2015 – 2016
Foundation
Awards and
Competitions
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(IL) = Institutionally Limited / (IO) = Invitation Only / Red Dates = Tentative
Foundation Awards and Competitions

Rita Allen Foundation
Rita Allen Foundation Scholars Program

**DESCRIPTION**
The Rita Allen Foundation Scholars program concentrates on young leaders in bio-medical research who are advancing our understanding of the human condition and supports basic biomedical research in the fields of cancer, immunology, and neuroscience. Through the Scholars, the foundation embraces innovative research with above average risk and groundbreaking possibilities. Individuals chosen and their affiliated institutions receive grants of up to $110,000 annually, for a maximum of five years. Investment in the Scholars helps the foundation support transformative ideas in their earliest stages.

**NOMINATION / APPLICATION**
Invited institutions are eligible to submit one nomination. MSU is currently not on the list of invited institutions.

**GENERAL ELIGIBILITY REQUIREMENTS** *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*
- Candidates must have completed their training and provided persuasive evidence of distinguished achievement or extraordinary promise in research in one of the relevant fields (cancer, immunology, or neuroscience).
- Candidates should be independent investigators in the early stages of their careers and research.
- The caliber of early-stage investigators suggests nominees would be appointed to tenure track positions at their respective institutions.
- It is preferable that candidates be in the first three years of their tenure track. (This is taken into consideration in the rating of applications by the Scientific Advisory Committee.)
- A senior post-doc should not be a candidate; wait until s/he has tenure track as described.
- Associate professors should not be candidates.
- Candidates must have received committed start-up funds from their respective institutions.
- Candidates must have lab space from their institutions.

**REVIEW CRITERIA / SELECTION PROCESS**
The Scientific Advisory Committee reviews and selects finalists from the eligible institutions. Guiding principles for selection include attention to innovation, focus on areas of global concern, opportunities for lasting outcomes, collaborations, and a demonstration of leadership and learning potential.

**ADVISORY / SELECTION COMMITTEE**
Kathleen Foley / Neurology, Neuroscience, and Clinical Pharmacology / Cornell University
Douglas Fearon / Immunology / University of Cambridge
Charles Gilbert / Neurobiology / Rockefeller University
Gregory Hannon / HHMI Investigator, Bioinformatics and Genetics / Cold Spring Harbor Laboratory
Jeffrey Macklis / Stem Cell and Regenerative Biology / Harvard University
Carl Nathan / Microbiology and Immunology / Cornell University
Joan Steitz / Molecular Biophysics and Biochemistry / Yale School of Medicine
PREVIOUS YEAR RECIPIENTS - 2014

Lei Ding
Columbia University
Investigating the molecular and cellular mechanisms that regulate hematopoietic stem cell (HSC) self-renewal and expansion.

Molly Hammell
Cold Spring Harbor Laboratory
Research focuses on how transposable elements (TEs) may contribute to dysfunction and disease in animals, in particular to neurodegenerative disease.

Sebastian Klinge
The Rockefeller University
Seeks to understand structures and functions of key macromolecular assemblies that catalyze essential steps of the “central dogma of molecular biology”—DNA makes RNA makes Protein.

Zachary Knight
University of California, San Francisco
Dr. Knight’s lab studies neural circuits in the brain that control food intake, body weight and other aspects of physiologic homeostasis.

Gregory Scherrer
Stanford University
Investigates how neurons communicate with each other to generate pain sensation and how opioids such as morphine interfere with this communication to induce analgesia.

Lin Tian
University of California, Davis
Research that combines the development of optical sensors and applications in order to acquire fundamental insight about how the nervous system functions in health and disease.

Tuan Trang
University of Calgary
Investigates the molecules and processes involved in pain and how these processes can go awry to produce chronic pain.
Foundation Awards and Competitions

Arnold and Mabel Beckman Foundation

Beckman Scholars Program

Deadlines: June 2017

Amount: $116,000 (over 3 years)

DESCRIPTION
The Beckman Scholars Program is intended to help stimulate, encourage, and support research activities by exceptionally talented undergraduate students at U.S. colleges and universities.

NOMINATION / APPLICATION
MSU received its first Beckman Scholars Program award in 2014 and is not eligible to apply again until 2017. Each year, the Arnold and Mabel Beckman Foundation selects a number of research, doctoral, masters, and baccalaureate universities and colleges to be invited to submit applications for the Beckman Scholars Program. Each institution may submit one application for consideration for an award.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The research activities are to be centered in chemistry, biochemistry, the biological and medical sciences, or some interdisciplinary combination of these subjects. The Beckman Scholars Program is a merit-based program; issues of gender, race and financial need should not be considered contributing factors in the application process. We believe that the generous student financial support which provides for in-depth, sustained undergraduate research experiences and the related Beckman Scholars Annual Symposium offer an academically stimulating and very distinctive educational experience.

REVIEW CRITERIA / SELECTION PROCESS
The foundation conducts a two-phase review process. No additional information is available on the review/selection process.

ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS - 2014
Boston University
Bowdoin College
Calvin College
Macalester College
Michigan State University
Pomona College
Texas A & M University
University of Arizona
University of Maryland, College Park
University of San Diego
University of Vermont
Wake Forest University
Foundation Awards and Competitions

Arnold and Mabel Beckman Foundation

Beckman Young Investigator Awards

Deadlines: 09.30.15 (letter of intent)

Amount: $750,000 (over 4 years)

DESCRIPTION
The Beckman Young Investigator Program is intended to provide research support to the most promising young faculty members in the early stages of academic careers in the chemical and life sciences, particularly to foster the invention of methods, instruments, and materials that will open up new avenues of research in science.

NOMINATION / APPLICATION
Open, not institutionally limited. Letter of Intent followed by application if invited. No more than one candidate from any one institution or its affiliates will be selected for this award in any particular funding cycle.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Projects should show promise for contributing to significant advances in the research fields of interest to the Foundation. They should represent innovative departures in research rather than extensions or expansions of existing programs.

Proposed research that cuts across traditional boundaries of scientific disciplines is encouraged, and proposals that open up new avenues of research in chemistry and the life sciences by fostering the invention of methods, instruments and materials will be given additional consideration.

The program is intended to provide funding to individuals with minimal or no external or internal funding from parent or other organizations. Proposals that have substantial funding will not be considered for this award.

The program is open to persons with tenure-track appointments in academic and non-profit institutions that conduct fundamental research in the chemical and life sciences.

To be eligible, an applicant should not have completed more than three full years in his or her tenure-track or other comparable independent research appointment. Regardless of eligibility under this rule, no individual may apply for a Beckman Young Investigator award more than three times.

REVIEW CRITERIA / SELECTION PROCESS
The foundation conducts a multi-tiered review process. No additional information is available on the review/selection process.

ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS - 2014

Albert Bowers
School of Pharmacy, Chemical Biology & Medicinal Chemistry
University of North Carolina, Chapel Hill
Synthetic Biology Approach to Scaffolding Pathways for Small Molecule Biosynthesis

Ludovico Cademartiri
Materials Science & Engineering
Iowa State University

Environments by Design: Developing New Tools for the Quantitative Investigations of Networks of Plants

Prashant Jain
Chemistry
University of Illinois, Urbana-Champaign
Discovering Active Catalyst Structures By Nanoscale Imaging
Reade Roberts
Biological Sciences
North Carolina State University
A novel genetic model of dietary response and host-microbiota interactions

Wesley Wong
Cellular & Molecular Medicine/Biological Chemistry & Molecular Pharmacology and Pediatrics
Boston Children's Hospital/Harvard Medical School
Probing molecular forces with high-throughput single-molecule manipulation

Yimon Aye
Chemistry & Chemical Biology
Cornell University
A Chemical Technology for Target-Specific Redox Perturbation

Yuebing Zheng
Mechanical Engineering
University of Texas at Austin
Virtual Infrared Plasmonic Tweezers for Versatile Manipulation of Cells and Biomolecules
Foundation Awards and Competitions

Burroughs Wellcome Fund

*Career Awards at the Scientific Interface*

**Deadlines:**
- 09.03.15 (pre-proposal)
- 01.08.16 (application)

**Amount:** $500,000 (over 5 years)

**DESCRIPTION**

Provides $500,000 over five years to bridge advanced postdoctoral training and the first three years of faculty service. These awards are intended to foster the early career development of researchers who have transitioned or are transitioning from undergraduate and/or graduate work in the physical/mathematical/computational sciences or engineering into postdoctoral work in the biological sciences and who are dedicated to pursuing a career in academic research.

**NOMINATION / APPLICATION**

Eligibility quiz after which eligible candidates for this award may self-nominate by submitting a pre-proposal.

**GENERAL ELIGIBILITY REQUIREMENTS** *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*

Candidates are expected to draw from their training in a scientific field other than biology to propose innovative approaches to answer important questions in the biological sciences. Examples of approaches include, but are not limited to, the following, and proposals that include experimental validation of theoretical models are particularly encouraged.

- Physical measurement of biological phenomena
- Computer simulation of complex processes in physiological systems
- Mathematical modeling of self-organizing behavior
- Building probabilistic tools for medical diagnosis
- Developing novel imaging tools or biosensors
- Developing or applying nanotechnology to manipulate cellular systems
- Predicting cellular responses to topological clues and mechanical forces
- Developing a new conceptual understanding of the complexity of living organisms

Candidates must hold a Ph.D. degree in one of the fields of mathematics, physics, chemistry, computer science, statistics, or engineering. (Note, there are specific stipulations within this requirement.)

Candidates must have completed at least 12 months but not more than 48 months of postdoctoral research by the date of the full invited application deadline.

Candidates cannot hold nor have accepted, either in writing or verbally, a faculty appointment as a tenure-track assistant professor at the time of application - both pre-proposal and full application. This award cannot be made to a tenure-track faculty member because it is a transition award.

Candidates must have at least one first-author publication; including papers on which "first authorship" is shared.

Candidates must not hold nor have accepted a K99 award from the U.S. National Institutes of Health.

Candidates with a K01 award from the NIH may apply for this award as long as they meet all the remaining criteria, however, if granted a CASI award, the NIH will need to fund the postdoc portion and BWF will only fund the faculty portion of the award.
REVIEW CRITERIA / SELECTION PROCESS
The Interfaces in Science Advisory Committee will review all pre-proposals, select candidates to invite for submission of full applications, interview finalists, and make recommendations for awards to the BWF Board of Directors.
Selection will be based on the following:

- Depth and rigor of training in a scientific discipline other than biology.
- Importance of biological questions identified in the proposal, and innovation in the approaches chosen to answer them. Candidates should present clear evidence of already beginning to tackle a biological problem.
- Interdisciplinary nature of research plan, the degree to which non-biological methods are integrated, and the degree to which the proposed work will open new fields of inquiry.
- Potential of candidate to establish a successful independent research career, evidenced by productivity during the postdoctoral period prior to application.
- Quality of proposed collaborations.
- All eligibility requirements having been met.

ADVISORY / SELECTION COMMITTEE
Russ Altman / Bioengineering, Genetics, Medicine / Stanford University
William Bialek / Physics / Princeton University
Nancy Kopell / Math & Science / Boston University
John Kuriyan / HHMI Investigator / Chemistry / UC-Berkeley
Cato Laurencin / Regenerative Engineering / University of Connecticut
Alan Perelson / Senior Fellow / Los Alamos National Laboratory
Rob Phillips / Applied Physics & Bioengineering / CalTech
Brent Stockwell / Biological Sciences & Chemistry / Columbia University
Shankar Subramaniam / Bioengineering / UC-San Diego
Julie Theriot / Biochemistry / Stanford University
Michelle Wang / HHMI Investigator / Physics / Cornell University
Raimond Winslow / Biomedical Engineering / Johns Hopkins University

PREVIOUS YEAR RECIPIENTS - 2014
Ariana E Anderson, Ph.D.
University of California-Los Angeles
It’s all in your head: isolating the placebo effect in the brain to reduce drug development costs

Amit Choudhary, Ph.D.
Broad Institute
Snakes, antioxidants, and diabetes

Matthew C Good, Ph.D.
University of California-Berkeley
Cell size and shape dependence of intracellular assembly and signaling

Prashant Mali, Ph.D.
Harvard Medical School
Engineering normal and diseased liver organogenesis

Nikhil S Malvankar, Ph.D.
University of Massachusetts-Amherst
Direct visualization of charge flow in individual native biomolecules

Elizabeth A Nance, Ph.D.
Johns Hopkins University
Nanoparticle-mediated targeted therapies for pediatric brain disorders

Elizabeth Hesper Rego, Ph.D.
Harvard School of Public Health
Drug use on the single cell level: differential antibiotic susceptibility of mycobacterial cells using fluorescent reporters.

Ramkumar Sabesan, Ph.D.
University of California-Berkeley School of Public Health
Studying visual function on a cellular scale

Kimberly Murley Stroka, Ph.D.
Johns Hopkins University School of Medicine
Engineering blood-brain barrier mechanobiology in tumor metastasis

Michael D. Vahey, Ph.D.
University of California-Berkeley School of Public Health
Uncovering the dynamics of enveloped virus assembly

Heng Xu, Ph.D.
Baylor College of Medicine
Deciphering stochastic transcriptional regulation at the single-event level

Xin Zhang, Ph.D.
Scripps Research Institute
Scrutinizing the cellular and molecular mechanisms that create and maintain the functional proteome using chemical probes
Foundations Awards and Competitions

Burroughs Wellcome Fund
Career Awards for Medical Scientists

Deadlines: 10.01.15 (application)
Amount: $700,000 (over 5 years)

DESCRIPTION
Provides $700,000 over five years for physician-scientists, who are committed to an academic career, to bridge advanced postdoctoral/fellowship training and the early years of faculty service. Proposals must be in the area of basic biomedical, disease-oriented, or translational research. Proposals in health services research or involving large-scale clinical trials are not eligible.

New for 2014: Beginning the 2014 award cycle, BWF will make up to two additional awards to clinically trained psychiatrists who focus on research at the interface between neuroscience and psychiatry. These proposals must clearly demonstrate evidence of integration of neuroscience and psychiatry in project design.

NOMINATION / APPLICATION
Institutions may nominate up to five candidates. Nominations of women and underrepresented minorities are encouraged. If a woman or underrepresented minority is included among the initial five nominees, a sixth candidate may be nominated provided that candidate is also a woman or underrepresented minority.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The ideal candidate will be two years away from becoming an independent investigator, have at least two years or more of postdoctoral research experience, and have a significant publication record.

Candidates must be nominated by their dean or department chair, and applications must be approved by an official responsible for sponsored programs at the degree-granting institution.

Candidates must hold an M.D., D.D.S., or D.V.M. degree.

Proposals must be in the area of basic biomedical, disease-oriented, or translational research. Proposals in health services research or involving large-scale clinical trials are ineligible, and BWF encourages nominations from candidates who work in reproductive science.

Candidates must be a fellow, resident, or a postdoctoral researcher and have at least two years of postdoctoral research experience at the time of application.

Candidates must not be more than 10 calendar years past their most recent earned doctorate degree. No exceptions will be made.

Candidates who hold a junior faculty appointment (Lecturer, Instructor, Assistant Professor-non tenure track, etc.) may be eligible if they have been in a faculty position for two years or less at the time of application. To meet this requirement, the appointment must have begun no earlier than July 1, 2012.

Candidates with tenure-track appointments as an Instructor or Assistant Professor at the time of application are not eligible.

Candidates that have faculty appointments with institutional start-up funds or hold an R01 grant from the NIH are not eligible.
REVIEW CRITERIA / SELECTION PROCESS
The Career Awards for Medical Scientists Advisory Committee will review applications, interview finalists, and make recommendations for approval to BWF’s Board of Directors.

ADVISORY / SELECTION COMMITTEE
Jack Antel / Neurology & Neurosurgery / McGill University
Leslie Berg / Pathology / University of Massachusetts
Paul Buckmaster / Comparative Medicine / Stanford University
Kathleen Caron / Cell Biology & Physiology / University of North Carolina-Chapel Hill
Aravinda Chakravarti / Genomics / Johns Hopkins University
Tamara Doering / Microbiology / Washington University
H. Shelton Earp, III / Medicine / University of North Carolina-Chapel Hill
Sarah Hollingsworth / Psychiatry & Neuroscience / Duke University
Kelsey Martin / Chemistry, Psychiatry, Biobehavioral Sciences / UCLA
Martin Matzuk / Pathology, Molecular & Cellular Biology / Baylor College
Elizabeth McNally / Medicine & Human Genetics / University of Chicago
Louis Muglia / Pediatrics, Neonatology / University of Cincinnati
Jeffrey Whitsett / Neonatology / University of Cincinnati
John York / Biochemistry / Vanderbilt University

PREVIOUS YEAR RECIPIENTS - 2014
Theresa Alenghat, D.V.M., Ph.D.
University of Pennsylvania
Epigenomic regulation of the host-commensal relationship

Christina Eleanor Barkauskas, M.D.
Duke University
Epithelial-mesenchymal crosstalk in lung fibrosis and alveolar homeostasis

James Edward Cassat, M.D., Ph.D.
Vanderbilt University School of Medicine
Contribution of host and pathogen to altered bone homeostasis and bacterial survival during osteomyelitis

Kevin Jon Cheung, M.D.
Johns Hopkins University
Elucidating the Role of K14+ Leader Cells in Breast Cancer Invasion and Metastasis

Ethan Michael Goldberg, M.D., Ph.D.
University of Pennsylvania Perelman School of Medicine
Analysis of circuit function informs novel therapeutic interventions in an epilepsy model

Malay Haldar, M.D., Ph.D.
Washington University School of Medicine
Transcription factor SPI-C at the interface of iron homeostasis and innate immunity.

