUNCH (on your own)**

SESSION 3

- 1:40 PM** **Peter Margolis** (Cincinnati Children's Hospital Medical Center, Transformative Research Awardee, with **Michael Seid**, Cincinnati Children's Hospital Medical Center)
A Collaborative Chronic Care Network (C3N) is a peer produced learning health system
- 2:00 PM** **Lalita Ramakrishnan** (University of Washington, Pioneer Awardee)
Insights into macrophage migration in tuberculosis from the zebrafish
- 2:20 PM** **Julia Felipe** (Cornell University, New Innovator Awardee)
The identity thief: Silencing of B lymphocyte commitment gene PAX5 is coincident with gene methylation in common variable immunodeficiency
- 2:40 PM** **Ram Samudrala** (State University of New York at Buffalo, Pioneer Awardee)
Interactomics: computational analysis of novel drug opportunities
- 3:00 PM** **POSTER SESSION 1**
- 5:00 PM** **5:00 PM**

DAY 2 TUESDAY, DECEMBER 16, 2014

SESSION 4

- 8:30 AM** **High-Risk High-Reward Program Updates** (Ravi Basavappa, Office of Strategic Coordination, DPCPSI, Office of the Director, NIH)
- 8:40 AM** **John Calarco** (Harvard University, Early Independence Awardee)
Interrogating co- and post-transcriptional gene regulation at single neuron resolution
- 9:00 AM** **Josh Dubnau** (Cold Spring Harbor Laboratory, Transformative Research Awardee)
The transposon storm hypothesis: collateral damage in the brain
- 9:20 AM** **Gabriel Kreiman** (Harvard Medical School, New Innovator Awardee)
How neural circuits orchestrate the magic of human cognition
- 9:40 AM** **Patrick Purdon** (Massachusetts General Hospital, New Innovator Awardee)
Neural systems approach to monitoring brain states during general anesthesia and sedation
- 10:00 AM** **BREAK**

SESSION 5

- 10:20 AM** **Sanjay Jain** (Johns Hopkins University, New Innovator and Transformative Research Awardee)
Developing a pipeline of bacteria-specific imaging agents
- 10:40 AM** **Fernando Camargo** (Boston Children's Hospital, New Innovator Awardee)
Barcoding stem cells: surprises, challenges, and perspectives
- 11:00 AM** **Andrew Feinberg** (Johns Hopkins University, Pioneer Awardee)
Epigenetic stochasticity, phenotype and the environment
- 11:20 AM** **Sarah Tishkoff** (University of Pennsylvania, Pioneer Awardee)
Integrative genomic studies of evolution and adaptation in Africa
- 11:40 AM** **Ivor Benjamin** (Medical College of Wisconsin, Pioneer Awardee)
The reductive stress hypothesis and the antioxidant treatment paradox
- 12:00 pm** **LUNCH (on your own)**

SESSION 6

- 1:30 PM** **Susan Rosenberg** (Baylor College of Medicine, Pioneer Awardee)
The DNA damage-control network: a new class of cancer genes discovered in bacteria
- 1:50 PM** **Chengkai Dai** (Jackson Laboratory, New Innovator Awardee)
MEK critically regulates cellular proteome homeostasis via HSF1
- 2:10 PM** **Tannishtha Reya** (University of California, San Diego; Pioneer Awardee)
Imaging cancer heterogeneity and therapy resistance in real time
- 2:30 PM** **Dana Pe'er** (Columbia University, New Innovator and Pioneer Awardee)
Computational dissection of phenotypic and functional heterogeneity in cancer
- 2:50 PM** **Yvonne Chen** (University of California, Los Angeles; Early Independence Awardee)
Engineering smarter and stronger T cells for cancer immunotherapy
- 3:10 PM** **POSTER SESSION 2**
- 5:00 PM** **Adjourn for day**

DAY 3 WEDNESDAY, DECEMBER 17, 2014

SESSION 7

- 8:30 AM** **Jody Puglisi** (Stanford University, Transformative Research Awardee)
The dynamics of translation
- 8:50 AM** **Randal Halfmann** (University of Texas Southwestern Medical Center, Early Independence Awardee)
Detection and functional characterization of prion-like protein self-assembly
- 9:10 AM** **Kerwyn Huang** (Stanford University, New Innovator Awardee)
Quantitative imaging of gut microbiota spatial organization
- 9:30 AM** **Jin Zhang** (Johns Hopkins University, Pioneer Awardee)
Biochemical activity architecture in living cells
- 9:50 AM** **Ed Boyden** (Massachusetts Institute of Technology, Transformative Research and Pioneer Awardee)
Super-resolution microscopy across arbitrary scales
- 10:10 AM** **BREAK**

SESSION 8

- 10:30 AM Xiaoliang (Sunney) Xie** (Harvard University, Transformative Research and Pioneer Awardee)
Single cell genomic analyses of circulating tumor cells
- 10:50 AM Ipsita Banerjee** (University of Pittsburgh, New Innovator Awardee)
Systems analysis of human pluripotent stem cells during self renewal and differentiation
- 11:10 AM Bela Suki** (Boston University, Transformative Research Awardee)
Regulatory roles of mechanical fluctuations in biology
- 11:30 AM Leor Weinberger** (Gladstone Institutes, New Innovator and Pioneer Awardee)
Harnessing gene-expression “noise” for therapy
- 11:50 AM Closing remarks**
- 11:55 AM ADJOURN MEETING**