The NIH Common Fund High-Risk High-Reward Research Program

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Program Leader, High-Risk High-Reward Research
Office of Scientific Coordination
Division of Program Coordination, Planning, and Strategic Initiatives
Office of the Director
NIH

July 16, 2015
27 NIH Institutes and Centers

NIAAA
National Institute on Alcohol Abuse and Alcoholism

NIEHS
National Institute of Environmental Health Sciences

National Human Genome Research Institute

National Heart Lung and Blood Institute

National Institute of Allergy and Infectious Diseases

Eunice Kennedy Shriver
National Institute of Child Health & Human Development

National Institute of Diabetes and Digestive and Kidney Diseases

NIAMS
National Institute of Arthritis and Musculoskeletal and Skin Diseases

National Institute of Biomedical Imaging and Bioengineering

National Institute of Dental and Craniofacial Research

NIDDK
National Institute of Diabetes and Digestive and Kidney Diseases

FOGARTY International Center

NATIONAL INSTITUTE ON AGING
National Institutes of Health

NIH
Office of Strategic Coordination - The Common Fund

National Center for Research Resources

Clinical Center

National Institute of Deafness and Communications Disorders

National Institute of Neurological Disorders and Stroke

NIDCR
National Institute of Dental and Craniofacial Research

National Institute of Nursing Research

National Institute of General Medical Sciences

NIH Library of Medicine
NIH Reauthorization Bill (2006) provides broad language:

- Establishes the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI)
- Establishes the CF to support cross-cutting, trans-NIH programs that require at least two NIH Institutes or Centers (ICs) or would benefit from strategic planning and coordination
- Office of Strategic Coordination (OSC) within DPCPSI to manage CF

Vision for the Common Fund:

- Serve as a “test bed” for high-risk, enabling programs to overcome significant obstacles to scientific progress and capitalize on emerging scientific opportunities
- Limited-term investment to accelerate the pace of discovery and improve the translation of research findings into medical and health interventions
**DPCPSI Scientific Org Chart**

- **5-10 Year** efforts to address specific challenges and catalyze IC-funded work
- **Sustained** efforts to stimulate and coordinate research in the ICS

- **OSC/Common Fund**
  - **OAR** – AIDS Research
  - **ORWH** – Women’s Health
  - **ODP** – Disease Prevention
  - **OBSSR** – Behavioral and Social Sci.
  - **ORIP** – Research Infrastructure Prog.

*NIH National Institutes of Health
Office of Strategic Coordination - The Common Fund*
Common Fund Enables a Different Approach to Science and Science Management

**Transformative:** Programs are expected to have exceptionally high and broadly applicable impact.

**Catalytic, Short Term and Goal-driven:** Programs must achieve - not just work toward - a goal. They have deliverables - data sets, tools, technologies, approaches, or fundamental principles of biology, etc – that can be achieved within 5-10 years.

**Synergistic /Enabling:** Programs should be valued-added to the ICs, with the output enabling the mission of multiple ICs.

**Cross-cutting:** CF programs should address complex issues that require trans-NIH teams, insights and perspectives to design and manage.

**Novel:** Programs should provide new solutions to specific challenges.
Current Common Fund Programs

- Illuminating the Druggable Genome
- Single Cell Analysis
- Health Economics
- Bridging Intervventional Development Gaps (BrIDGs)
- HCS Research Collaboratory
- PROMIS: Clinical Outcomes Assessment
- Gulf Oil Spill Long Term Follow Up
- Pioneer Awards
- New Innovator Awards
- Transformative Research Awards
- Early Independence Awards
- Library of Integrated Network-Based Cellular Signatures (LINCS)
- Undiagnosed Diseases Program
- Regulatory Science
- NIH Medical Research Scholars
- Protein Capture
- Big Data to Knowledge (BD2K)
- Molecular Libraries and Imaging
- Nanomedicine
- Knockout Mouse Phenotyping
- Structural Biology
- Epigenomics
- Science of Behavior Change
- Metabolomics
- Biolinformatics and Computational Biology
- Global Health
- Undiagnosed Diseases Program
- Extracellular RNA Communication
- NIH Center for Regenerative Medicine
- Protein Capture
- Molecular Libraries and Imaging
- Nanomedicine
- Knockout Mouse Phenotyping
- Structural Biology
- Epigenomics
- Science of Behavior Change
- Metabolomics
- Biolinformatics and Computational Biology
- Global Health
- High-Risk Research

http://commonfund.nih.gov/
High-Risk High-Reward Initiatives of the NIH Common Fund