Marcin Imielinski, M.D., Ph.D.
Harvard Medical School
Reconstructing complex loci in lung adenocarcinoma with large-insert whole genome sequencing

Jeffery M Klco, M.D., Ph.D.
Washington University School of Medicine
Role of Notch Signaling in the Bone Marrow Stromal

Jason Knight, M.D., Ph.D.
University of Michigan-Ann Arbor
Innate immunity in the pathogenesis of lupus and antiphospholipid vasculopathy

Anita Katherine McElroy, M.D., Ph.D.
Emory University School of Medicine
Defining the roles of CD4+ T cells in generating a protective immune response against Rift Valley fever virus

Sudarshan Rajagopal, M.D., Ph.D.
Duke University Medical Center
Dissecting Receptor Signaling Pathways in Pulmonary Hypertension

Sean Robinson Stowell, M.D., Ph.D.
Emory University School of Medicine
Elucidating Mechanisms of Innate Immunity Against Molecular Mimicry
**Foundation Awards and Competitions**

**Burroughs Wellcome Fund**  
*Investigators in the Pathogenesis of Infectious Disease*

**Deadlines:** 11.03.15  
(application)

**Amount:** $500,000  
(over 5 years)

**DESCRIPTION**

Provides $500,000 over a period of five years to support accomplished investigators at the assistant professor level to study pathogenesis, with a focus on the interplay between human and microbial biology, shedding light on how human and microbial systems are affected by their encounters. The awards are intended to give recipients the freedom and flexibility to pursue new avenues of inquiry and higher-risk research projects that hold potential for significantly advancing the biochemical, pharmacological, immunological, and molecular biological understanding of how microbes and the human body interact. The Investigators in the Pathogenesis of Infectious Disease program provides opportunities for assistant professors to bring multidisciplinary approaches to the study of human infectious diseases. The goal of the program is to provide opportunities for accomplished investigators still early in their careers to study what happens at the points where human and microbial systems connect. The program supports research that sheds light on the fundamentals that affect the outcomes of this encounter: how colonization, infection, commensalism and other relationships play out at levels ranging from molecular interactions to systemic ones.

**NOMINATION / APPLICATION**

Institutions may nominate up to two candidates. To encourage applications from veterinarians, institutions that nominate a researcher who holds the D.V.M. will be allowed three nominations. Institutions may have a single additional nomination if they nominate a researcher working in pathogenic helminths, mycology, or reproductive science. In addition, institutions may have an additional nomination if they nominate a member of an underrepresented minority group (i.e., African American, Hispanic or Native American). So an institution could have a total of four nominations.

The institution must submit a statement of nomination for each candidate. In this statement, BWF expects that the institution will tangibly demonstrate its commitment to support each candidate it nominates, including the protection of 75 percent of the grantee’s time for research.

**GENERAL ELIGIBILITY REQUIREMENTS**  
*(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*

Candidates will generally have an M.D., D.V.M., or Ph.D. degree. BWF particularly encourages human health-relevant applications from veterinary scientists.

Candidates must have an established record of independent research and hold a tenure-track position as an assistant professor or equivalent (at the time of application) at a degree-granting institution. Researchers recently appointed to a faculty position may not have a demonstrated track record sufficient to compete successfully for this award. Exceedingly few newly appointed assistant professors have sufficient independence. Most successful applicants are at or well past their third complete year as an Assistant Professor.

Candidates at the appropriate career stage who have held or are currently holding a Burroughs Wellcome Fund award must contact BWF in advance to determine eligibility for this program.

**REVIEW CRITERIA / SELECTION PROCESS**

The BWF utilizes an external advisory committee composed of distinguished scientists from relevant pathogen and human biology fields to review applications and make funding recommendations for approval by BWF’s Board of Directors. Proposal selection is based on a number of factors, including:

- Candidate’s qualifications and potential to conduct innovative research.
• Quality and originality of the proposed research and its potential to advance understanding of fundamental issues of how infectious agents and human hosts interact. Proposals that bring new, solid experimental approaches to understudied questions will be considered more competitive than proposals that primarily extend work under way.

• Demonstration of an established record of independent research. Most awardees have demonstrated independence by publishing a significant body of work beyond that related to their postdoctoral advisors. It is not necessary to have an R01 to apply, but successful applicants who do not yet have an R01 have frequently obtained independent K- or R-series NIH grants or early career grants from other funders. Researchers who have not demonstrated this level of independence should not apply.

ADVISORY / SELECTION COMMITTEE
John Boothroyd / Microbiology and Immunology / Stanford University
Robert Doms / Microbiology / University of Pennsylvania
JoAnne Flynn / Microbiology, Molecular Genetics/ University of Pittsburgh
Daniel Goldberg / Medicine / Washington University
Brigitte Huber / Pathology / Tufts University
Margaret Kielian / Cell Biology / Albert Einstein College of Medicine
Aron Lukacher / Microbiology & Immunology / Penn State
Aaron Mitchell / Biological Sciences / Carnegie Mellon University
Robert Munford / Clinical Infectious Diseases / NIAID
Julie Overbaugh / Human Biology / Fred Hutchinson Cancer Research Center

PREVIOUS YEAR RECIPIENTS – 2014
Robert A. Cramer, Ph.D.
Dartmouth College
Bioenergetics and microbial pathogenesis sufficiency

Michael A. Fischbach, Ph.D.
University of California-San Francisco
Novel microbiota-derived molecules that modulate the host immune response

De'Broski R. Herbert, Ph.D.
University of California-San Francisco
Trefoil factor proteins modulate host immunity against hookworms

Tobias M. Hohl, M.D., Ph.D.
Memorial Sloan-Kettering Cancer Center
Visualization and discovery of innate immune crosstalk that coordinates antifungal immunity

Alexei V. Korenykh, Ph.D.
Princeton University
Systems analysis of pathogen defense mediated by 2', 5'-linked isoRNA

Matthias Marti, Ph.D.
Harvard University
Cellular communication in malaria parasites

Erika L Pearce, D.Phil., Ph.D.
Washington University
Cellular metabolism in immunity to infection

Manuela Raffatellu, M.D.
University of California-Irvine
Characterization of novel populations of neutrophils during bacterial infection

Daniel B. Stetson, Ph.D.
University of Washington
Why do DNA viruses cause cancer?

Niraj H. Tolia, Ph.D.
Washington University School of Medicine
Molecular basis for and inhibition of red blood cell invasion by Plasmodium parasites

Victor J. Torres, Ph.D.
New York University School of Medicine
Staphylococcus aureus pore-forming toxins: leukocyte killing and beyond

Robert T. Wheeler, Ph.D.
University of Maine
Phagocytes block fungal dimorphism to defend the epithelial barrier
Foundation Awards and Competitions

Burroughs Wellcome Fund

Preterm Birth Initiative

Deadlines: 12.01.15 (application)

Amount: $600,000 (over 4 years)

DESCRIPTION
The Preterm Birth Initiative was created to increase the understanding of the biological mechanisms underlying parturition and spontaneous preterm birth and will provide up to $600,000 over a four-year period ($150,000 per year). The initiative is designed to bring together a diverse interdisciplinary group with expertise in genetics/genomics, immunology, microbiology and proteomics along with the more traditional areas of parturition research such as maternal fetal medicine, obstetrics, and pediatrics to address scientific issues related to preterm birth. The formation of new connections between reproductive scientists and investigators who are involved in other areas will give preterm birth research a fresh and unique look.

NOMINATION / APPLICATION
Open, not institutionally limited.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Proposals should address the biomedical causes and mechanisms underlying (preterm) parturition including but not limited to peri-implantational events, placentation, fetal determinants, fetal-maternal immune responses, biological basis for racial-ethnic disparities, mechanisms relating preterm birth to other adverse pregnancy outcomes, biology of normal labor, etc.

Proposals seeking to identify biomarkers predicting preterm birth are welcome.

Proposals must have an interdisciplinary approach.
One member of the team must have training and expertise outside the traditional areas of reproductive science.

Proposals that cross institutional boundaries (partnerships between multiple universities or collaborations within larger universities) are encouraged.

Prior preterm birth full research grant recipients are not eligible to reapply.

REVIEW CRITERIA / SELECTION PROCESS
BWF utilizes an interdisciplinary advisory committee to select and interview finalists and make recommendations for approval by the Fund's Board of Directors.

Selection will be based on the creativity, novelty, and innovation of the proposal as well as the likelihood of a significant impact in the area of parturition and the prevention of spontaneous prematurity.

ADVISORY / SELECTION COMMITTEE
Susan Fisher / Perinatal Biology & Medicine / University of California-San Francisco
Jay Iams / Obstetrics and Gynecology / Ohio State University
Louis Muglia / Pediatrics / University of Cincinnati
D. Michael Nelson / Obstetrics & Gynecology / Washington University
Jerome Strauss / Medicine / Virginia Commonwealth University
Jenny Ting / Microbiology & Immunology / University of North Carolina
Jeffrey Whitsett / Neonatology / University of Cincinnati
PREVIOUS YEAR RECIPIENTS - 2014

Trevor D. Burt
University of California-San Francisco
Fetal immune activation and lineage switching in preterm labor

Kang Chen
Wayne State University
Functions of B cells in pregnancy and pathogenesis of preterm birth

David N. Cornfield
Stanford University School of Medicine
Myometrial smooth muscle cell TRPV channel activity modulates contractility

Stephen Lye
University of Toronto
Targeting leukocyte activation to prevent preterm labor

Vincent Joseph Lynch
University of Chicago
Evolutionary forward genomic insights into the casual mechanisms of preterm birth
Camille & Henry Dreyfus Foundation

Camille Dreyfus Teacher-Scholar Awards Program

Deadlines: 02.10.16 (application)

Amount: $75,000

DESCRIPTION
The Camille Dreyfus Teacher-Scholar Awards Program supports the research and teaching careers of talented young faculty in the chemical sciences. Based on institutional nominations, the program provides discretionary funding to faculty at an early stage in their careers. Criteria for selection include an independent body of scholarship attained within the first five years of their appointment as independent researchers, and a demonstrated commitment to education, signaling the promise of continuing outstanding contributions to both research and teaching.

NOMINATION / APPLICATION
Institutions may make only one nomination annually.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The Camille Dreyfus Teacher-Scholar Awards Program is open to academic institutions in the States, Districts, and Territories of the United States of America that grant a bachelor's or higher degree in the chemical sciences, including biochemistry, materials chemistry, and chemical engineering.

Nominees must hold a full-time tenure-track academic appointment and are normally expected to have been appointed no earlier than mid-year 2009.

Awardees are from Ph.D. granting departments in which scholarly research is a principal activity.

Undergraduate education is an important component of the nominee's activities.

REVIEW CRITERIA / SELECTION PROCESS
The Foundation seeks Camille Dreyfus Teacher-Scholars who demonstrate leadership in research and education. Nominations must provide compelling evidence of the advance of important knowledge in the chemical sciences by the nominee. Further, the nomination should describe dedication and contributions to education in the chemical sciences, particularly with respect to undergraduates.

Recommendations for awards are based primarily on the nominee's scholarly research achievements as an independent faculty member, as assessed by the Foundation's reviewers and the judgment of the nominee's peers exemplified by letters of recommendation. Other considered factors are: awards and honors, publication of research achievements in leading journals, and success in attracting funding of research. Nominations are reviewed by distinguished faculty in the chemical sciences.

ADVISORY / SELECTION COMMITTEE
Not available.
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<thead>
<tr>
<th>Institution</th>
<th>Awarded</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Massachusetts Amherst</td>
<td>Paul Dauenhauer</td>
<td>Production of Renewable Chemicals and Fuels by High Temperature Pyrolysis Chemistry of Cellulose</td>
</tr>
<tr>
<td>Massachusetts Institute of Technology</td>
<td>Elizabeth Nolan</td>
<td>Understanding the Physiological Role of Peptides / Proteins that Bind Metals and their Function as Antibacterial Agents</td>
</tr>
<tr>
<td>Boston University</td>
<td>Ramesh Jasti</td>
<td>The Bottom-Up Organic Synthesis of Graphitic Nanomaterials with Well-Defined Structures and Properties</td>
</tr>
<tr>
<td>Yale University</td>
<td>Nilay Hazari</td>
<td>Transition Metal Catalyzed Conversion of Carbon Dioxide and Mechanistic Studies of the Reactions</td>
</tr>
<tr>
<td>Princeton University</td>
<td>Rodney Priestley</td>
<td>Understanding the Combined Roles of Size, Interfaces, and Processing on the Properties of Amorphous Polymers</td>
</tr>
<tr>
<td>University of Rochester</td>
<td>Daniel Weix</td>
<td>New Methods and Mechanisms for Cross Couplings in C-C Bond Formation and Organic Synthesis</td>
</tr>
<tr>
<td>Temple University</td>
<td>Michael Zdilla</td>
<td>Synthesis and Reactivity of Multimetal Systems Inspired by Biology</td>
</tr>
<tr>
<td>Emory University</td>
<td>Khalid Salaita</td>
<td>Cellular Mechanochemistry at Interfaces: Sensing and Manipulating Forces in Living Systems</td>
</tr>
<tr>
<td>Indiana University - Bloomington</td>
<td>Sara Skrabalak</td>
<td>Shaping the Synthesis of Nanoscale Solids</td>
</tr>
<tr>
<td>Purdue University</td>
<td>Adam Wasserman</td>
<td>Extending the Limits of Applicability of Density Functional Theory towards Larger Systems and Longer Times</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>Jordan Schmidt</td>
<td>Computational Modeling for the Properties of Complex Materials, with Applications to Energy and Catalysis</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Emily Weiss</td>
<td>Controlling the Electronic Structure and Dynamics at Nanoscale Interfaces between Inorganic and Organic Materials</td>
</tr>
<tr>
<td>The University of Texas at Austin</td>
<td>Hal Alper</td>
<td>Utilizing Cells as Bicatalysts for Producing Commodity and Specialty Chemicals</td>
</tr>
<tr>
<td>California Institute of Technology</td>
<td>Theodor Agapie</td>
<td>Multimetallic and Metal-ligand Cooperativity for Catalysis</td>
</tr>
<tr>
<td>Stanford University</td>
<td>Matthew Kanan</td>
<td>Catalyzing CO2 Recycling and Controlling Reactions at Interfaces</td>
</tr>
</tbody>
</table>
Foundation Awards and Competitions

Camille & Henry Dreyfus Foundation

Henry Dreyfus Teacher-Scholar Awards Program

DESCRIPTION
The Henry Dreyfus Teacher-Scholar Awards Program supports the research and teaching careers of talented young faculty in the chemical sciences at undergraduate institutions. Based on institutional nominations, the program provides discretionary funding to faculty at an early stage in their careers. The award is based on accomplishment in scholarly research with undergraduates, as well as a compelling commitment to teaching, and provides an unrestricted research grant of $60,000.

NOMINATION / APPLICATION
Institutions may make only one nomination annually. Renominations are accepted.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The Henry Dreyfus Teacher-Scholar Awards Program is open to academic institutions in the States, Districts, and Territories of the United States of America that grant a bachelor's or master's degree in the chemical sciences, including biochemistry, materials chemistry, and chemical engineering.

Awardees are typically in departments that do not grant a doctoral degree.

Nominees must hold a full-time tenure-track academic appointment, be after the fourth and not after the twelfth years of their independent academic careers, and be engaged in research and teaching primarily with undergraduates.

REVIEW CRITERIA / SELECTION PROCESS
The Foundation seeks Henry Dreyfus Teacher-Scholars who, as independent faculty members, have demonstrated leadership in original scholarly research of outstanding quality, substantially with undergraduates, as well as excellence and dedication in undergraduate education.

Recommendations for awards are based on evidence of outstanding educational efforts and the nominee's scholarly research achievements with undergraduates as an independent faculty member, as assessed by a panel of distinguished faculty in the chemical sciences. The three outside letters of support are of particular value to the reviewers.

Other considered factors are: awards and honors, publication of research achievements in leading journals, and success in attracting research funding.

ADVISORY / SELECTION COMMITTEE
Not available.
## PREVIOUS YEAR RECIPIENTS - 2014

<table>
<thead>
<tr>
<th>Institution</th>
<th>Awardee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamilton College</td>
<td>Myriam Cotten</td>
</tr>
<tr>
<td>Haverford College</td>
<td>Joshua Schrier</td>
</tr>
<tr>
<td>Hope College</td>
<td>Jason Gillmore</td>
</tr>
<tr>
<td>Calvin College</td>
<td>Douglas A. Vander Griend</td>
</tr>
<tr>
<td>Gustavus Adolphus College</td>
<td>Dwight R. Stoll</td>
</tr>
<tr>
<td>University of Colorado Denver</td>
<td>Hai Lin</td>
</tr>
<tr>
<td>Western Washington University</td>
<td>Gregory O'Neil</td>
</tr>
</tbody>
</table>
Foundation Awards and Competitions

Camille & Henry Dreyfus Foundation
Postdoctoral Program in Environmental Chemistry

Deadlines: 08.03.15 (application)
Amount: $120,000 (over 2 years)

DESCRIPTION
The Camille and Henry Dreyfus Foundation seeks to further the development of scientific leadership in the field of environmental chemistry with a postdoctoral fellowship program. The Postdoctoral Program in Environmental Chemistry provides a principal investigator with an award of $120,000 over two years to appoint a Postdoctoral Fellow in environmental chemistry.

NOMINATION / APPLICATION
Open, not institutionally limited.

GENERAL ELIGIBILITY REQUIREMENTS. (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The Postdoctoral Program in Environmental Chemistry is open to all academic and other not-for-profit organizations in the States, Districts, and Territories of the United States of America.

