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 **Jacquin 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 mutagene

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 Felippe** (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**