(Common Fund program for “investigator-initiated” HRHR research)

- Pioneer Award
- New Innovator Award
- Early Independence Award
- Transformative Research Award
NIH Common Fund High-Risk High-Reward Working Group

Chair:
- James M. Anderson, M.D., Ph.D.
  Director, Division of Program Coordination, Planning, and Strategic Initiatives
  Office of the Director

Common Fund Program Leader:
- Ravi Bassappa, Ph.D.
  Program Leader
  Office of Strategic Coordination
  Division of Program Coordination, Planning, and Strategic Initiatives
  Office of the Director
  National Institutes of Health (NIH)

Members:
- Kristin Abraham, Ph.D.
  Senior Advisor
  Division of Diabetes, Endocrinology, and Metabolic Diseases
  National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- Vernon Anderson, Ph.D.
  Program Director
  Division of Pharmacology, Physiology, and Biological Chemistry
  National Institute of General Medical Sciences (NIGMS)
- Melissa A. Anderson, Ph.D.
  Health Science Policy Analyst
  Division of Extramural Research Activities
  National Heart, Lung, and Blood Institute (NHLBI)
- Hugh Auchincloss, M.D.
  Deputy Director
  National Institute of Allergy and Infectious Diseases (NIAID)
- Richard Beach, Ph.D.
  Director
  Division of Interdisciplinary Training
  National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- David Balsavage, Ph.D.
  Program Director
  Center for Risk and Integrated Sciences
  Division of Extramural Research and Training
  National Institute of Environmental Health Sciences (NIEHS)
- Marie A. Bernard, M.D.
  Deputy Director
  Office of Aging (OA)
- John Bowes, Ph.D.
  Chief
  Biological Chemistry and Macromolecular Biophysics (BCMB)
  Center for Scientific Review (CSR)
- Ken Breden, M.D., M.P.H.
  Director
  Division of International Training and Research
  John E. Fogarty International Center (FFIC)
- Robert C. Carter, M.D.
  Deputy Director
  National Institute of Allergy and Infectious Diseases (NIAID)
- Christine Celsis, Ph.D.
  Program Director
  National Center for Advancing Translational Sciences (NCATS)
- Richard Connery, Ph.D.
  Deputy Director
  Division of Applied Science and Technology
  National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Milton Cohn, M.D., FACP, FACMI
  Deputy Director for Research and Education
  National Library of Medicine (NLM)
- Emmeline Edwards, Ph.D.
  Director
  Division of Extramural Research
  National Center for Complementary and Alternative Medicine (NCCAM)
- Valerie Florance, Ph.D.
  Associate Director for Extramural Programs
  National Library of Medicine (NLM)
- Lorraine Gunzerath, Ph.D., M.B.A.
  Senior Advisor to the Director
  Office of the Director
  National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- Tyl Hewitt, Ph.D.
  Chief
  Developmental Biology, Genetics, and Teratology Branch
  National Institute of Child Health and Human Development (NICHD)
- Heather A. Johnn, M.S.
  Health Science Analyst
  Office of Population Genomics
  National Human Genome Research Institute (NHGRI)
- Sneha Konstant, Ph.D.
  Deputy Director
  Division of Neuroscience and Behavioral Science
  National Institute of Mental Health (NIMH)
- Rajiv Kumar, Ph.D.
  Chief
  Neuroimmunoassay, Oral and Skin Sciences Integrated Review Group
  Division of Translational and Clinical Sciences
  Center for Scientific Review (CSR)
- Roger Little, Ph.D.
  Deputy Director
  Division of Basic Neuroscience and Behavioral Research
  National Institute on Drug Abuse (NIDA)
- James Marsh, Ph.D.
  Scientific Review Officer
  Division of Basic and Translational Sciences
  National Institute of Neurological Disorders and Stroke (NINDS)
- Susan E. Mauer, Ph.D.
  Deputy Director
  Office of Research on Women's Health
  Division of Program Coordination, Planning, and Strategic Initiatives
  Office of the Director
  National Institutes of Health (NIH)
- Judy A. Melia, Ph.D.
  Program Director and Chief
  Division of Cancer Biology
  National Cancer Institute (NCI)
- Wenjiu N., Ph.D.
  Scientific Review Officer
  Division of AIDS, Behavioral, and Population Sciences
  National Institute on Drug Abuse (NIDA)
- Walter Schaffer, Ph.D.
  Senior Scientific Advisor for Extramural Research
  Office of the Director
  National Institutes of Health (NIH)
- Selinda Seto, Ph.D.
  Deputy Director
  National Eye Institute (NEI)
- Carol Shreffler, Ph.D.
  Health Science Administrator
  Division of Extramural Research and Training
  National Institute of Environmental Health Sciences (NIEHS)
- Lillian Shum, Ph.D.
  Chief
  Integrative Biology and Infectious Diseases Branch
  National Institute of Dental and Craniofacial Research (NIDCR)
- Michael A. Steinmetz, Ph.D.
  Program Director
  Division of Extramural Research
  National Eye Institute (NEI)
- Nathaniel Stinson, Jr., Ph.D., M.D.
  Acting Director
  Office of Scientific Programs
  National Center on Minority Health and Health Disparities (NCMHD)
- Edmund Talley, Ph.D.
  Program Director
  Channels Synapses and Circuits
  National Institute of Neurological Disorders and Stroke (NINDS)
- Neil M. Thakur, Ph.D.
  Special Assistant to the NIH Deputy Director for Extramural Research
  Office of the Director
  National Institutes of Health (NIH)
- Joan Wasserman, Dr.PH., R.N.
  Program Director
  Division of Extramural Activities
  National Institute of Nursing Research (NINR)
- Elizabeth L. Wider, Ph.D.
  Director
  Office of Strategic Coordination
  Division of Program Coordination, Planning, and Strategic Initiatives
  Office of the Director
  National Institutes of Health (NIH)
Pioneer Award Initiative