Applications are accepted from principal investigators who have well-established research efforts in environmental science or engineering. These research activities need not be located in traditional departments in the chemical sciences, and collaboration across departments and institutions is encouraged.

The postdoctoral fellow is usually not already identified nor in the principal investigator’s lab at the time of application.

Applications most likely to be of interest should describe innovative fundamental research in the chemical sciences or engineering related to the environment. The importance of the research should be explained. Examples include but are not limited to the chemistry associated with: the climate, the atmosphere, aquatic or marine settings, toxicology, soil or groundwater. Also of interest are chemistry-related energy research (renewable sources, sequestration, etc.), and new or green approaches to chemical synthesis and processing, both with a clearly stated relation to the environment.

REVIEW CRITERIA / SELECTION PROCESS
Recommendations for awards are based on several factors: assessment of the proposed research, the arrangements for the interdisciplinary educational broadening of the Fellow, and an assessment of the ability to both attract the best young Ph.D. candidates and subsequently place them in high level independent starting positions. Applications are reviewed by distinguished scientists in the environmental and chemical sciences.

ADVISORY / SELECTION COMMITTEE
Not available.
## PREVIOUS YEAR RECIPIENTS - 2014

<table>
<thead>
<tr>
<th>Institution</th>
<th>Awarded</th>
<th>Department</th>
<th>Area of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Institute of Technology</td>
<td>Brian Stoltz</td>
<td>Chemistry &amp; Chemical Engineering</td>
<td>Investigation of Atmospheric Autoxidation of Organics: A Unique Mérger of Synthesis and Gas Phase Studies</td>
</tr>
<tr>
<td>Harvard University</td>
<td>Jennifer Lewis</td>
<td>Engineering and Applied Science</td>
<td>Eco-Friendly Direct Ink Writing of Functional 3D Hierarchical Micro/Nano Architectures for Efficient Photovoltaics Cells</td>
</tr>
<tr>
<td>Massachusetts Institute of Technology</td>
<td>Yogesh Surendranath</td>
<td>Chemistry</td>
<td>Chemically Modified Carbons for Energy Dense Redox Flow Batteries</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>Richard Lunt</td>
<td>Chemical Engineering and Materials Science, Physics</td>
<td>Novel Perovskite Semiconductors: Making Solar Cells Affordable for Everyone</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Danna Freedman</td>
<td>Chemistry</td>
<td>Improving Wind Power Generation via Synthesis of a New Class of Permanent Magnets</td>
</tr>
<tr>
<td>University of California, Berkeley</td>
<td>Peidong Yang</td>
<td>Chemistry</td>
<td>Solar-Driven CO₂ Reduction to Carbon Compounds by Semiconductor Nanowire - MOF Hybrid System</td>
</tr>
<tr>
<td>University of California, San Diego</td>
<td>Timothy Bertram</td>
<td>Chemistry and Biochemistry</td>
<td>Direct Measurement of Chemical Reactions at the Air-Sea Interface via Eddy Covariance</td>
</tr>
</tbody>
</table>
Foundation Awards and Competitions

Camille & Henry Dreyfus Foundation

Senior Scientist Mentor Program

Deadlines: 09.10.15 (application)

Amount: $20,000 (over 2 years)

DESCRIPTION
The Camille and Henry Dreyfus Foundation supports emeritus faculty who maintain active research programs with undergraduates in the chemical sciences. The Senior Scientist Mentor Program provides an award of $20,000 over two years for undergraduate stipends and modest research support.

NOMINATION / APPLICATION
Open, not institutionally limited.

GENERAL ELIGIBILITY REQUIREMENTS (see website for complete eligibility requirements)
The Senior Scientist Mentor Program is open to all academic institutions in the States, Districts, and Territories of the United States of America that grant a bachelor’s degree or higher in the chemical sciences, including biochemistry, materials chemistry, and chemical engineering. Faculty with emeritus status on or before October 2014, and who maintain active research programs in the chemical sciences, may apply to the program. More than one application per department or institution is permitted.

REVIEW CRITERIA / SELECTION PROCESS
Successful applicants are expected to be closely engaged in a mentoring relationship with undergraduate students. The evaluation will be based on both an assessment of the research proposed and the plans for undergraduate participation in the research. An applicant’s history of mentoring undergraduates is favorably viewed.

ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS – 2014

<table>
<thead>
<tr>
<th>Institution</th>
<th>Awardee</th>
<th>Department</th>
<th>Area of Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trinity College</td>
<td>Henry DePhillips</td>
<td>Chemistry</td>
<td>Aging Study of Resins, Binders and Organic Pigments</td>
</tr>
<tr>
<td>The Pennsylvania State University</td>
<td>Ronald Danner</td>
<td>Chemical Engineering</td>
<td>Solubility and Diffusivity of Solvents in Polymers at High Pressure</td>
</tr>
<tr>
<td>College of Charleston</td>
<td>Camil A. Guirgis</td>
<td>Chemistry and Biochemistry</td>
<td>Conformational Studies of Six-Membered Ring Systems Containing Silicon and Other Atoms Within the Cyclic Backbone</td>
</tr>
<tr>
<td>Emory University</td>
<td>Albert Padwa</td>
<td>Chemistry</td>
<td>Tandem Cyclopropanation / Insertion / Cycloaddition Sequence of Differently Substituted Bis-Diazoc Compounds</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>James Dye</td>
<td>Chemistry</td>
<td>Sequestered Alkali Metals for Green Chemistry Reductions</td>
</tr>
<tr>
<td>Calvin College</td>
<td>Roger DeKock</td>
<td>Chemistry and Biochemistry</td>
<td>Electronic Structure of Atoms and Molecules</td>
</tr>
<tr>
<td>Institution</td>
<td>Name</td>
<td>Major</td>
<td>Thesis Title</td>
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<tr>
<td>-------------------------------------------------</td>
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<tr>
<td>The University of Chicago</td>
<td>R. Stephen Berry</td>
<td>Chemistry</td>
<td>Bridging Macro and Micro</td>
</tr>
<tr>
<td>The University of Chicago</td>
<td>Takeshi Oka</td>
<td>Chemistry and Astronomy &amp; Astrophysics</td>
<td>Astrochemistry: Identification of Diffuse Interstellar Bands (DIBs) and Analysis of H3+ and other Molecular Ions</td>
</tr>
<tr>
<td>The University of Chicago</td>
<td>Stuart Rice</td>
<td>Chemistry</td>
<td>Three Studies of Quasi-Two-Dimensional Colloid Suspensions</td>
</tr>
<tr>
<td>University of California, Berkeley</td>
<td>Andrew Streitwieser</td>
<td>Chemistry</td>
<td>Computational Physical Organic Chemistry</td>
</tr>
</tbody>
</table>
## Foundation Awards and Competitions

**Camille & Henry Dreyfus Foundation**  
*Special Grant Program in the Chemical Sciences*

<table>
<thead>
<tr>
<th>Deadlines:</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount:</td>
<td>Up to $100,000</td>
</tr>
</tbody>
</table>

**As of January 2, 2015 this program has been suspended.**

### DESCRIPTION
The Special Grant Program in the Chemical Sciences provides funding for innovative projects in any area consistent with the Foundation's broad objective to advance the chemical sciences.

### NOMINATION / APPLICATION
Open, not institutionally limited.

### GENERAL ELIGIBILITY REQUIREMENTS  
(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The program is open to institutions in the States, Districts, and Territories of the United States of America that have a focus in the chemical sciences. Institutions include schools, colleges and universities, as well as other not-for-profit organizations, such as scientific societies and science museums. Awards are not made directly to individuals, or, in general, to private foundations.

### REVIEW CRITERIA / SELECTION PROCESS
The Foundation encourages proposals that are judged likely to significantly advance the chemical sciences. Examples of areas of interest include (but are not limited to): the increase in public awareness, understanding, and appreciation of the chemical sciences; innovative approaches to chemistry education at all levels (K-12, undergraduate, and graduate); and efforts to make chemistry careers more attractive. Research proposals are not customarily considered.

Important aspects of proposals include the following:
- Broad applicability and impact beyond the submitting institution
- Specific and detailed descriptions of the chemistry associated with the proposal
- Uniqueness of the project

Favorable consideration also is given to the following:
- A plan for sustaining this project, if relevant
- Significant institutional support or other complementary sources of funding
- Evidence of expertise of the PIs and/or identified consultants
- Plans to assess effectiveness, including over the longer term

### ADVISORY / SELECTION COMMITTEE
Not available.
## PREVIOUS YEAR RECIPIENTS - 2014

<table>
<thead>
<tr>
<th>Institution</th>
<th>Awarded</th>
<th>Department</th>
<th>Title</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Chemical Society</td>
<td>Mary Kirchhoff</td>
<td>Education Division</td>
<td>Multimedia Learning Resources for American Association of Chemistry Teachers</td>
<td>$100,000</td>
</tr>
<tr>
<td>California Institute of Technology</td>
<td>Bruce Hay</td>
<td>Biology and Biomedical Engineering</td>
<td>High School Community Science and the Design of Portable Custom Molecular Sensors</td>
<td>$45,000</td>
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<tr>
<td>Fordham University</td>
<td>Jos Friedrich</td>
<td>Chemistry</td>
<td>Chondrule Analysis Project: a Classroom-based Crowdsourcing Initiative for Early Undergraduate Involvement in Interdisciplinary Analytical Research</td>
<td>$14,700</td>
</tr>
<tr>
<td>Middle Tennessee State University</td>
<td>Andrienne Friedli</td>
<td>Chemistry</td>
<td>Using Stereoscopic 3D Visualization to Improve Learning in Organic Chemistry</td>
<td>$19,100</td>
</tr>
<tr>
<td>Rensselaer Polytechnic Institute</td>
<td>Wilfredo Colon</td>
<td>Chemistry and Chemical Biology</td>
<td>RESE: Research Internship for Community College Student Engagement</td>
<td>$54,550</td>
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<tr>
<td>Science Friday Initiative, Inc.</td>
<td>Ariel Zych</td>
<td>Education</td>
<td>Science Friday Chemical Sciences Educational Materials</td>
<td>$40,000</td>
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<tr>
<td>Smith College</td>
<td>Kevin Shea</td>
<td>Chemistry</td>
<td>Organic II Course-Based Research Experience: Synthesis of Bioactive Neurotransmitter Derivatives to Combat Lymphatic Filariasis</td>
<td>$50,000</td>
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<tr>
<td>The Ohio State University</td>
<td>Susan Oleksi</td>
<td>Chemistry and Biochemistry</td>
<td>Wonders of Our World (WOW) - Engaging Middle School Students in STEM through Nanochemistry</td>
<td>$29,000</td>
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<tr>
<td>The Rockefeller University</td>
<td>Jeannine Garbarino</td>
<td>Science Outreach</td>
<td>Chemistry-Based Professional Development Research: A New Component of the LAL Initiative</td>
<td>$50,000</td>
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<tr>
<td>Tuskegee University</td>
<td>Willard Collier</td>
<td>Chemistry</td>
<td>Chemistry for the Future of Water Sustainability</td>
<td>$45,000</td>
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<tr>
<td>University of Arkansas</td>
<td>Wesley Sites</td>
<td>Chemistry and Biochemistry</td>
<td>Chemistry at Work: Videos Illustrating Chemical Principles Applied in Industry</td>
<td>$40,000</td>
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<tr>
<td>University of California, Santa Barbara</td>
<td>Norbert Reich</td>
<td>Chemistry and Biochemistry</td>
<td>ScTrick: How Science Works</td>
<td>$38,000</td>
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<tr>
<td>University of Nebraska-Lincoln</td>
<td>Rebecca Lai</td>
<td>Chemistry</td>
<td>ScIPop Talk: Chemistry</td>
<td>$25,000</td>
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<tr>
<td>University of North Carolina at Charlotte</td>
<td>Michael Walter</td>
<td>Chemistry</td>
<td>Discovering the Chemistry of Polymeric Semiconductors and Molecular Electronics: A New Polymer Education Kit for High School Science Classrooms</td>
<td>$25,000</td>
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<tr>
<td>University of Pittsburgh</td>
<td>Geoffrey Hutchinson</td>
<td>Chemistry</td>
<td>Creating an Open Quantum Chemistry Repository</td>
<td>$46,000</td>
</tr>
</tbody>
</table>
Foundation Awards and Competitions

Doris Duke Charitable Foundation

Clinical Scientist Development Award

**Deadlines:**
- **10.31.15** (preproposal)
- **02.24.16** (full proposal)

**Amount:** $486,000 (over 3 years)

**DESCRIPTION**
These awards provide support for mentored research to physician scientist faculty working in any disease area as they transition to independent clinical investigators. Early career physician scientists must balance their patient care and research responsibilities as they set out to establish their research programs. With only two percent of US physicians identifying research as their main professional activity and an estimated ten-year attrition rate of 39 percent for assistant professors with and M.D. degree, this award program aims to enable promising early career physician scientists to build successful careers in clinical research and attain independent research project grant funding. For this program clinical research is defined as the scientific investigation of the etiology, prevention, diagnosis, or treatment of human disease using human subjects, human populations, or materials of human origin. Included in the definition are studies that utilize tissues or pathogens only if they can be linked to a patient.

**NOMINATION / APPLICATION**
Open, not institutionally limited.

**GENERAL ELIGIBILITY REQUIREMENTS** *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*
- Hold an M.D., D.O. or foreign equivalent degree from an accredited institution.
- Have a valid, active U.S. medical license at the time of application, but do not have to be U.S. citizens.
- Be working at a U.S. academic institution that grants doctoral degrees and is able to receive an award as an organization with 501(c)(3) Internal Revenue Service status.
- Have a full-time, salaried faculty appointment as assistant professor. Have been appointed to their first assistant professor position between November 1, 2009 and November 1, 2013.
- Propose a clinical research project, as defined by the Doris Duke Charitable Foundation, in any disease area. See definition in the Request for Applications.
- Not be the principal investigator of a multi-year grant with annual direct funding in the amount of $225,000 or higher with start date prior to and inclusive of July 1, 2015.
- Not be the principal investigator or co-principal investigator on a National Institutes of Health R01 research grant or equivalent that has a start date prior to and inclusive of July 1, 2015.
- Be guaranteed a minimum overall research time protection of 75% of full-time professional effort by the institution where the applicant has an appointment.

**REVIEW CRITERIA / SELECTION PROCESS**
Proposals are reviewed by a panel of peers selected for each round of awards with the following criteria:
- Originality and significance of the research project
- Suitability of the proposed research to the foundation’s mission
- Adherence to the foundation’s definition of clinical research
- Evidence of the applicant’s commitment to a clinical research career
- Applicant’s formal research training, laboratory experience, and productivity
- Evidence of the applicant’s original research in the relevant area
- Evidence that the research will be driven by the applicant and that the applicant has his/her own research facilities
- Importance of the research to the field and to the applicant’s career
- Appropriateness of the methodology and scope of the project
• Commitment of the applicant’s department and institution to the area of research and to the applicant
• Resources available to the applicant

Applicants are encouraged to propose research that is innovative, interfaces with different scientific disciplines, and has the potential to significantly advance the frontiers of clinical research.

**ADVISORY / SELECTION COMMITTEE**

**NOTE:** Following is a listing of the Scientific Advisory Council for the foundation’s overall Medical Research Program. The foundation selects a peer panel to review the Clinical Scientist Development Award proposals.

Helen Hobbs / Molecular Genetics / University of Texas Southwestern Medical Center at Dallas  
Nancy Andrews / Dean / Duke University School of Medicine  
Martin Blaser / Microbiology / New York University School of Medicine  
Barry Bloom / Public Health / Harvard University  
David Ginsburg / Internal Medicine and Human Genetics / University of Michigan Medical School  
Talmadge King / Medicine / University of California, San Francisco  
Alan Schwartz / Pediatrics / Washington University School of Medicine  
Bruce Walker / Director / Ragon Institute of MGH, MIT and Harvard

**PREVIOUS YEAR RECIPIENTS – 2014**

**Wael Asaad**  
Brown University  
Breaking Beta: Decoding and Manipulating Critical Neural State Transitions in Parkinson’s Disease

**Eran Bendavid**  
Stanford University  
Rigorous Evaluations of Global Health programs and Policies

**Kathrin Bernt**  
University of Colorado  
Targeting DOT1L in MN1-High Acute Myeloid Leukemia

**Chetan Bettegowda**  
Johns Hopkins University  
Blood Based Biomarkers for Hereditary Cancer Syndromes using Neurofibromatosis 1 as a Model

**Alex Carter**  
Washington University  
Understanding How Different Therapies Reshape Brain Networks to promote Stroke Recovery

**Ilseung Cho**  
New York University  
Hypermethylation as a Microbiome-Mediated Epigenetic Phenomenon in CIMP(+) Colorectal Cancers

**Todd Druley**  
Washington University  
Functional Characterization of Deleterious Germline Variability in MLL3 in Infant Leukemia

**Edward Hsiao**  
University of California, San Francisco  
Dissecting Human Osteoprogenitor Function using iPS Cells

**Michael Kruer**  
University of South Dakota  
New Insights into Molecular Mechanisms driving Pediatric Movement Disorders

**Edward Lee**  
University of Pennsylvania  
Transcriptional Silencing of C9orf72 in Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration

**Brian Lindman**  
Washington University  
Novel Prediction Models for Patient-Centered Clinical Outcomes after Transcatheter Aortic Valve Replacement for Aortic Stenosis

**Ta-Chiang Liu**  
Washington University  
Small Intestinal Paneth Cell Phenotype in Crohn’s Disease: Clinical Relevance and Genetic Associations

**Steven Lubitz**  
Massachusetts General Hospital  
Improving Stroke Care by Predicting Atrial Fibrillation

**Stephen Oh**  
Washington University  
Targeting Aberrant Signaling Pathways in Myeloproliferative Neoplasms

**Daniel Popkin**  
Case Western Reserve University  
Pharmacologic NK Harness to Seek and Destroy the HIV Reservoir

**Rebecca Scharf**  
University of Virginia  
Early Predictors and Biomarkers of Cognition and Growth in Impoverished Children

**Cynthia Shibao**  
Vanderbilt University  
Racial Differences in Vagal Control of Glucose Homeostasis
**Foundation Awards and Competitions**

William T. Grant Foundation

*Scholars Program*

**Deadlines:** 07.08.15  (application)

**Amount:** $350,000  (over 5 years)

**DESCRIPTION**
The William T. Grant Scholars Program is for early-career researchers in the social, behavioral, and health sciences. The foundation encourages Scholars to tackle important questions that will advance theory, policy, and practice for youth. Applicants identify new methods, disciplines, or content they want to learn, and propose five-year research plans that foster their growth in those areas. The foundation recognizes that early-career researchers are rarely given incentives or support to take such risks; so this award includes a mentoring component. Potential Scholars should have a promising track record of conducting high-quality research, but want to pursue a significant shift in their trajectories as researchers. Candidates are nominated by a supporting institution and must submit five-year research plans that demonstrate creativity, intellectual rigor, and a commitment to continued professional development. Every year, four to six William T. Grant Scholars are selected and each receives $350,000 distributed over a five-year period.