• Started in 2004
• Any qualified investigator
• $500K DC/year for five years
• Individual scientists of exceptional creativity who propose pioneering and possibly transforming approaches to addressing major biomedical or behavioral challenges
Origins of the NIH Director’s Pioneer Awards

➢ Dr. Zerhouni becomes NIH Director in 2002

➢ Surveys biomedical research committee about research funding and NIH.
   In responses, sometimes too conservative nature of review is prominent theme

➢ Because of the conservative nature, opportunities for making leaps in sciences are lost

➢ Assembles trans-NIH “High-Risk Research Working Group”

➢ Dr. Zerhouni initiates Pioneer Award program, part of the NIH Roadmap

➢ First awards made in 2004, awards made annually since then
Fundamental characteristics of the Pioneer Award program

- Person-focused
- Allow unusual flexibility
  (Pioneer awardee may change direction of research)
- Provide generous resources
  ($500k direct costs per year for 5 years)
To implement the Pioneer Award program, wanted to make it very distinctive from the major NIH grant Program (R01):

Application format:

Review:

Program administration:
Pioneer Award Application format:

**R01:** 25 pages research strategy including detailed experimental plan and preliminary data

- **Pioneer:** 3-5 page essay
  - Scientific problem, significance, and pioneering approach
  - Evidence for innovativeness
  - How is research direction different from ongoing?
  - Why Pioneer Award mechanism?

**R01:** Biographical sketch limit 4 pages

- **Pioneer:** Biographical Sketch - 2 pages

**R01:** Budget, animal, human subject information – details required

- **Pioneer:** No detailed budget, other information brief

**R01:** letters of collaboration encouraged

- **Pioneer:** letters of collaboration not allowed

National Institutes of Health
Office of Strategic Coordination - The Common Fund
Pioneer Award Application format (continued):

Components of Pioneer application not present for R01 application

- Most significant research accomplishment (one page max.)

- Statement of suitability of proposal for Pioneer - research must be different from established research projects in the applicant’s laboratory

- Statement of commitment of at least 51% research effort to project

- Three letters of references

Pioneer application format designed to focus on person and scientific vision
Pioneer Award Review process:

R01 review:

Review by a single panel

Review by topic experts

Asked to consider: significance/impact, innovation, approach, investigator, and environment

Focus tends to be on approach and feasibility

Pioneer review:

Review through 2 phase review (2 panels)

Reviewers not assigned by specific topic expertise

Asked to consider: innovation/impact, investigator, and suitability for award

Involves in-person interviews
Overall Pioneer Review Process

Electronic review of all applications

Phase I (electronic panel)

Identify 25 for interview

Phase II (interview panel)

Interview 25

Provide scores
Pioneer Award Review – 1st phase

- Electronic review of all applications

- Phase I (electronic panel)

  - No attempt to closely match reviewer expertise to proposal topic – 1 reviewer must be outside broad science area

  - Use 3 Pioneer-specific review criteria
    Proposal
    Investigator
    Suitability for Pioneer program

  - Reviewers provide only scores and brief comments

  - No discussion of applications/scores
Identify 25 for interview

Guided by first review phase results, interview panel selects 25 applicants

Interview 25

25 applicants interviewed in person in Bethesda

Panelists provide individual scores from which overall priority score is calculated

Phase II (interview panel)
Pioneer Awards – Program Administration

- Pioneer project must represent at least 51% of the awardees research effort (first 3 years, reduced to 33% and 25% in 4th and 5th years, respectively)

- Pioneer Awardee allowed to change course of research direction, to follow most promising path as the science evolves

- Acknowledgment that not all projects will succeed as proposed
Pioneer Awards – Comparison Evaluation

- Evaluation of Pioneer supported research

- Conducted by independent entity (Science and Technology Policy Institute of the Institute for Defense Analysis)

- Compared research outcomes of Pioneers (first three cohorts) to comparison groups (similarly qualified R01 investigators, random R01 sets, and HHMI investigators)

- Used both bibliometric and expert analysis to assess scientific impact and innovation

- Concluded that Pioneers have more impact than similarly qualified R01 investigators and random R01s and about as much impact as HHMI investigators

New Innovator Award Program

- Started in 2007 (in response to concerns that young investigators had difficulty in being funded)

- Must be Early Career Stage Investigator at time of award (<10 years from Ph.D./clinical residency with no significant NIH support as PI)

- Up to $300K DC/year for five years (MYF at $1.5M)

- Highly innovative research ideas

- Investigators must have track record of exceptional creativity and have outstanding promise
New Innovator Awards program implementation:

- Very similar in spirit to the Pioneer Awards
- Focuses on the individual
- Limited to Early Career Stage Investigators
- Application is longer (10 page essay, preliminary data allowed but not required)
- Review criteria very similar
- Review process also has two phases but the second does not include interviews
Transformative Research Award Program

• Started in 2009

• Arose from NIH Innovation workshop and Enhancing Peer Review process

• Individuals or teams with a project to overturn or create a fundamental paradigm

• Focus is more on the idea than the individual(s)

• “Outside-the-box” ideas

• “No limit” budget
Transformative Research Award Program - implementation

- Focuses more on the project than the individual(s)

- Encourage teams of investigators to apply

- Application was shorter than standard R01, but now uses standard format

- Application directs individuals to address program specific aspects, such as challenge, impact, innovation, suitability