**NOMINATION / APPLICATION**
The supporting institution nominates the applicant. Each year, only one applicant may be nominated from a major division (e.g., College of Arts and Sciences, Medical School) of an institution. The institution is committed to providing the researcher with sufficient resources to carry out the five-year research plan. This includes computer equipment, colleagues, administrative staff, research facilities, and the balance of his or her salary, absent denial of tenure or dramatic reduction in institutional funding. At least half of the Scholar’s paid time must be spent conducting research.

**GENERAL ELIGIBILITY REQUIREMENTS**  (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Applicants must have received their terminal degree within seven years of submitting their application. The foundation calculates this by adding seven years to the date the doctoral degree was conferred. In medicine, the seven-year maximum is dated from the completion of the first residency.

Applicants must be employed in career-ladder positions. For many applicants, this means holding a tenure-track position in a university. Applicants in other types of organizations should be in positions in which there is a pathway to advancement in a research career at the organization and the organization is fiscally responsible for the applicant’s position. The award may not be used as a post-doctoral fellowship.

Applicants of any discipline are eligible.

**REVIEW CRITERIA / SELECTION PROCESS**
Selection is based on applicants’ potential to become influential researchers, as well as their plans to expand their expertise in new and significant ways. The application should make a cohesive argument for how the applicant will expand his or her expertise. The research plan should evolve in conjunction with the development of new expertise, and the mentoring plan should describe how the proposed mentors will support applicants in acquiring that expertise.

Review occurs in the following stages: Staff screen abstracts, brief CVs, and, if warranted, full applications to determine whether they fit the foundation’s Current Research Interests and potentially meet other Selection Criteria. Next, the Scholars Selection Committee reviews the remaining applications. Each application receives detailed reviews by two Committee members. The Committee then chooses approximately 10 finalists, who will be invited to New York City for an interview. Prior to the interview, finalists’ proposals are reviewed by two external reviewers. During the interview, finalists have the opportunity to respond to Committee members’ and external experts’ reviews. Following the interviews, the Selection Committee chooses four to six William T. Grant Scholars.
ADVISORY / SELECTION COMMITTEE

Edith Chen / Clinical Psychology / Northwestern University
Cynthia García Coll / Institutional Center for Scientific Research / Carlos Albizu University
Adam Gamoran / President / William T. Grant Foundation
Susan M. Kegeles / Medicine / University of California, San Francisco
Vonnie C. McLoyd / Psychology / University of Michigan
Elizabeth Birr Moje / Language, Literacy, and Culture; Education / University of Michigan
Richard J. Murnane / Education and Society / Harvard University
Lawrence Palinkas / Social Policy and Health / University of Southern California
Mary Pattillo / Sociology and African American Studies / Northwestern University
Robert C. Pianta / Education / University of Virginia
Andrew C. Porter / Education / University of Pennsylvania
Hirokazu Yoshikawa / Globalization and Education / New York University

PREVIOUS YEAR RECIPIENTS – 2014

Noelle M. Hurd
University of Virginia
Through three interconnected research projects, Dr. Hurd’s grant, entitled “Critical Contexts for the Formation of Natural Mentoring Relationships among Economically Disadvantaged African-American Adolescents,” will examine how family and neighborhood settings support the development of mentoring relationships between economically disadvantaged African-American adolescents and the adults in their everyday lives. This project will develop her skills in the design and implementation of multilevel and mixed-methods studies to assess family- and neighborhood-level influences on natural mentoring relationships. Patrick Tolan, professor at the University of Virginia Curry School of Education, will mentor Hurd in multilevel study design and measurement. Jean Rhodes, professor of psychology at the University of Massachusetts-Boston, and Mary Waters, professor and chair of sociology at Harvard University, will co-mentor Hurd in qualitative and mixed-methods research.

Michael J. Mackenzie
Columbia University
His grant, “Children in Limbo: A Transactional Model of Foster Care Placement Instability,” will examine why some children in the child welfare system experience placement disruptions that increase in frequency and speed over their time in care. Mackenzie will expand his expertise to become better skilled at assessing adolescent development and transitions as well as developing novel longitudinal designs that allow for a more nuanced look at children’s experiences of life disruptions. The former will be supported through the efforts of mentor Jeanne Brooks-Gunn, the Virginia & Leo Marx Professor of Child Development at Teachers College, Columbia University. The latter methodological portion will be supported by Professor John Schulenberg at the University of Michigan’s Institute for Social Research and the Center for Human Growth and Development.

Rebecca M. B. White
Arizona State University
Her grant, “A New Look at Neighborhood Ethnic Concentration: Implications for Mexican-Origin Adolescents’ Cultural Adaptation and Adjustment,” will examine how ethnically concentrated neighborhood settings influence Latino adolescents’ development, with a special emphasis on a set of developmental competencies that are salient to ethnic minority youth. White will expand upon her expertise in family, developmental, and public health sciences to gain knowledge in mixed-methods field work and sociological theory. Sandra Simpkins, a developmental psychologist at Arizona State University, will mentor White on qualitative and mixed methods. Christopher Browning, professor of sociology at The Ohio State University, will provide guidance on exposure-based field methods and mainstream neighborhood theory.

Joanna Lee Williams
University of Virginia
Her grant, “Benefits and Challenges of Ethnic Diversity in Middle Schools: The Mediating Role of Peer Groups,” will examine how ethnically diverse peer groups provide psychosocial and academic benefits to early adolescents. Williams, a developmental psychologist, will gain expertise in social network analysis, ethnographic methods, mixed-methods research, and sociological perspectives on peer groups. Sandra Graham at the University of California, Los Angeles will provide expertise in ethnicity and school-level diversity as contexts of development. Jill Hamm at University of North Carolina will provide guidance in social network analysis and middle school peer groups. In the later years of the award, Prudence Carter, an educational sociologist at Stanford University, will provide expertise on mixed-methods data collection in diverse schools.

David Scott Yeager
University of Texas at Austin
His Grant, “Toward a Sociological, Contextual Perspective on Psychological Interventions,” will examine how and to what extent the effects of social-psychological interventions vary across different settings. Yeager, who has a strong background in adolescent development research and in evaluating psychological interventions in education seeks a better integration of theory and data on social settings in order to strengthen understanding of the scalability of these types of interventions. Robert Crosnoe and Chandra Muller at the University of Texas will provide guidance on the measurement and analysis of settings. Uri Treisman, a public policy expert, will share his expertise about carrying out policy-relevant analyses as well as on communicating the findings to the general public. In addition, Tony Bryk at the Carnegie Foundation will serve as an informal mentor and provide statistical guidance.
**Foundation Awards and Competitions**

**Howard Hughes Medical Institute**  
*Investigators Competition*

<table>
<thead>
<tr>
<th>Deadlines:</th>
<th>TBD (application)</th>
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</thead>
<tbody>
<tr>
<td>Amount:</td>
<td>Varies (over 5 years)</td>
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</tbody>
</table>

**DESCRIPTION**

By employing scientists as investigators rather than awarding them grants for specific research projects, HHMI provides its researchers long-term, flexible funding that gives them the freedom to explore and, if necessary, change direction. HHMI investigators have support to follow their ideas through to fruition, even if that process takes a very long time. HHMI’s philosophy of selecting “people, not projects” seeks researchers who bring innovative approaches to the study of many different biological problems through the biomedical disciplines of genetics, cell biology, developmental biology, biochemistry, and neuroscience as well as adjacent fields of biophysics, chemical biology, biomedical engineering, and computational biology. Plant scientists, evolutionary biologists, and patient-oriented researchers are also in the ranks of current investigators. Investigators continue to be based at their host institutions; however, HHMI investigators and some of their laboratory personnel are Institute employees and are supported by HHMI field offices throughout the country. Each investigator receives his or her full salary, benefits, and a research budget from HHMI. Appointment is for a five-year term, which may be renewed after an exacting review process.

**NOMINATION / APPLICATION**

Through periodic competitions, HHMI accepts applications from researchers at more than 200 research institutions across the United States, with the aim of identifying individuals who have the potential to make significant contributions to science. The last competition was held in 2012 and resulted in the selection of 27 scientists as HHMI Investigators. The current 2014 competition is expected to result in 20 to 25 new Investigators to be announced in 2015.

The Investigator competition places no restrictions on the number of applications from any eligible institution. Researchers with faculty appointments apply directly, and prior institutional endorsement is not a requirement. HHMI particularly welcomes applications from women and members of minority groups that are under-represented in the biomedical sciences.

**GENERAL ELIGIBILITY REQUIREMENTS** *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*

Specific eligibility criteria for the 2014 competition include the following:

- PhD and/or MD (or the equivalent).
- Tenured or tenure-track position as an assistant professor or higher academic rank (or the equivalent) at an eligible U.S. institution. Federal government employees are not eligible.
- More than 5, but no more than 15, years of post-training, professional experience. To meet this requirement, the applicant’s professional appointment(s) must have begun no earlier than June 1, 1999, and no later than July 1, 2009.
- Principal investigator on one or more active, national peer-reviewed research grants with a duration of at least three years, such as an NIH R01 grant, by June 3, 2014. Mentioned awards, career development, and training grants do not qualify. Multi-investigator grants may qualify.

**REVIEW CRITERIA / SELECTION PROCESS**

Includes evaluation of applications by distinguished scientists, leading to the selection of semifinalists by early 2015. Further review includes a symposium attended by HHMI scientific leadership and the final advisory panel, at which each semifinalist will make a brief research presentation. Finalists will be announced in the spring of 2015.

**ADVISORY / SELECTION COMMITTEE**

Not Available.
PREVIOUS YEAR RECIPIENTS - 2013

Peter Baumann, PhD
HHMI Early Career Scientist
Stowers Institute for Medical Research
Robert A. Cramer, Ph.D.

Michael S. Brainard, PhD
University of California, San Francisco

Jean-Laurent Casanova, MD, PhD
Rockefeller University

Adam E. Cohen, PhD
Harvard University

Karl Deisseroth, MD, PhD
HHMI Early Career Scientist
Stanford University

Michael A. Dyer, PhD
HHMI Early Career Scientist
St. Jude Children’s Research Hospital

Marc R. Freeman, PhD
HHMI Early Career Scientist
University of Massachusetts Medical School

Chuan He, PhD
University of Chicago

Hopi Hoekstra, PhD
Harvard University

Neil Hunter, PhD
HHMI Early Career Scientist
University of California, Davis

Akiko Iwasaki, PhD
Yale University

Nicole King, PhD
University of California, Berkeley

Christopher D. Lima, PhD
Memorial Sloan-Kettering Cancer Center

Harmit S. Malik, PhD
HHMI Early Career Scientist
Fred Hutchinson Cancer Research Center

Tirin Moore, PhD
HHMI Early Career Scientist
Stanford University

Vamsi K. Mootha, MD
Massachusetts General Hospital

Dyche Mullins, PhD
University of California, San Francisco

Evgeny Nudler, PhD
New York University

Ardem Patapoutian, PhD
Scripps Research Institute

Michael Rape, PhD
University of California, Berkeley

Peter W. Reddien, PhD
HHMI Early Career Scientist
Massachusetts Institute of Technology

Aviv Regev, PhD
HHMI Early Career Scientist
Massachusetts Institute of Technology

David Reich, PhD
Harvard Medical School

Russell E. Vance, PhD
University of California, Berkeley

Johannes C. Walter, PhD
Harvard Medical School

Rachel I. Wilson, PhD
HHMI Early Career Scientist
Harvard Medical School

Yukiko Yamashita, PhD
University of Michigan
Foundation Awards and Competitions

W. M. Keck Foundation

**Science and Engineering Awards**

**Medical Research Awards**

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<td>(concept paper)</td>
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<tr>
<td>(phone conference)</td>
<td>07.01 to 08.15.15</td>
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<tr>
<td>(phase I application)</td>
<td>11.01.15</td>
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<tr>
<td>(phase 2 proposal)</td>
<td>02.15.16</td>
</tr>
</tbody>
</table>

**Amount:** $1,000,000 (over 5 years)

**DESCRIPTION**

The Research Program seeks to benefit humanity by supporting projects in two specific areas (1) medical research and (2) science and engineering, that are distinctive and novel in their approach, question the prevailing paradigm, or have the potential to break open new territory in their field. Past grants have been awarded to major universities, independent research institutions, and medical schools to support pioneering biological and physical science research and engineering, including the development of promising new technologies, instrumentation or methodologies. The foundation has two grant cycles per year.

**NOMINATION / APPLICATION**

The foundation has a four-part application process and requires this process to be coordinated out of a university’s central Foundation Relations Office:

1. Submission of a one-page concept paper
2. A phone consultation among a foundation program officer(s), the Vice President for Research at the university, and university’s Foundation Relations Office
3. Submission of a phase I application, if invited
4. Submission of a phase 2 proposal, if invited

Universities are invited to submit up to eight concept papers for review: up to four in the Science and Engineering area and up to four in the Medical Research area.

Applicants may submit one phase 1 application per grant cycle to each of the following areas for which they are eligible: Science and Engineering Program AND/OR Medical Research Program. So potentially a total of two phase 1 applications per grant cycle.

**GENERAL ELIGIBILITY REQUIREMENTS**  (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)

Funding is awarded to universities and institutions nationwide for projects in research that:

- Focus on important and emerging areas of research
- Have the potential to develop breakthrough technologies, instrumentation or methodologies
- Are innovative, distinctive and interdisciplinary
- Demonstrate a high level of risk due to unconventional approaches, or by challenging the prevailing paradigm
- Have the potential for transformative impact, such as the founding of a new field of research, the enabling of observations not previously possible, or the altered perception of a previously intractable problem
- Does not focus on clinical or translational research, treatment trials or research for the sole purpose of drug development
- Fall outside the mission of public funding agencies
- Demonstrate that private philanthropy generally, and the W. M. Keck Foundation in particular, is essential to the project’s success

**REVIEW CRITERIA / SELECTION PROCESS**

Major review criteria are reflected in General Eligibility Requirements discussed in the previous section.
To overcome this, PI Clodagh O’Shea has identified a cell intact cell and remain one of the most intractable challenges in biology. To fit within the nucleus, DNA assembles into chromatin and coils into spatially defined territories that determine if genes are active or silent through poorly understood mechanisms. The higher order coding structures of the human genome have not been visualized within an intact cell and remain one of the most intractable challenges in biology. To overcome this, PI Clodagh O’Shea has identified a cell

permeable fluorescent small molecule that binds specifically to DNA and upon excitation can be used to paint its surface with an electron dense polymer that enables the 3D ultrastructure of chromatin to be visualized at nucleosome resolutions. O’Shea and UCSD co-PI Mark Ellisman will combine this technique, called ChromEM, with metal nanoparticles targeted to specific genes. They will apply the combined technology to visualize how viruses cause rearrangement of the 3D chromatin structure in the infected cell’s nucleus to modulate gene activity. If successful, the methodology would reveal important clues to the relationship between chromatin structure and gene expression. These technological innovations and conceptual advances will have exciting applications that impact many aspects of biomedical science.

**Northern Arizona University**
Klisa Nishikawa, Brent Nelson, Christopher Mann, Matthew Gage
$1,000,000

The research team will develop new techniques for characterizing protein interactions that will test a radical new theory on muscle contraction. The prevailing “sliding filament” theory fails to adequately predict muscle behavior during natural movements. PI Nishikawa’s winding filament hypothesis represents a paradigm shift for the theory of muscle contraction. She proposes that the titin protein binds to actin upon calcium influx and winds on thin filaments as they are rotated by the cross-bridges during force development. She has demonstrated that the hypothesis fills existing gaps between experiment and theory. In order to directly characterize the proposed interactions, the team will develop and validate methods at or beyond the current state-of-the-art. First, single molecule atomic force spectroscopy will be used to quantify interactions between synthetically produced titin fragments and actin. Second, the investigators will use fluorescence resonance energy transfer reporters in a cell culture system and subsequently in transgenic mice to visualize and quantify these interactions in real time in living muscle fibers. Third, to observe the winding of titin on actin filaments, electron holographic tomography will be used to generate 3D images. The latter two approaches will require improvement of these technologies to yield sufficient data to either validate or disprove the winding filament hypothesis. Even if the hypothesis is disproved, a set of improved technologies would add value to the field of biological mechanics. If correct, her hypothesis could inspire new approaches for ameliorating neuromuscular disease and injury.