- Review process uses “Editorial Board” model
  - Editorial Board screens all applications to identify most exciting subset (assignments not made on close topic expertise)
  - Most exciting subset sent forward for technical review by experts
  - Editorial Board uses technical review to discuss and score
Early Independence Award Program

• Started in 2011

• Started because of extraordinary length of time typically taken for an investigator to get first NIH R01 grant (~42 years old)

• Graduate students and clinicians within one year of degree or clinical residency who wish to “skip” the post-doc

• Talented young scientists who have the intellect, scientific creativity, drive and maturity to flourish independently without the need for traditional post-doctoral training

• Up to $250k DC/year for 5 years
Early Independence Award Program - implementation

• Each institution is allowed to submit up to only 2 applications

• Uses standard R01 application packet, but with applicants focusing on program specific topics

Three to five letters of recommendation required

Review process is similar to that of Pioneer
  - All applications sent for technical review
  - Panel selects ~30 of these for in-person interview

Site visit first year to awardees’ institutions

Since still an experimental program, all awards remain as “OD” awards
Annual NIH Common Find High-Risk, High-Reward Symposium

2014 High-Risk, High-Reward Research Symposium

December 15-17, 2014 - Bethesda, MD

Agenda • Abstracts • Videocasts from Day 1, Day 2, and Day 3

Save the date for the 2015 High-Risk, High-Reward Research Symposium on December 7-9 at Natcher Conference Center, NIH, Bethesda, MD!
## Stanford-affiliated Pioneer Award Recipients