**Salk Institute of Biological Sciences**
Clodagh O’Shea, Mark Ellisman
$1,000,000

ADVISORY / SELECTION COMMITTEE
Not Available.

PREVIOUS YEAR RECIPIENTS – 2014 MEDICAL RESEARCH PROGRAM

**Hereditary Disease Foundation**
Nancy Wexler, Robert Darnell, Jean Paul Vonsattel
$1,000,000

The team’s goal is to discover and understand the mode of action of genetic modifiers of age of onset and other symptoms of Huntington’s disease (HD). For over two decades Hereditary Disease Foundation researchers characterized its extensive Venezuelan HD kindred cohorts. A genome-wide linkage scan of this unique population demonstrated strong statistical support for three genetic modifier loci for age of HD onset. The investigators propose to identify the specific genetic variants responsible for modification of age of onset for HD. Neurological, psychiatric and cognitive examinations, well preserved brain tissue and germ line DNA represent an unprecedented resource for carrying out this study. They will conduct next-generation whole genome sequencing of key family groups, in-depth transcriptome analysis of brain regions, and genome-wide epigenetic analysis on germ line DNA at the New York Genome Center. The unique combination of resources in this project provides an extraordinary opportunity to unravel the pathway for age of onset. Results from this project could be applied to other inherited and other neurological diseases.

**Klisa Nishikawa, Brent Nelson, Christopher Mann, Matthew Gage**

**Northern Arizona University**
Klisa Nishikawa, Brent Nelson, Christopher Mann, Matthew Gage
$1,000,000

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**Salk Institute of Biological Sciences**
Clodagh O’Shea, Mark Ellisman
$1,000,000

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The complexity of the interplay of dynamic neuronal signals in the brain has implications for human behavior. A UCSB team of engineers and a neuroscientist proposes to develop analytical tools that could continuously track multiple small molecules including psychoactive drugs and neurotransmitters in the brain of awake and ambulatory rodents. The technology is based on the team’s recently developed electrochemical sensors, composed of small DNA molecules called aptamers. These can be engineered to bind tightly to specific target molecules thereby triggering an electrical signal. These sensors, supported on micron-scale gold electrodes inserted into a rodent brain, will, for the first time, establish the time-synchronized relationships between drug neuropharmacokinetics as well as the neurotransmitter dynamics and behaviors that they induce. The success of this project could help to answer some of the most fundamental questions in addiction biology. It will also validate a powerful new approach for studying the dynamic molecular changes that form the biological bases of behavior.

University of California, Santa Barbara
Tod Kippin, Kevin Plaxco, Tom Soh
$1,000,000
The complexity of the interplay of dynamic neuronal signals in the brain has implications for human behavior. A UCSB team of engineers and a neuroscientist proposes to develop analytical tools that could continuously track multiple small molecules including psychoactive drugs and neurotransmitters in the brain of awake and ambulatory rodents. The technology is based on the team’s recently developed electrochemical sensors, composed of small DNA molecules called aptamers. These can be engineered to bind tightly to specific target molecules thereby triggering an electrical signal. These sensors, supported on micron-scale gold electrodes inserted into a rodent brain, will, for the first time, establish the time-synchronized relationships between drug neuropharmacokinetics as well as the neurotransmitter dynamics and behaviors that they induce. The success of this project could help to answer some of the most fundamental questions in addiction biology. It will also validate a powerful new approach for studying the dynamic molecular changes that form the biological bases of behavior.

PREVIOUS YEAR RECIPIENTS — 2014 SCIENCE AND ENGINEERING PROGRAM

Rice University
Daniel Mittleman
$1,000,000
The past decade has seen significant growth in wireless communications. As a result, existing wireless network infrastructures are reaching their maximum capacity, and with the accelerating trends in smart phone usage and in machine-to-machine wireless links, this problem will soon reach a crisis point. To address this challenge, the only viable solution is to increase the carrier frequency in order to access more bandwidth. However, this scaling poses serious scientific and technical challenges. A team at Rice University will solve the most serious of these challenges, enabling the creation of multi-node mobile wireless networks operating in the terahertz range, at a frequency about 100 times higher than that of the existing 4G infrastructure. Many of these same challenges, such as the low power of practical sources and the lack of electronic beam steering capabilities, also inhibit the development of high-speed terahertz imaging systems. Such systems could provide unprecedented capabilities for sensing and chemical identification in applications as diverse as security screening, manufacturing quality control and navigation for autonomous vehicles. This research will lay the groundwork for future needs in wireless communications and will also create new possibilities for imaging and sensing systems.

Stanford University
Mark Kasevich
$1,000,000
Gravitational waves have yet to be directly detected. The direct observation of these waves, when it occurs, is expected to initiate new avenues for understanding our universe. For example, detection of gravitational waves is the only known method for directly observing the early universe. A team at Stanford University proposes to build a prototype gravitational wave detector based on recent advances in atom interferometry and atomic clock technology. This approach is uniquely capable of detecting gravity waves in the 0.1 Hz to 10 Hz frequency band, which is ideally suited for studies of the early universe, and which is currently not addressed by any of the major existing detectors (LIGO, Advanced LIGO and the proposed LISA detector). The team will develop the required advanced laser/atom technologies and a 10 m test-bed apparatus to realize a proof-of-concept demonstration of a prototype detector. Theoretical work will pursue improved understanding of the science reach of the proposed detectors and their constraints on new physics. A technological byproduct of this work will be demonstration of a new class of geophysical sensors suited to study of, for example, the Earth’s water table. The work will also result in new tests of quantum mechanics by probing quantum states where interfering particles separate by meter-scale distances and enable new tests of Einstein’s theory of general relativity.

University of California, Los Angeles
Rob Candler
$1,000,000
X-ray lasers are poised to create a revolution in high-speed, high-resolution imaging. With wavelengths smaller than atoms and ultrafast time scales (10-15 seconds), X-ray laser pulses give the entirely new possibility of taking real-time snapshots of the atomic motion dictating material behavior. This new imaging capability now provides exceptional insights into fundamental processes in chemistry, biology, material science and condensed matter physics, but only in billion-dollar class national lab facilities. The proposed project will miniaturize free electron lasers by incorporating nanofabrication, enabling access to new physical regimes of operation that are inherently more efficient. This project will lay the groundwork for X-ray free electron laser (XFEL) capable of producing high brightness X-rays that produce ultrafast, high-resolution images in the X-ray water window. These miniature XFELs will spread the powerful functionality of the short wavelength free electron laser to a much broader user community, a community that currently must wait for access to the one XFEL in the USA.

University of Oklahoma
Alberto Marino
$1,000,000
A team at the University of Oklahoma seeks to combine quantum optics with devices based on collective electronic excitations in a metal, or plasmons, in order to develop ultra-precise sensors that go beyond the ultimate sensitivity possible with classical resources. The combination of these two fields, known as quantum plasmonics, is an emerging area of research that has been identified as a key enabling technology for sensing applications. Traditional plasmonic sensors are currently used to detect local changes in air pressure or traces of biomolecules and chemicals and have begun to approach their ultimate sensitivity. This team will go beyond the current state of the art by combining quantum states of light with novel plasmonic sensors to obtain a sensitivity enhancement of several orders of magnitude. Among other things, this enhancement will allow earlier detection of diseases and advanced warning of dangerous pollutants or chemicals in the atmosphere. The team will also take advantage of recent advances in both quantum states of light and plasmonic devices that allow them to address the spatial degree of freedom to extend the enhancement to imaging applications to achieve higher resolution than currently possible.
University of Washington
Andrea Stocco, Chantel Prat, Rajesh Rao
$1,000,000
A team at the University of Washington recently demonstrated the world’s first brain-to-brain interface in humans. This demonstration involved the transfer of the intention to move the right hand from a sender brain to a receiver brain located across campus. The goal of the current proposal is to advance the methods and science that made this first brain to brain interface possible, with the goal of systematically increasing the complexity of thoughts, intentions, and mental states that can reliably be transferred from one human brain to another. To do so, advances in computer science and neuroscience must be made to enhance the “neural bridge” connecting the brains to one another. The team has organized its efforts in building this bridge into four aims: (1) to reverse-engineer the neural code for representing complex thoughts, (2) to improve thought decoding capabilities, (3) to advance brain stimulation protocols, and (4) to characterize the unique and invariant features of information representation necessary for translating a meaningful code from one brain to another. Advancing these capabilities will have major implications for transmitting nonverbal information from one mind to another, with possible applications in neuroscience, education and health care.

Yale University
Corey O’Hern
$1,000,000
The objective of this project is to establish the first comprehensive and predictive theoretical framework for assemblies of macroscopic objects. The physical properties of all materials emerge from the collective behavior of their constituents. At the atomic and molecular levels, thermal fluctuations dominate and free energy minimization determines collective behavior. However, for collections of macroscopic objects, thermal motion is absent and the underlying physical concepts that control material properties are unknown. To address this question, a team from Yale University, Brandeis University and Duke University will use theoretical, experimental and simulation approaches to generate statistical descriptions of particle configurations, measurements of contacts and stresses within granular packings, and advanced simulations for complex particles. Specifically, they aim to characterize the jamming transition, measure the nonlinear responses of jammed configurations, and develop assembly protocols for novel granular structures. Their efforts stand to create a theoretical framework analogous to that provided by quantum and classical statistical mechanics for atomic and molecular systems, and hold potential to create new capabilities to engineer novel materials with highly tunable properties.
Foundation Awards and Competitions

Josiah Macy Jr. Foundation

Macy Faculty Scholars Program

Deadlines: 02.19.16 (application)

Amount: $200,000 (over 2 years)

DESCRIPTION

The Macy Faculty Scholars program – the first of its kind – launched in December 2010. The program aims to accelerate needed reforms in health professions education to accommodate the dramatic changes occurring in medical practice and health care delivery. Under the program, the Foundation will select up to five faculty leaders each year. Each Scholar will receive salary support at $100,000 per year over two years. The Foundation will support educational change in each Scholar’s institution and develop a national network for the Scholars, who will receive career advice from a National Advisory Committee and participate in an Annual Meeting for the program.

NOMINATION / APPLICATION

Scholars must be nominated by the Dean of the medical or nursing school, and each school can nominate only one candidate. (MSU may nominate up to three candidates, one each from Human Medicine, Osteopathic Medicine, and/or Nursing.) The Dean of the nominating school must commit to protecting at least 50 percent of the Scholars’ time to pursue education reform projects at their institution. Each school may nominate only one candidate each year, and will be expected to provide a senior faculty member to mentor the Scholar.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)

Eligible candidates must:

- Be a doctorally prepared faculty member in good standing at the sponsoring school.
- Have served for five or more years as a faculty member, ideally at the sponsoring school.
- Have an identified faculty mentor who will provide advice on the candidate’s project and career development.
- Have an educational innovation project with the appropriate institutional support.
- Have an institutional commitment for the protection of at least 50% of time.
- Be a citizen or permanent resident of the United States or its territories.

REVIEW CRITERIA / SELECTION PROCESS

All complete applications will be reviewed by senior staff of the Josiah Macy Jr. Foundation, and semifinalists will be selected. Applications of semifinalists will be reviewed by the National Advisory Committee and finalists will be selected. All finalists will be interviewed by the National Advisory Committee and senior Josiah Macy Jr. Foundation staff.

The following factors will be considered in the selection process:

- Evidence of a strong commitment to a career as an educator in the health professions.
- Early promise as an educator and institutional leader.
- Evidence of innovation and creativity in career to date.
-Merit of the educational innovation proposed and the likelihood that it will influence national trends in health professions education.
- Evidence of strong institutional support.
- Likelihood that the candidate will become a national leader in health professions education.
- Evidence that the candidate’s institution supports the careers of educators and is a fertile environment.
ADVISORY / SELECTION COMMITTEE

David Irby / Medicine / University of California-San Francisco
Afaf Meleis / Nursing & Sociology / University of Pennsylvania
Kelley Skeff / Medicine / Stanford University
Christine Tanner / Nursing / Oregon Health & Science University
Samuel Thier / Medicine / Harvard University

PREVIOUS YEAR RECIPIENTS - 2014

Meg Zomorodi
University of North Carolina at Chapel Hill School of Nursing
Meg Zomorodi is a Clinical Associate Professor at the University of North Carolina at Chapel Hill School of Nursing. Dr. Zomorodi is the Coordinator for the Health Care Systems graduate program, Chair of the Master’s Executive Committee, and Coordinator for the undergraduate comprehensive adult health course and graduate Clinical Nurse Leader program. Zomorodi’s Macy Faculty Scholar project is to develop an interprofessional academic certificate program for preparing graduate level healthcare providers with the competencies for managing populations while improving quality, safety, and reducing costs. As a Macy Faculty Scholar, her overall goal is to lead innovations in the removal of curricular boundaries that educate healthcare professionals in silos.

Charles Vega Jr., MD
University of California Irvine School of Medicine
Charles Vega is a Health Sciences Clinical Professor of Family Medicine at UC Irvine. He is also Residency Director in Family Medicine and Executive Director of UCI’s Program in Medical Education for the Latino Community. He has cared for the same patient panel in Orange County’s largest safety-net health clinic for 17 years. As a Macy Faculty Scholar, Dr. Vega will bring the Patient-Centered Advanced Clinical Education (PACE) curriculum to UC Irvine. All teaching programs would include a patient focus, and the curriculum would feature early clinical exposures and correlates with basic science, team-based training, and flipped classrooms.

Deanna Reising, PhD, RN, ACNS-Bc, ANEF
Indiana University School of Nursing
Deanna Reising is an Associate Professor at Indiana University School of Nursing, and Research Clinical Nurse Specialist at Indiana University Health Bloomington Hospital, both in Bloomington, Indiana. She teaches nursing students in baccalaureate, masters, and doctoral programs. Dr. Reising’s career focus has been in developing experiential learning environments for undergraduate nursing students. Reising’s Macy Faculty Scholars Program project proposes to engage interprofessional nursing and medicine student teams to serve as navigators for patients at risk for hospital readmission. The project aims to use interprofessional student navigator teams to facilitate safe transition of patients between health care environments, and to simultaneously develop interprofessional relationships with experienced health care professionals. The project will advance scalable models of interprofessional education and practice that enhance patient quality and safety during transitions of care.

Sarah Peyre, EdD
University of Rochester Schools of Medicine and Nursing
Sarah Elizabeth Peyre, EdD is currently the Director of the Center for Experiential Learning, Associate Professor of Surgery and Assistant Professor of Nursing at the University of Rochester. She also serves on the Executive Board and Board of Directors for the medical centers Institute for Innovative Education. As a health professions educator, her career began in the field of surgical expertise and cognitive task analysis.

Dr. Peyre’s Macy Faculty Scholars Project will focus on identification and education of best practices in the patient and family-centered use of the electronic medical record (EMR). Building on the traditions of the University of Rochester, she is interested in nourishing humanism alongside technology as educational programs are created that promote effective communication with the EMR.

Douglas Larsen, MD, MEd
Washington University School of Medicine
Douglas Larsen is an Assistant Professor of Neurology & Pediatrics at the Washington University in St. Louis School of Medicine. He is the Director of Medical Student Education for the Division of Pediatric Neurology. Nationally, Dr. Larsen serves as the Director of the Education Research Colloquium in the American Academy of Neurology and is a member of their Education Research Subcommittee.

Using principles of self-regulated learning and socio-cultural learning theory, Dr. Larsen’s Macy Faculty Scholar project will create a curriculum-wide program of weekly personal learning goals directed at patient care for medical students throughout their third-year clinical clerkships. The program will train students, residents, and faculty to use these student-generated goals in their clinical teams as tools for dialogue and collaboration focused on professional identity formation and patient-centered learning.

Laura Hanyok, MD
Johns Hopkins University School of Medicine
Laura Hanyok is an Assistant Professor in the Department of Medicine at Johns Hopkins University School of Medicine with a joint appointment in the School of Nursing. She serves as Director of Interprofessional Education for the School of Medicine. She also directs the residency continuity practice for the Johns Hopkins Bayview Internal Medicine Residency Program, and serves as Director of Faculty Development for the Aliki Initiative, a patient-centered learning initiative. Dr Hanyok’s Macy Faculty Scholars’ project will implement and evaluate a novel curriculum in interprofessional primary care practice to prepare medical, nursing, and pharmacy students and pastoral care trainees to meet the needs of complex patients in a patient-centered medical home. Primary care internal medicine residents will participate and will be mentored to become effective teachers of interprofessional primary care practice.
Foundation Awards and Competitions

James S. McDonnell Foundation

Scholar Award in Studying Complex Systems

**Deadlines:** 03.11.16 (application)

**Amount:** $450,000 (over 3-6 years)

**DESCRIPTION**
The JSMF Scholar Awards program derives from and is consistent with JSMF’s commitment to supporting high quality research and scholarship leading to the generation of new knowledge and its responsible application. For Scholar Awards the program’s emphasis is furthering the science of complex systems via the continued development of the theory and tools used in the study of complex research questions and not on particular fields of research per se. JSMF is particularly interested in projects attempting to apply complex systems approaches to coherently articulated questions. For Scholar Awards the program’s emphasis is furthering the science of complex systems via the continued development of the theory and tools used in the study of complex research questions and not on particular fields of research per se. JSMF is particularly interested in projects attempting to apply complex systems approaches to coherently articulated questions.