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Fiscal Year</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEISSEROTH, KARL A.</td>
<td>2005</td>
<td>NIH Director's Pioneer Award (RMI)</td>
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<tr>
<td>HARBURY, PEHR A</td>
<td>2005</td>
<td>NIH Director's Pioneer Award (RMI)</td>
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<tr>
<td>RANDO, THOMAS A.</td>
<td>2005</td>
<td>NIH Director's Pioneer Award (RMI)</td>
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<tr>
<td>BOAHEN, KWABENA</td>
<td>2006</td>
<td>NIH Director's Pioneer Award</td>
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<td>KIRKEGAARD, KARLA</td>
<td>2006</td>
<td>NIH Director's Pioneer Award</td>
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<td>RELMAN, DAVID A.</td>
<td>2006</td>
<td>NIH Director's Pioneer Award</td>
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<tr>
<td>CLANDININ, THOMAS ROBERT</td>
<td>2007</td>
<td>Dissecting the functional anatomy of the visual system: a new way forward</td>
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<td>SCHNITZER, MARK J</td>
<td>2007</td>
<td>Massively Parallel Brain Imaging</td>
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<tr>
<td>CHEN, JAMES K</td>
<td>2008</td>
<td>Chemical Embryology: Technologies for Manipulating and Visualizing Development</td>
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<tr>
<td>DOLMETSCH, RICARDO E.</td>
<td>2008</td>
<td>Using induced pluripotent stem cells to identify cellular phenotypes of autism</td>
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<tr>
<td>CHAWLA, AJAY</td>
<td>2009</td>
<td>Immune Triggers of Tissue Regeneration</td>
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<tr>
<td>CHEN, CHANG-ZHENG</td>
<td>2009</td>
<td>The Role of Pre-miRNA Loop in Target Regulation by microRNA Genes</td>
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<tr>
<td>COVERT, MARKUS W</td>
<td>2009</td>
<td>A Gene-Complete Computational Model of Yeast</td>
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<td>SHENOY, KRISHNA V</td>
<td>2009</td>
<td>Toward an Animal Model of Freely Moving Human</td>
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<td>SCHNEIDER, DAVID S.</td>
<td>2011</td>
<td>Mapping the road to recovery - Does the way we get better differ from the way we</td>
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<td>BRUNET, ANNE</td>
<td>2012</td>
<td>Transgenerational epigenetic inheritance of longevity</td>
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<td>SMOLKE, CHRISTINA D</td>
<td>2012</td>
<td>Synthetic Biology Platforms for Natural Product Discovery and Biosynthesis</td>
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<td>LIN, MICHAEL Z.</td>
<td>2013</td>
<td>Optogenetics for all: A general method for optical control of protein activity</td>
</tr>
<tr>
<td>WU, SEAN M</td>
<td>2014</td>
<td>Enabling Technologies for Human-Machine Hybrid Tissues</td>
</tr>
</tbody>
</table>
Sean Wu (2014)
Project Title: Enabling Technologies for Human-Machine Hybrid Tissues
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<tbody>
<tr>
<td>BRYANT, ZEV</td>
<td>2008</td>
<td>Engineering Molecular Motors</td>
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<tr>
<td>KESLER, SHELLI R.</td>
<td>2008</td>
<td>Assessment and Treatment of Cognitive Deficits in Breast Cancer</td>
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<tr>
<td>WU, JOSEPH C.</td>
<td>2008</td>
<td>Inducing Pluripotency with MiRNAs: New Paradigm Shift in Cell Reprogramming</td>
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<tr>
<td>ASHLEY, EUAN A</td>
<td>2009</td>
<td>Nanoscale approaches to allelic silencing in myocardial disease states</td>
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<tr>
<td>HEILSHORN, SARAH C</td>
<td>2009</td>
<td>Engineering 3D in vitro niches to reveal fundamentals of cellular biomechanics</td>
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<tr>
<td>HUANG, KERWYN C</td>
<td>2009</td>
<td>Engineering of cell shape and intracellular organization</td>
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<tr>
<td>PENN, ANNA A</td>
<td>2009</td>
<td>Fetal Brain Damage: A Placental Disorder</td>
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<tr>
<td>SONNENBURG, JUSTIN</td>
<td>2009</td>
<td>Discovery of gut microbiota-targeted small molecules: new tools and therapeu</td>
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<tr>
<td>CEGELSKI, LYNETTE S</td>
<td>2010</td>
<td>Structure, Function, and Disruption of Microbial Amyloid Assembly and Biofilm</td>
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<tr>
<td>DUNN, ALEXANDER R</td>
<td>2010</td>
<td>Uncovering New Roles for Mechanical Force in Tissue Development and Remod</td>
</tr>
<tr>
<td>FELDMAN, BRIAN J</td>
<td>2010</td>
<td>Using Components of the Circadian Clock to Regulate Stem Cell Fate Decisions</td>
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<tr>
<td>FRASER, HUNTER B</td>
<td>2011</td>
<td>Systematic functional annotation of human cis-regulatory genetic variation</td>
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<td>WANG, CHIHUNG</td>
<td>2011</td>
<td>Healthy Ideas Exchange</td>
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<td>CARETTE, JAN EDUARD</td>
<td>2012</td>
<td>Genetic approaches to discover host factors critical to dengue virus infection</td>
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<tr>
<td>CUI, BIANXIAO</td>
<td>2012</td>
<td>Engineering external forces for manipulating cargo transport in live neurons</td>
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<tr>
<td>ROHATGI, RAJAT</td>
<td>2012</td>
<td>Reconstructing Primary Cilia</td>
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<tr>
<td>URBAN, ALEXANDER</td>
<td>2012</td>
<td>Genomic and epigenomic effects of large CNV in neurons from iPSC</td>
</tr>
<tr>
<td>BLISH, CATHERINE A</td>
<td>2013</td>
<td>Harnessing natural killer cell memory to fight viruses</td>
</tr>
<tr>
<td>DIEHN, MAXIMILIAN</td>
<td>2013</td>
<td>Developing a genomic approach for cancer screening</td>
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<tr>
<td>SATTELY, ELIZABETH</td>
<td>2013</td>
<td>Liberation of Plant Nutrients by the Gut Microbiota</td>
</tr>
<tr>
<td>BASSIK, MICHAEL C</td>
<td>2014</td>
<td>Accelerating drug development and repurposing using systematic genetic intera</td>
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</table>
Catherine A. Blish (2013)
Project Title: Harnessing Natural Killer Cell Memory to Fight Viruses