**NOMINATION / APPLICATION**
There are no restrictions on the number of submissions that may be submitted by an institution. However, considering the small number of grants awarded each year, we do ask that institutions limit their submissions to applications meeting both the letter and the spirit of the Foundation’s guidelines.

**GENERAL ELIGIBILITY REQUIREMENTS** (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Eligible Scholar Award principal investigators must have completed all doctoral, postdoctoral, or fellowship training and hold an independent research position. James S. McDonnell Scholar Awards are not intended to serve primarily as career development awards -- the intent is to allow creative researchers to pursue important research. It is anticipated that successful Scholar-Award applications will have principal investigators between 5 and 15 years post Ph.D.

We must emphasize that this is an international program for a limited number of awards. It is anticipated that competition for the awards will be intense.

**REVIEW CRITERIA / SELECTION PROCESS**
Applications will be reviewed by the James S. McDonnell Foundation and an expert advisory panel. The awards will be based on the importance and originality the research program described in the application, the quality of the essay, the thoughtfulness of the expenditure plan, and the PI’s qualifications to carry out the proposed research program. JSMF is unlikely to award more than 8 Scholar Awards-CS each year.

**ADVISORY / SELECTION COMMITTEE**
Luis A. N. Amaral / Chemical and Biological Engineering / Northwestern University
Timothy G. Buchman / Critical Care / Emory University Hospital
Partha Dasgupta / Economics and Politics / University of Cambridge
Diana M. Downs / Microbiology / University of Georgia
Mimi Koehl / Integrative Biology / University of California, Berkeley
David Krakauer / Wisconsin Institute for Discovery / University of Wisconsin, Madison
Mercedes Pascual / Ecology and Evolutionary Biology / University of Michigan
PREVIOUS YEAR RECIPIENTS - 2014

James W. Moody, Ph.D.
Duke University
Cohesion and connectivity: Methods for identifying endemic diffusion in dynamic networks

Christopher J. Rozell, Ph.D.
Georgia Institute of Technology.
Tracking time-varying low-dimensional structure to uncover the building blocks of complex dynamics

Karen E. Daniels, Ph.D.
North Carolina State University
A network approach to multi-scale materials

Rosemary Braun, Ph.D.
Northwestern University
Modeling biocomplexity: From molecular interactions to population genetics

Sarah Cobey, Ph.D. & Patrick C. Wilson, Ph.D.
The University of Chicago
Measuring the predictability of evolution with adaptive immunity

Melanie E. Moses, Ph.D.
University of New Mexico
Emergent cooperative search in natural and engineered systems
Foundation Awards and Competitions

James S. McDonnell Foundation

Scholar Award in Understanding Human Cognition

Deadlines: TBD 2015 (application)

Amount: $600,000

DESCRIPTION

For more than two decades, the James S. McDonnell Foundation (JSMF) has supported both basic and applied research in cognitive neuroscience, cognitive psychology and cognitive science through targeted initiatives. In 2010, JSMF announced new guidelines for its Scholar Awards in Understanding Human Cognition program. With these new guidelines the Foundation is re-emphasizing the central role of cognitive psychology in advancing the understanding of neural and cognitive bases of behavior. JSMF is also re-iterating its commitment to research applying cognitive principles to problems in teaching, learning, and recovery from brain injuries.

NOMINATION / APPLICATION

JSMF is working in confidence with a broad network of senior scholars in cognitive neuroscience, cognitive psychology and cognitive science to help JSMF identify potential applicants. Selected applicants will be contacted and invited to submit proposals for review by the JSMF Understanding Human Cognition Advisory Panel.

GENERAL ELIGIBILITY REQUIREMENTS (See website for complete eligibility requirements)

JSMF’s goal is to recognize and encourage serious efforts to study human cognition by supporting both basic research studies and research applying findings from cognitive neuroscience and psychology to research efforts aimed at improving education, training, and neuro-rehabilitation. The awards are intended to support research programs judged to be original and important to advancing the state of knowledge of the field.

REVIEW CRITERIA / SELECTION PROCESS

Following review, applications recommended for funding will be presented to the JSMF Board of Directors for final funding consideration. Up to 8 $600,000 Scholar Awards could be made each year.

ADVISORY / SELECTION COMMITTEE

Karen Adolph / Psychology / New York University
Thomas H. Carr / Psychology / Michigan State University
David Danks / Philosophy / Carnegie Mellon University
Frank Keil / Cognition and Development Lab / Yale University
Kia Nobre / Experimental Psychology / University of Oxford
Steven Petersen / Neurology and Neurological Surgery / Washington University School of Medicine
Trevor Robbins / Experimental Psychology / University of Cambridge

PREVIOUS YEAR RECIPIENTS – 2014

Carnegie Mellon University
Anna V. Fisher, Ph.D.
Elucidating developmental change in the structure of semantic knowledge and inductive reasoning

Johns Hopkins University
Justin Halberda, Ph.D.
How biology and experience shape mathematical thought

Massachusetts General Hospital
Ken Solt, M.D.
Reanimation and Cognitive Recovery from General Anesthesia

New York University
Todd M. Gureckis, Ph.D.
Self-directed learning: Understanding the interactions between decision making, learning, and memory
Stanford University
Surya Ganguli, Ph.D.
The emergence of cognition from the biophysics of neurons and synapses

The University of Western Ontario
Jessica Grahn, Ph.D.
Moving to the beat: The relationship between rhythm perception and movement

University of Oxford
Roi Cohen Kadosh, Ph.D.
New frontiers to improve learning, cognition and neuroplasticity

University of Oxford
Mark Stokes, Ph.D.
Stability of mind in a dynamic brain: Neural principles of working memory for flexible human cognition
Foundation Awards and Competitions

McKnight Foundation

*Memory and Cognitive Disorders Awards*

**Deadlines:**
- 04.01.15 (letter of intent)
- 09.09.15 (application)

**Amount:** $300,000 (over 3 years)

**DESCRIPTION**
These awards support innovative efforts to solve the problems of neurological and psychiatric diseases, especially those related to memory and cognition. They encourage research aimed at translating laboratory discoveries about the brain and nervous system into diagnoses and therapies to improve human health. Collaborative projects between basic and clinical neuroscientists are welcomed, as are proposals that help link basic with clinical neuroscience. Each year, up to four awards are given. Awards provide $100,000 per year for three years. Funds may be used toward a variety of research activities but not the recipient’s salary.

**NOMINATION / APPLICATION**
Open, not institutionally limited.

**GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)**
Candidates for McKnight Neuroscience of Memory and Cognitive Disorders Awards:
- Must be U.S. citizens or lawful permanent residents.
- Must be working at not-for-profit institutions within the United States.
- Must be tenured or in tenure-track positions.
- Must be addressing clinically relevant areas of neuroscience in new ways.
- May not be employees of the Howard Hughes Medical Institute or scientists within the intramural program of the National Institutes of Health.
- May not hold another McKnight award that would overlap with the Memory and Cognitive Disorders award.

**REVIEW CRITERIA / SELECTION PROCESS**
A review committee will evaluate letters of intent and will invite a few candidates to submit complete proposals. Following review of the proposals, the committee will recommend up to four awards to the Board of Directors. The board will make the final decision. Awards will be announced in December and begin on February 1 of the following year.

**ADVISORY / SELECTION COMMITTEE**
Karen Adolph / Psychology / New York University
Wendy Suzuki / Neural Science and Psychology / New York University
Robert Edwards / Neuroscience / University of California, San Francisco
Howard Eichenbaum / Psychology and Brain Sciences / Boston University
Rob Malenka / Psychiatry and Behavioral Sciences / Stanford University
Helen S. Mayberg / Psychiatry, Neurology, and Radiology / Emory University
Rich O’Brien / Neurology / Duke University
Steven E. Petersen / Neuropsychology / Washington University
Matthew Shapiro / Cognitive and Behavioral Neuroscience / Icahn School of Medicine at Mount Sinai
PREVIOUS YEAR RECIPIENTS - 2014

Nicole Calakos  
Duke University  
From good habit to bad: Examining the relationship between habit learning and compulsivity

Edward Chang  
University of California, San Francisco  
How we learn words: the neurophysiology of verbal memory

Adam Kepecs  
Cold Spring Harbor Laboratory  
Cell-type specific cognitive broadcast signals from the nucleus basalis

John Wixted and Larry Squire  
University of California, San Diego  
The representation of episodic and semantic memory in single neurons of the human hippocampus
Foundation Awards and Competitions

McKnight Foundation

McKnight Scholar Awards

**Deadlines:** 01.06.16 (application)

**Amount:** $225,000 (over 3 years)

**DESCRIPTION**
The McKnight Scholar Awards encourage neuroscientists in the early stages of their careers to focus on disorders of learning and memory. The Scholar Awards have been given annually since 1977. They were The McKnight Foundation's earliest means of supporting neuroscience research. In 1999, in revising the awards program, the Endowment Fund board continued the Scholar Awards but with the new goal of addressing problems with imminent clinical implications. Each year, up to six scholars are selected to receive three years' support. Currently, awards are $75,000 per year. Funds may be used in any way that will facilitate development of the Scholar's research program, but not for indirect costs.

**NOMINATION / APPLICATION**
Open, not institutionally limited.

**GENERAL ELIGIBILITY REQUIREMENTS** (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Applicants for the McKnight Scholar Awards must demonstrate interest in solving important problems in relevant areas of neuroscience, including the translation of basic research to clinical neuroscience. Awards are given to exceptional young scientists who hold the M.D. and/or Ph.D. degree and who are in the early stages of establishing an independent laboratory and research career. Traditionally, successful candidates have held faculty positions for at least one year. Applicants must have the following:

- an M.D. and/or Ph.D. degree and have completed formal postdoctoral training;
- tenure-track status at a U.S.-based sponsoring institution, to which awards will be paid;
- a record of meritorious research in areas pertinent to the interests of the Endowment Fund;
- no more than four years of experience in an independent/tenure-track faculty position (exceptions may be made to account for parental leave);
- evidence of a commitment to a career in neuroscience; and
- U.S. citizenship or lawful permanent resident status.

**APPLICANTS MUST BE IN A TENURE-TRACK POSITION; RESEARCH FACULTY WITH ANNUALLY RENEWABLE CONTRACTS ARE NOT ELIGIBLE.**

**REVIEW CRITERIA / SELECTION PROCESS**
A review committee will evaluate applications and invite a select few to interview with the committee. The committee will then recommend candidates to the Board of Directors for final decision.

**ADVISORY / SELECTION COMMITTEE**
Allison J. Doupe / Psychiatry / University of California, San Francisco
Larry Abbott / Neurobiology and Behavior / Columbia University
Daniel Feldman / Neurobiology / University of California, Berkeley
Kelsey Martin / Cell Biology of Learning and Memory / University of California, Los Angeles
Anthony Movshon / Neural Science / New York University
Leslie Vosshall / Neurogenetics and Behavior / Rockefeller University
PREVIOUS YEAR RECIPIENTS - 2014

Jessica Cardin
Yale University
Mechanisms of State-Dependent Cortical Regulation

Robert Froemke
New York University
Neural Circuitry and Plasticity for Control of Mammalian Social Behavior

Ryan Hibbs
University of Texas, Southwestern Medical Center
Structure and Mechanism of Neuronal Acetylcholine Receptors

Jeremy Kay
Duke University
Assembly of Retinal Direction-Selective Circuitry

Takaki Komiyama
University of California, San Diego
Motor Cortex Plasticity in Motor Learning

Ilana Witten
Princeton University
Deconstructing Working Memory: Dopamine Neurons and Their Target Circuits
Foundation Awards and Competitions

McKnight Foundation  

Technological Innovations in Neuroscience Awards  

Deadlines: 12.01.15 (application)  

Amount: $200,000 (over 2 years)

DESCRIPTION
These awards support scientists working on new and unusual approaches to understanding brain function. The program seeks to advance and enlarge the range of technologies available to the neurosciences. It does not support research based primarily on existing techniques. McKnight is especially interested in how technology may be used or adapted to monitor, manipulate, analyze, or model brain function at any level, from the molecular to the entire organism. Collaborative and cross-disciplinary applications are invited. Established in 1999, the Technological Innovations in Neuroscience Awards provide up to $100,000 per year for two years. Each year, up to four awards are given. Funds may be used toward a variety of research activities but not the recipient’s salary.

NOMINATION / APPLICATION
Open, not institutionally limited.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Candidates for McKnight Technological Innovations in Neuroscience Awards:

• Must be U.S. citizens or lawful permanent residents.
• Must be working at not-for-profit institutions within the United States.
• Must hold tenured or tenure-track positions at their sponsoring institutions.
• Must be developing new techniques or applying techniques to neuroscience in new ways.
• May not be employees of the Howard Hughes Medical Institute or scientists within the intramural program of the National Institutes of Health.
• May not hold another McKnight award that would overlap with the Technology award.

REVIEW CRITERIA / SELECTION PROCESS
A selection committee will invite a few applicants to submit detailed proposals. Proposals will be evaluated on the basis of creativity, the potential benefit of the new approach, and the significance of the problems to be addressed. Competition is very intense; McKnight encourages applicants to re-apply.

ADVISORY / SELECTION COMMITTEE
David Tank / Molecular Biology, Neuroscience Institute / Princeton University
Ed Callaway / Systems Neurobiology / Salk Institute
Loren Looger / Group Leader / Janelia Farm Research Campus, Howard Hughes Medical Institute
Liqun Luo / HHMI Investigator / Biology / Stanford University
Gall Mandel / HHMI Investigator / Biochemistry and Molecular Biology / Oregon Health & Science University
Markus Meister / Molecular and Cell Biology / Harvard University
H. Sebastian Seung / Computational Neuroscience / Massachusetts Institute of Technology
Rachel Wilson / Neurobiology / Harvard University
PREVIOUS YEAR RECIPIENTS - 2014

Juan Carlos Izpisua Belmonte
The Salk Institute for Biological Studies
Derivation, characterization and gene modification of common marmoset primordial germ cell lines under a novel condition

Sotiris Masmanidis
University of California, Los Angeles
Silicon micropores for monitoring mesoscale brain dynamics

Kate O'Connor-Giles
University of Wisconsin, Madison
A CRISPR/Cas9 toolkit for comprehensive neural circuit analysis
**Foundation Awards and Competitions**

Andrew W. Mellon Foundation  
*New Directions Fellowships*

**DESCRIPTION**
Serious interdisciplinary research often requires established scholar-teachers to pursue formal substantive and methodological training in addition to the PhD. New Directions Fellowships assist faculty members in the humanities who seek to acquire systematic training outside their own areas of special interest. The program is intended to enable strong scholars in the humanities to work on problems that interest them most, at an appropriately advanced level of sophistication. In addition to facilitating the work of individual faculty members, these awards should benefit scholarship in the humanities more generally by encouraging the highest standards in cross-disciplinary research. The New Directions Fellowships provide support for exceptional faculty members in the humanities, enabling them to pursue systematic training outside their own special fields; they are thus intended to support the acquisition of new academic competencies needed for the pursuit of a cross-disciplinary research agenda. Unlike other fellowship awards, this program does not aim to facilitate short-term outcomes, such as completion of a book. Rather, New Directions Fellowships are meant to be viewed as longer-term investments in scholars’ intellectual range and productivity. The fellowships cover salary and standard fringe benefits for one nine-month academic year and two two-month summers. The Foundation assumes that the fellow will be released from teaching for an academic year and that the fellow’s college or university will use the budget relief generated by the leave in support of academic work in the fellow’s department. Given that recent fellows’ budgets have typically ranged from $175,000 to $250,000, we have established a $300,000 maximum for these awards.

**NOMINATION / APPLICATION**
MSU is invited to nominated one candidate. While the foundation does not dictate the form a college or university’s internal competition should take, Mellon wants to know the procedure for selecting a nominee. It is expected that institutions will communicate the particulars of both the program and the application process to faculty in all the relevant academic departments and programs. Following an internal competition to be overseen by a committee of senior faculty members in the relevant disciplines, each institution will forward the proposal it has selected to the Foundation.

**GENERAL ELIGIBILITY REQUIREMENTS**  *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*
Candidates should be exceptional faculty members in the humanities who received their doctorates between six and twelve years ago (that is, between May 1, 2002 and June 30, 2008).

Candidates research interests should call for formal training in a discipline other than the one in which they are expert. Such training may consist of coursework or other programs of organized study and may take place either at fellows’ home institutions or elsewhere. Although it is anticipated that many fellows will seek to acquire deeper knowledge of other fields within the humanities broadly defined, proposals to study disciplines farther afield will also be eligible.

For the foundation the humanities are broadly understood to include the arts, history, languages, area studies, and zones of such fields as anthropology and geography in which the practice and insights of scholarship in the humanities coexist integrally with those of the social sciences.

**REVIEW CRITERIA / SELECTION PROCESS**
The foundation convenes a panel of distinguished scholars to evaluate the proposals. The principal criteria for selection include the following:

- The overall significance of the research
- The case for the importance of extra-disciplinary training for furthering the research
- The likely ability of the candidate to derive satisfactory results from the training program proposed
- A well-developed plan for acquiring the necessary training within a reasonable period of time
ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS - 2014

Sonya Atalay
Anthropology
University of Massachusetts at Amherst

Wiebke Denecke
Chinese, Japanese, Comparative Literature
Boston University

Antonio Donato
Medieval and Renaissance Philosophy
Queens College, City University of New York

Gregory Flaxman
English and Comparative Literature
University of North Carolina at Chapel Hill

Brooke Holmes
Classics
Princeton University

Laure Katsaros
French
Amherst College

Sonya Lee
Art History
University of Southern California

Adam Lifshey
Spanish and Portuguese
Georgetown University

Lori Pearson
Religion
Carleton College

Nancy Reynolds
History
Washington University in St. Louis

Naghmeh Sohrabi
Middle East History
Brandeis University

Shirley Thompson
African and African Diaspora Studies, American Studies
University of Texas at Austin
Foundation Awards and Competitions

David and Lucile Packard Foundation

**Fellowships for Science and Engineering**

**Deadlines:**
- 03.16.15 (nominations)
- 04.20.15 (application)

**Amount:** $875,000 (over 5 years)

**DESCRIPTION**
The Packard Fellowships for Science and Engineering provides the nation’s most promising early-career scientists and engineers with flexible funding and the freedom to take risks and explore new frontiers in their fields of study. Packard Fellows are encouraged to think big and look at complex issues with a fresh perspective. The Foundation encourages them to use their funds in whatever ways would best advance their research.

**NOMINATION / APPLICATION**
MSU is invited to nominate two candidates annually.

**GENERAL ELIGIBILITY REQUIREMENTS** (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Faculty members in the natural and physical sciences or engineering within the first three years of their faculty careers.

Disciplines include physics, chemistry, mathematics, biology, astronomy, computer science, earth science, ocean science, and all branches of engineering. Candidates engaged in research in the social sciences will not be considered.

The Fellowship Program provides support for highly creative researchers early in their careers; faculty members who are well established and well-funded are less likely to receive the award. The Foundation emphasizes support for innovative individual research that involves the Fellows, their students, and junior colleagues, rather than extensions or components of large-scale, ongoing research programs.

**REVIEW CRITERIA / SELECTION PROCESS**
Nominations are reviewed by the Advisory Panel, which makes recommendations to the Foundation’s Board of Trustees.

**ADVISORY / SELECTION COMMITTEE**
Richard B. Alley / Geosciences / Penn State University
Kristi A. Anseth / Chemical and Biological Engineering / University of Colorado-Boulder
Frances Arnold / Chemical Engineering / California Institute of Technology
Jennifer Doudna / HHMI Investigator / Biochemistry / UC-Berkeley
John Hopcroft / Computer Science / Cornell University
Cynthia Kenyon / Biochemistry and Biophysics / UC-San Francisco
Andrei Y. Okounkov / Mathematics / Columbia University
Stephen R. Quake / Bioengineering / Stanford University
Stuart A. Rice / Chemistry / University of Chicago
Robert J. Schoelkopf / Applied Physics / Yale University
Christopher W. Stubbs / Physics / Harvard University
Susan S. Taylor / HHMI Investigator / Chemistry, Biochemistry / UC-San Diego
PREVIOUS YEAR RECIPIENTS - 2014

Mark Braverman
Department of Computer Science, Princeton University
Discipline: Computer/Information Sciences
Braverman’s research focuses on theoretical computer science and its connections to areas outside of computer science. He is particularly interested in links to problems in economics, electrical engineering, operations research, and mathematics. These connections lead to new insights in these disciplines and within core computer science.

Trisha Andrew
Department of Chemistry, University of Wisconsin, Madison
Discipline: Materials Science, Nanotechnology
Andrew’s research focuses on improving the performance of existing electronics and enabling revolutionary data and energy storage. She also focuses on telecommunications technology. Through her work, she strives to produce electronic devices with dramatically decreased power consumption by using organic magnets that are able to achieve unmatched control over processing conditions, device dimension and the spin of charge carriers.

James Cahoon
Department of Chemistry, University of North Carolina, Chapel Hill
Discipline: Materials Science, Nanotechnology
Cahoon focuses on designing materials that can open the door to new technologies based on semiconductor nanomaterials. Using rational-design principles combined with chemical fabrication methods, Cahoon and his research group will create semiconductor wires with tunable electrical, optical and thermal properties through precise control of size, shape and composition.

Ivan Corwin
Department of Mathematics, Columbia University
Discipline: Mathematics
Corwin works to unify algebraic structures within mathematics, build bridges between these structures and domains of physics, and discover universal phenomena within these domains. He has uncovered universal distributions (modern day parallels of the bell curve) in models of interface growth, traffic flow, mass transport, turbulence and shock-fronts.

James Fraser
Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco
Discipline: Biochemistry
Proteins fluctuate between different structures as they catalyze chemical reactions, but it is often difficult to resolve all but the most common structures. Enabled by bright new X-ray sources, the Fraser lab wants to understand how these different structures can be engineered and how they are altered in disease.

Liang Fu
Department of Physics, Massachusetts Institute of Technology
Discipline: Physics
Fu develops predictive theory to search for new quantum phases of matter in real materials and explore their novel properties. He seeks to understand collective behaviors of solids using concepts and techniques from theoretical physics, quantum chemistry and quantum information science. His work on topological quantum materials has potential applications in quantum computing and nanoelectronics.

Chris Harrison
Human-Computer Interaction Institute, Carnegie Mellon University
Discipline: Computer/Information Sciences
Harrison creates new interface technologies that foster powerful and natural interactions between humans and computers. He is particularly determined to better unlock the incredible potential of mobile and worn computing, empowering people to interact with their “small devices in big ways.”

Lena Kourkoutis
School of Applied and Engineering Physics, Cornell University
Discipline: Physics
New functionalities, with fundamental and technological implications, can emerge at the interface between two materials. The Kourkoutis Electron Microscopy Group develops techniques to understand such phenomena in complex oxides, a class of materials that exhibits a rich variety of functional properties including some that are unattainable in conventional semiconductors.

Vedran Lekic
Department of Geology, University of Maryland, College Park
Discipline: Geosciences
Lekic works on imaging the Earth’s deep interior to reveal structures and processes responsible for the break-up of continents, the creation of oceanic islands, and the pattern of circulation driving plate tectonics. He does this by devising improved ways of analyzing ground vibration recordings gathered by massive arrays of seismometers.

Brice Ménard
Department of Physics and Astronomy, John Hopkins University
Discipline: Astronomy, Astrophysics, Cosmology
Ménard explores the Universe using the power of statistical analyses applied to large astronomical datasets. He pioneers techniques to uncover new astrophysical phenomena from observations of the sky across the entire electromagnetic spectrum. His interests range from stars in the Milky Way to distant galaxies across the Universe.

Karin Öberg
Department of Astronomy, Harvard University
Discipline: Astronomy, Astrophysics, Cosmology
Öberg is an astrochemist. She combines ice experiments and radio astronomy to explore the chemistry present during planet formation. This chemistry regulates the compositions and habitability of nascent planets, and is thus key to our understanding of the origins of life.

Sabine Petry
Department of Molecular Biology, Princeton University
Discipline: Biochemistry
Petry researches how the cytoskeleton gives cells their shape, positions organelles, moves materials and divides cells. She uses biochemical and engineering approaches to uncover the mechanisms that generate their architecture. Her research reveals how cellular structures are built and how malfunctions occur, which lie at the heart of many diseases involving cell proliferation and cancer.

Daniel Rabosky
Department of Ecology and Evolutionary Biology, University of Michigan
Discipline: Ecology, Evolutionary Biology
Rabosky studies the evolutionary processes of species formation and extinction to understand why biological diversity varies so dramatically over space and time. His work helps explain why some groups of animals and plants have undergone spectacular evolutionary explosions and why many other groups have so few species.

**Santiago Ramirez**  
*Department of Evolution and Ecology, University of California, Davis*  
*Discipline: Ecology, Evolutionary Biology*

Evolutionary biologists have long recognized the central role that species interactions play in the origin and maintenance of biological diversity. However, the ecological conditions and the genetic mechanisms whereby lineages coevolve and adapt to one another remain poorly understood. Ramirez’s research integrates genetic, ecological and physiological approaches to investigate the evolutionary origin and the ecological function of adaptations that facilitate mutualistic associations between bee pollinators and plants.

**Agnel Sfeir**  
*Skirball Institute, New York University*  
*Discipline: Biological Sciences*

Mitochondria are the ATP-generating powerhouses of our cells, carrying their own circular genome. Maintaining the integrity of the mitochondrial DNA is necessary for optimal cellular function and for protection against several diseases. Sfeir’s goal is to understand the basis of incurred mitochondrial DNA aberrations and to manipulate the genome to revert such errors.

**Alison Sweeney**  
*Department of Physics and Astronomy, University of Pennsylvania*  
*Discipline: Physics*

Squids, octopuses and clams build an array of living optical devices of astonishing sophistication, such as reflective camouflage, graded index lenses, solar radiance distributors, and wavelength-specific light guides. Soft matter physics has very recently produced theoretical insights that may inform our understanding of the evolution of these structures. Sweeney plans to use both evolutionary biology and these new theoretical ideas to help explain their emergence.

**Andrew Thompson**  
*Division of Geological and Planetary Sciences, California Institute of Technology*  
*Discipline: Geosciences*

Thompson studies ocean turbulence and its impact on Earth’s climate through the use of both observations from autonomous robotic platforms and numerical models. His research focuses on understanding oceanic heat transport, physical-biological controls on ecosystem dynamics and the cycling of carbon and oxygen in the upper ocean.

**Laura Waller**  
*Department of Electrical Engineering and Computer Sciences, University of California, Berkeley*  
*Discipline: Electrical or Computer Engineering*

Waller’s research develops new methods of computational imaging, where optical systems and image processing algorithms are designed simultaneously. Specifically, she focuses on optical and X-ray microscopy for biological and metrological applications. Waller and her research group have designed a new microscope enabling improved resolution, aberration removal, and 3D and phase imaging, all in post-processing.
**Foundation Awards and Competitions**

**Pew Charitable Trusts**  
*Pew Scholars Program in the Biomedical Sciences*

<table>
<thead>
<tr>
<th>Deadlines:</th>
<th>Amount:</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.15.15 (nomination)</td>
<td>$240,000 (over 4 years)</td>
</tr>
<tr>
<td>11.03.15 (application)</td>
<td></td>
</tr>
</tbody>
</table>

**DESCRIPTION**
The Pew Scholars Program in the Biomedical Sciences provides funding to young investigators of outstanding promise in science relevant to the advancement of human health. The program makes grants to selected academic institutions to support the independent research of outstanding individuals who are in their first few years of their appointment at the assistant professor level. The award provides $240,000 in flexible support over four years.

**NOMINATION / APPLICATION**

MSU is invited to nominate one candidate via the following suggested process:

- The office of sponsored research should distribute the invitation and award eligibility details to all investigators through a campus-wide email announcement or website posting.
- Each interested applicant should submit pre-proposal materials—including a research project summary, curriculum vitae, and a letter of support from the chair of his or her division—to the office of sponsored research, which will submit them to an internal selection committee for consideration.
- The internal selection committee should be made up of at least three notable scientists from your institution. The panel should be diverse in terms of gender, minority status, and academic fields. We encourage the inclusion of Pew scholar alumni in the internal selection committee.
- The internal selection committee should evaluate and discuss the pre-proposals and select the most suitable applicant for the Pew scholars program award.
- To nominate a candidate, a member of the internal selection committee must complete the online survey, describe the selection process used by the institution, and submit the name and contact information of the chosen nominee by the deadline.
- Once the Pew program office has received the completed survey and the name and contact information of the nominee, login information will be emailed directly to the applicant.

**GENERAL ELIGIBILITY REQUIREMENTS**  
*(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*

Candidates must have been awarded a doctorate in biomedical sciences, medicine or a related field.

As of November 1, 2014, nominees must hold full-time appointments at the rank of assistant professor, and on July 1, 2014, candidates must have been in such an appointment for less than three years (not appointed before July 1, 2011), whether or not such an appointment was on a tenure track.

Based on their performance during their education and training, candidates should demonstrate outstanding promise as contributors in science relevant to human health. Strong proposals will incorporate particularly creative and innovative approaches, and risk-taking is encouraged.

Candidates whose work is based on biomedical principles, but brings in concepts and theories from more diverse fields, are encouraged to apply.

**REVIEW CRITERIA / SELECTION PROCESS**

Selection of the successful candidates will be based on a detailed description of the work that the applicant proposes to undertake, evaluations of the candidate’s performance, and notable past accomplishments, including honors, awards and publications. In evaluating the candidates, the National Advisory Committee gives considerable weight to evidence that the candidate is a successful independent investigator and has published significant work.
## ADVISORY / SELECTION COMMITTEE

Craig Mello / HHMI Investigator / Molecular Medicine / University of Mass.
Bonnie Bassler / HHMI Investigator / Molecular Biology / Princeton University
Pamela Bjorkman / HHMI Investigator / Biology / CalTech
Helen Blau / Stem Cell Biology / Stanford University
Frances Brodsky / Microbiology, Immunology / UC-San Francisco
Claude Desplan / Biology / New York University
Michael Eisen / HHMI Investigator / Molecular & Cell Biology / UC-Berkeley
Jorge Galán / Microbial Pathogenesis / Yale University
Charles Gilbert / Neurobiology / Rockefeller University
Gregory Hannon / HHMI Investigator / Cell Biology / Cold Spring Harbor Lab
John Kuriyan / HHMI Investigator / Molecular, Cell Biology / UC-Berkeley
Ruth Lehmann / HHMI Investigator / Cell Biology / New York University
Diane Mathis / Pathology / Harvard Medical School
Ruslan Medzhitov / HHMI Investigator / Immunobiology / Yale University
Markus Meister / Molecular and Cellular Biology / Harvard University
Kevan Shokat / HHMI Investigator / Cellular & Molecular Pharmacology / UC-San Francisco
Xiaowei Zhuang / HHMI Investigator / Chemistry, Physics / Harvard University

## PREVIOUS YEAR RECIPIENTS – 2014

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erik Andersen, Ph.D.</td>
<td>Northwestern University</td>
<td>Genetics and genomics</td>
</tr>
<tr>
<td>Jeremy Kay, Ph.D.</td>
<td>Duke University</td>
<td>Neurobiology and vision</td>
</tr>
<tr>
<td>Maria Barna, Ph.D.</td>
<td>Stanford University</td>
<td>Developmental biology</td>
</tr>
<tr>
<td>Brian Kelch, Ph.D.</td>
<td>University of Massachusetts Medical School</td>
<td>Structural biology and biochemistry</td>
</tr>
<tr>
<td>Kevin Briggsman, Ph.D.</td>
<td>National Institutes of Health</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Matthew Kennedy, Ph.D.</td>
<td>University of Colorado, School of Medicine</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Anne Churchland, Ph.D.</td>
<td>Cold Spring Harbor Laboratory</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Gabriel Lander, Ph.D.</td>
<td>The Scripps Research Institute</td>
<td>Structural biology</td>
</tr>
<tr>
<td>James Fraser, Ph.D.</td>
<td>University of California, San Francisco</td>
<td>Biophysics</td>
</tr>
<tr>
<td>Yunsun Nam, Ph.D.</td>
<td>University of Texas Southwestern Medical Center</td>
<td>Biochemistry, biophysics, and RNA biology</td>
</tr>
<tr>
<td>Jesse Gatlin, Ph.D.</td>
<td>University of Wyoming</td>
<td>Cell biology</td>
</tr>
<tr>
<td>Sabine Petry, Ph.D.</td>
<td>Princeton University</td>
<td>Cell biology, biochemistry, and structural biology</td>
</tr>
<tr>
<td>Lindsey Glickfeld, Ph.D.</td>
<td>Duke University</td>
<td>Neuroscience</td>
</tr>
<tr>
<td>Prashanth Rangan, Ph.D.</td>
<td>University at Albany, The State University of New York</td>
<td>Developmental genetics and biophysics</td>
</tr>
<tr>
<td>Jesse Goldberg, M.D., Ph.D.</td>
<td>Cornell University</td>
<td>Systems neuroscience</td>
</tr>
<tr>
<td>Michael Rust, Ph.D.</td>
<td>University of Chicago</td>
<td>Systems biology</td>
</tr>
<tr>
<td>Catherine Grimes, Ph.D.</td>
<td>University of Delaware</td>
<td>Chemical biology</td>
</tr>
<tr>
<td>Mohammad Seyedsayamdost, Ph.D.</td>
<td>Princeton University</td>
<td>Chemical biology</td>
</tr>
<tr>
<td>Chris Hittinger, Ph.D.</td>
<td>University of Wisconsin-Madison</td>
<td>Evolutionary genomics</td>
</tr>
<tr>
<td>Elçin Ünal, Ph.D.</td>
<td>University of California, Berkeley</td>
<td>Germ cell biology</td>
</tr>
<tr>
<td>Robert Johnston, Ph.D.</td>
<td>Johns Hopkins University</td>
<td>Developmental neurobiology</td>
</tr>
<tr>
<td>Jing-Ke Weng, Ph.D.</td>
<td>Whitehead Institute for Biomedical Research</td>
<td>Chemical biology</td>
</tr>
</tbody>
</table>
Foundation Awards and Competitions

Research Corporation for Science Advancement

**Cottrell Scholar Awards**

**Deadlines:** 08.15.15 (application)

**Amount:** $75,000 (over 3 years)

**DESCRIPTION**

The Cottrell Scholar Award Program (CSA) funds early career faculty in the physical sciences and related fields who are committed to excellence in both research and undergraduate teaching at U.S. research universities. The premise is that the right combination of high-caliber research, integrated with modern, interactive educational tools, creates the perfect environment for scientific breakthroughs and outstanding learning outcomes for the next generation of U.S. scientists.

Another key objective of the program is to build an interdisciplinary community of outstanding teacher-scholars dedicated to becoming leaders in both research and teaching and who, collectively, have the potential to change the way science is taught nationally.

**NOMINATION / APPLICATION**

Open, not institutionally limited.