Maximilian Diehn (2013)
Project Title: Developing a Genomic Approach for Cancer Screening

Elizabeth Sattely (2013)
Project Title: Liberation of Plant Nutrients by the Gut Microbiota

Michael C. Bassik (2014)
Project Title: Accelerating Drug Development and Repurposing Using Systematic Genetic Interactions
# Stanford-affiliated Transformative Research Award Recipients

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<tr>
<th>Recipient</th>
<th>Fiscal Year</th>
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<tbody>
<tr>
<td>KUO, CALVIN J</td>
<td>2009</td>
<td>Three-dimensional Scaffold-based Systems for Primary Human Intestinal Culture</td>
</tr>
<tr>
<td>PARSONNET, JULIE</td>
<td>2009</td>
<td>Childhood infection and prevention of obesity</td>
</tr>
<tr>
<td>WU, JOSEPH C.</td>
<td>2009</td>
<td>Re-Education of the Immune System for hES Cell Tolerance</td>
</tr>
<tr>
<td>PELTZ, GARY A</td>
<td>2010</td>
<td>Human Pharmacogenetics and Human Liver Regeneration</td>
</tr>
<tr>
<td>WERNIG, MARIUS; SUDHOF, THOMAS C</td>
<td>2010</td>
<td>Direct conversion of fibroblasts into neurons: A novel approach to study neuropsy</td>
</tr>
<tr>
<td>BOAHEN, KWABENA</td>
<td>2011</td>
<td>Fully Implantable and Programmable Spike-based Codecs for Neuroprosthetics</td>
</tr>
<tr>
<td>PUGLISI, JOSEPH D</td>
<td>2011</td>
<td>Single molecule translational profiling</td>
</tr>
<tr>
<td>BARRES, BEN A</td>
<td>2012</td>
<td>An Astrocytic Basis for Humanity</td>
</tr>
<tr>
<td>BLAU, HELEN M</td>
<td>2012</td>
<td>Telomere extension using nucleoside-modified mRNA and exosomes as a novel therape</td>
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<tr>
<td>DEISSEROTH, KARL A.</td>
<td>2012</td>
<td>CLARITY: fully-assembled biology</td>
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</table>
Ben A. Barres (2012)
Project Title: *An Astrocytic Basis for Humanity*

Helen M. Blau (2012)
Project Title: *Telomere extension using nucleoside-modified mRNA and exosomes as a novel therapy*

Karl Deisseroth (2012)
Project Title: *CLARITY: fully-assembled biology*
## Stanford-affiliated Early Independence Award Recipients

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<th>Recipient</th>
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<tr>
<td>DE LA ZERDA, ADAM</td>
<td>2012</td>
<td>Molecular Imaging of Protein Glycosylation in Living Subjects</td>
</tr>
<tr>
<td>YEH, ELLEN</td>
<td>2012</td>
<td>Defining the novel eukaryotic biology of the Apicomplexan plastid</td>
</tr>
<tr>
<td>ANGELO, ROBERT MICHAEL</td>
<td>2014</td>
<td>Predictive signatures in breast cancer using multiplexed ion beam imaging</td>
</tr>
<tr>
<td>NELSON, ERIC JORGE</td>
<td>2014</td>
<td>A novel approach to improve patient care and diarrheal disease research using mobile technology</td>
</tr>
</tbody>
</table>
Michael Angelo (2014)
Project Title: Predictive Signatures in Breast Cancer using Multiplexed Ion Beam Imaging

Eric Jorge Nelson (2014)
Project Title: A Novel Approach to Improve Patient Care and Diarrheal Disease Research using Mobile Technology
Do you have any wild and crazy ideas?

<table>
<thead>
<tr>
<th>APPLICATION STATUS</th>
<th>Early Independence Award</th>
<th>New Innovator Award</th>
<th>Pioneer Award</th>
<th>Transformative Research Award</th>
</tr>
</thead>
</table>

http://commonfund.nih.gov