**GENERAL ELIGIBILITY REQUIREMENTS** (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)

Eligible applicants are tenure-track faculty members at U.S. institutions whose primary appointment is in a Bachelor’s and Ph.D.-granting department of astronomy, biochemistry, biophysics, chemistry, or physics, but not in a school of medicine or engineering.

**NOTE:** For the 2014 proposal cycle, eligibility was limited to faculty members who started their first tenure-track position anytime in calendar year 2011. The 2015 guidelines have not yet been issued.

Cottrell Scholar applicants submit two plans, one describing the research and one the educational activities. The project plans must be for a period of three years. The ability of applicants to mount a strong research program and their commitment to teaching excellence at the undergraduate level are two main criteria in the selection of awards. Successful educational plans show strong potential for significant impact in lower division courses, with the objective of increasing attraction and retention of students in science careers.

**REVIEW CRITERIA / SELECTION PROCESS**

Proposals are first scrutinized internally to assess the quality of the educational plan. Only submissions with truly unique educational plans aimed at improving undergraduate science education are further considered and sent out to external evaluators. Award recommendations are made by the Science Advisory Committee.

**ADVISORY / SELECTION COMMITTEE**

- Bert Chandler / Chemistry / Trinity University
- Seth Cohen / Chemistry and Biochemistry / UC-San Diego
- Linda Columbus / Chemistry / University of Virginia
- Michael Dennin / Physical Sciences / UC-Irvine
- Andrew Feig / Chemistry / Wayne State University
- Jordan Gerton / Physics and Astronomy / University of Utah
- Martin Gruebele / Chemistry / University of Illinois
- Rigoberto Hernandez / Chemistry and Biochemistry / Georgia Tech
- Peter Lovine / Chemistry / University of San Diego
- Terry Odom / Chemistry / Northwestern University
- Nicola Pohl / Chemistry / Indiana University
- Mats Selen / Physics / University of Illinois
- Veronika Szalai / Energy Research Group / National Institute of Standard and Technology
PREVIOUS YEAR RECIPIENTS - 2014

Shannon W. Boettcher
Assistant Professor of Chemistry, University of Oregon
Materials for Solar Water Splitting: Advancing Undergraduate Research and Controlling Chemistry and Charge Transport at Interfaces

Andrew J. Boydston
Assistant Professor of Chemistry, University of Washington
Quantitative Assessment of Flex Activation in Polymer Mecha-nochemistry

Rebecca A. Butcher
Assistant Professor of Chemistry, University of Florida
Chemical Communication in C. Elegans and Incorporation of Natural Products Discovery into the Classroom

Mircea Dinca
Assistant Professor of Chemistry, Massachusetts Institute of Technology
Teaching Sponges New Tricks: Self-Assembly, Charge Transport, and Electric Conductivity in Microporous Metal-Organic Frameworks

Carla Frohlich
Assistant Professor of Physics, North Carolina State University
The Origin of the Heaviest Nuclei in the Universe

Dinah Loerke
Assistant Professor of Physics, University of Denver
Toward a Mechanistic Understanding of Cell Intercalation in Germ-Band Extension

Tyrel M. McQueen
Assistant Professor of Chemistry, Johns Hopkins University
Superconductivity: From Discovery to Rational Design

Andriy Nevidomskyy
Assistant Professor of Physics, Rice University
Superconductivity in Strange Metals: Some Like It Hot

Jennifer A. Prescher
Assistant Professor of Chemistry, University of California, Irvine
Expanding the Bioluminescent Toolbox for Visualizing Metastatic Disease

Cindy Regal
Assistant Professor Physics, University of Colorado, Boulder
Measuring Micromechanical Motion at Quantum Limits and Identifying Successful Attributes of Undergraduate Research

Joseph E. Subotnik
Assistant Professor of Chemistry, University of Pennsylvania
What Every Undergraduate Should Learn About Electronic Relaxation

Xiaodong Xu
Assistant Professor of Physics, University of Washington
Valley Quantum Optoelectronics of Monolayer Semiconductors
Foundation Awards and Competitions

Searle Funds at The Chicago Community Trust

Searle Scholars Program

| Deadlines: 09.26.15 (application) |
| Amount: $300,000 (over 3 years) |

DESCRIPTION
The Searle Scholars Program makes grants to selected academic institutions to support the independent research of outstanding early-career scientists who have recently been appointed as assistant professors on a tenure-track appointment. Grants are $300,000 for a three-year term with $100,000 payable each year of the grant, subject to the receipt of acceptable progress reports. Generally, the program makes 15 new grants annually.

NOMINATION / APPLICATION
MSU is invited to submit one application.

GENERAL ELIGIBILITY REQUIREMENTS  (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
Applicants for awards which will be activated on July 1, 2015 will be expected to be pursuing independent research careers in biochemistry, cell biology, genetics, immunology, neuroscience, pharmacology, and related areas in chemistry, medicine, and the biological sciences.

Candidates should have begun their appointment as an independent investigator at the assistant professor level on or after July 1, 2013. The appointment must be their first tenure-track position (or its nearest equivalent) at an invited institution.

Potential applicants whose institutions do not have tenure-track appointments should consult with the scientific director of the Program regarding eligibility PRIOR to preparing an application.

The Searle Scholars Program does not ordinarily support purely clinical research but has supported research programs that include both clinical and basic components. Potential applicants who are unsure if their research is appropriate for the Program are encouraged to examine the research interests of present and former Searle Scholars on the website.

REVIEW CRITERIA / SELECTION PROCESS
Applications will be screened by a Scientific Advisory Board comprised of experts in the fields of interest to the Program. All applicants will be advised of competition results by the end of April of the award year.

ADVISORY / SELECTION COMMITTEE
Mitchell Lazar / Endocrinology, Diabetes, & Metabolism / University of Pennsylvania
Jeremy Berg / Computational Systems & Systems Biology / University of Pittsburgh
Catherine Dulac / Molecular & Cellular Biology / Harvard University
Chuan He / Chemistry / University of Chicago
Kristin Hogquist / Lab Medicine & Pathology / University of Minnesota
Jennifer Lippincott-Schwartz / Organelle Biology / Eunice Kennedy Shriver National Institute of Child Health
Harmit Malik / Basic Sciences / Fred Hutchinson Cancer Research Center
Richard Mooney / Neurology / Duke University
David Page / Whitehead Institute / MIT
Rama Ranganathan / Pharmacology / University of Texas Southwestern Medical Center
<table>
<thead>
<tr>
<th>Name</th>
<th>Department and Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Janelle S. Ayres</td>
<td>Department of Immunobiology and Microbial Pathogenesis, The Salk Institute</td>
</tr>
<tr>
<td>Brenda L. Bloodgood</td>
<td>Division of Biological Sciences, Department of Neurobiology, University of California, San Diego</td>
</tr>
<tr>
<td>Amie K. Boal</td>
<td>Department of Biochemistry and Molecular Biology and Chemistry, Pennsylvania State University</td>
</tr>
<tr>
<td>Irene A. Chen</td>
<td>MLPS Division, Department of Chemistry and Biochemistry, University of California, Santa Barbara</td>
</tr>
<tr>
<td>Kwanghun Chung</td>
<td>Department of Chemical Engineering, Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>Damon A. Clark</td>
<td>Department of Molecular, Cellular, and Developmental Biology, Yale University</td>
</tr>
<tr>
<td>James S. Fraser</td>
<td>Department of Bioengineering and Therapeutic Sciences, University of California, San Francisco</td>
</tr>
<tr>
<td>Mitchell Guttmann</td>
<td>Division of Biology and Biological Engineering, California Institute of Technology</td>
</tr>
<tr>
<td>Daniel F. Jarosz</td>
<td>Chemical and Systems Biology, Stanford University School of Medicine</td>
</tr>
<tr>
<td>Gabriel C. Lander</td>
<td>Department of Integrative Structural and Computational Biology, Scripps Research Institute</td>
</tr>
<tr>
<td>Kirk E. Lohmueller</td>
<td>Department of Ecology and Evolutionary Biology, University of California, Los Angeles</td>
</tr>
<tr>
<td>Mohammad R. Seyedsayamdost</td>
<td>Department of Chemistry, Princeton University</td>
</tr>
<tr>
<td>Matthew Simon</td>
<td>Department of Molecular Biophysics and Biochemistry, Yale University</td>
</tr>
<tr>
<td>Sarah A. Stanley</td>
<td>Division of Infectious Disease and Vaccinology, School of Public Health, University of California, Berkeley</td>
</tr>
<tr>
<td>Hani Zaher</td>
<td>Faculty of Arts and Sciences, Department of Biology, Washington University</td>
</tr>
</tbody>
</table>
Simons Fellows in Mathematics and Theoretical Physics

DESCRIPTION
The Simons Fellows Programs provide funds to faculty for up to a semester long research leave from classroom teaching and administrative obligations. Such leaves can increase creativity and provide intellectual stimulation. The goal of the Simons Fellows Program is to make it easier to take such leaves or to extend sabbatical leaves by an extra half year. The program provides salary replacement for up to 50 percent of the Fellow’s current academic year salary whether normally paid over nine or twelve months (up to a maximum of $100,000) and, in addition, up to $10,000 for expenses related to the leave. The award is to be administered through the Fellow’s home institution, which will receive 20 percent overhead on allowable expenses. The foundation anticipates awarding up to 40 Mathematics Fellowships and up to 20 Theoretical Physics Fellowships each year.

NOMINATION / APPLICATION
Open, not institutionally limited.

GENERAL ELIGIBILITY REQUIREMENTS  (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
A Fellow must have a teaching or administrative position at a U.S. or Canadian college or university through the term following the leave. This must be the applicant’s primary position.

A Fellow must have an active current research program.

Fellows cannot simultaneously hold a Simons Investigator award.

Eligibility for this year’s program is restricted to sabbatical-eligible faculty who wish to use the grant for the purpose of extending a single-term sabbatical leave to a full academic year. For applicants at universities on the semester system, the Simons Fellowship will fund up to one semester in the 2015–2016 academic year, either fall 2015 or spring 2016. For those on the quarter system, the Fellowship will fund up to one quarter, during the 2015–2016 academic year, extending the sabbatical leave to three quarters.

In order to receive the Simons Fellowship, you must be approved by your institution for a full year sabbatical leave, consisting of two consecutive semesters with one semester fully paid by the university and the second fully or partly supported by the Fellowship. For those on the quarter system, the leave must be for three consecutive quarters, and the university must provide pay for two quarters.

A letter from the university verifying the fulfillment of this contingency must be received by the foundation at least three months prior to the start of Fellowship funding.

NOTE: Biological Physics and Computer Science will not be supported by the Fellows Program.

REVIEW CRITERIA / SELECTION PROCESS
A selection committee of distinguished scientists will advise the foundation on the selection of applicants. Awards will be based on the applicant’s scientific accomplishments in the five-year period preceding the application and on the potential scientific impact of the leave period.

ADVISORY / SELECTION COMMITTEE
Not available.
## Previous Year Recipients - 2014

### Mathematics Fellows

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denis Auroux</td>
<td>University of California, Berkeley</td>
</tr>
<tr>
<td>Jason Behrstock</td>
<td>Lehman College, CUNY</td>
</tr>
<tr>
<td>Roman Bezrukavnikov</td>
<td>Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>Francis Bonahon</td>
<td>University of Southern California</td>
</tr>
<tr>
<td>Samuel R. Buss</td>
<td>University of California, San Diego</td>
</tr>
<tr>
<td>Daniela Calvetti</td>
<td>Case Western Reserve University</td>
</tr>
<tr>
<td>Guang Cheng</td>
<td>Purdue University</td>
</tr>
<tr>
<td>Tim Cochran</td>
<td>William Marsh Rice University</td>
</tr>
<tr>
<td>Donatella Danielli</td>
<td>Purdue University</td>
</tr>
<tr>
<td>Mark Andrea de Cataldo</td>
<td>SUNY at Stony Brook</td>
</tr>
<tr>
<td>Giovanni Forni</td>
<td>University of Maryland, College Park</td>
</tr>
<tr>
<td>Dan Freed</td>
<td>The University of Texas at Austin</td>
</tr>
<tr>
<td>Alexander Furman</td>
<td>University of Illinois at Chicago</td>
</tr>
<tr>
<td>William Goldman</td>
<td>University of Maryland, College Park</td>
</tr>
<tr>
<td>Shelly Harvey</td>
<td>William Marsh Rice University</td>
</tr>
<tr>
<td>Lizhen Ji</td>
<td>University of Michigan</td>
</tr>
<tr>
<td>Svetlana Jitomirskaya</td>
<td>University of California, Irvine</td>
</tr>
<tr>
<td>Joel Kamnitzer</td>
<td>University of Toronto</td>
</tr>
<tr>
<td>Martin Kassabov</td>
<td>Cornell University</td>
</tr>
<tr>
<td>Ludmil Katzarkov</td>
<td>University of Miami</td>
</tr>
<tr>
<td>Dmitry Kleinbock</td>
<td>Brandeis University</td>
</tr>
<tr>
<td>Bruce Kleiner</td>
<td>New York University</td>
</tr>
<tr>
<td>Elena Kosygina</td>
<td>Baruch College, CUNY</td>
</tr>
<tr>
<td>Sándor Kovács</td>
<td>University of Washington</td>
</tr>
<tr>
<td>Slava Krushkal</td>
<td>University of Virginia</td>
</tr>
<tr>
<td>George Lusztig</td>
<td>Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>Ivan Mirkovic</td>
<td>University of Massachusetts Amherst</td>
</tr>
<tr>
<td>Kartik Prasanna</td>
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<td>Scott Sheffield</td>
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<td>Liam McAllister</td>
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<td>Sonia Paban</td>
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DESCRIPTION
The Simons Investigator program aims to provide a stable base of support for outstanding scientists, enabling them to undertake long-term investigations of fundamental questions in their fields. The intent of the program is to support these scientists in their most productive years, when they are establishing creative new research directions, providing leadership to the field, and effectively mentoring junior scientists. A Simons Investigator is appointed for an initial period of five years. Renewal of an additional five years is contingent upon the evaluation of scientific impact of the Investigator. An Investigator will receive research support in an amount initially set at $100,000 per year; an additional $10,000 per year will be provided to the Investigator’s department. The institution administering the award will receive an additional 20 percent per year in indirect costs on the Investigator and departmental funds. In 2015 the foundation anticipates appointing up to three Investigators in Mathematics, up to seven in Physics, and up to three in Theoretical Computer Science.

NOMINATION / APPLICATION
The foundation asks each invited university to submit nominations, up to two for each of the three fields: Mathematics, Physics, and Theoretical Computer Science. The foundation asks that these nominations be treated confidentially.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
To be an Investigator, a scientist must be engaged in theoretical research in Mathematics, Physics, or Computer Science and must have a primary appointment as a faculty member at a United States, Canadian, or United Kingdom institution with a Ph.D. program and not have previously been a Simons Investigator.

At the time of appointment start date, an Investigator should be tenured.

Investigators are expected to attend annual meetings at the Simons Foundation (at the foundation’s expense) to discuss their activities.

REVIEW CRITERIA / SELECTION PROCESS
The nominees are judged on their potential for innovative new contributions to science over the coming years.

ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS - 2014
Alex Eskin - MATHEMATICS
University of Chicago
Alex Eskin is a leading geometer with important contributions to geometric group theory, ergodic theory and number theory. He has applied ideas from dynamical systems to solve counting problems in the theory of Diophantine equations, the theory of the mapping class group and mathematical billiards on rational polygons.

Larry Guth - MATHEMATICS
Massachusetts Institute of Technology
Larry Guth is a geometric with outstanding contributions to Riemannian geometry, symplectic geometry and combinatorial geometry. In Riemannian geometry, he solved a long-standing problem concerning sharp estimates for volumes of k-cycles. In symplectic geometry, he disproved a conjecture concerning higher-dimensional symplectic invariants by constructing ingenious counterexamples. In combinatorial geometry, he adopted a recent proof of the finite field analog of the Kakeya problem to the Euclidean context. He and Bourgain established the best current bounds to the restriction problem. Extending this work, he and Katz essentially solved one of the most well-known problems in incidence geometry, Erdős’s distinct distance problem, which was formulated in the 1940s.
Richard Kenyon - MATHEMATICS  
Brown University  
Richard Kenyon’s central mathematical contributions are in statistical mechanics and geometric probability. He established the first rigorous results on the dimer model, opening the door to recent spectacular advances in the Schramm–Loewner evolution theory. In most recent work, he introduced new homotopic invariants of random structures on graphs, establishing an unforeseen connection between probability and representation theory.

Andrei Okounkov - MATHEMATICS  
Columbia University  
Andrei Okounkov’s work spans a wide range of topics at the interface of representation theory, algebraic geometry, combinatorics and mathematical physics. He has made major contributions to enumerative geometry of curves and sheaves, the theory of random surfaces and random matrices. His papers reveal hidden structures and connections between mathematical objects and introduce deep new ideas and techniques of wide applicability.

Moses Charikar – THEORETICAL COMPUTER SCIENCE  
Princeton University  
Moses Charikar is one of the world’s leading experts on the design of approximation algorithms. He gave an optimal algorithm for the unique games, a central problem in complexity theory. His work sheds light on the strengths and limitations of continuous relaxations for discrete problems. He has uncovered new obstructions to dimension reduction and compression of geometric data. His algorithms for locality-sensitive hash functions are now de facto standard in real-life applications.

Shang-Hua Teng - THEORETICAL COMPUTER SCIENCE  
University of Southern California  
Shang-Hua Teng is one of the most original theoretical computer scientists in the world, with groundbreaking discoveries in algorithm design, spectral graph theory, operations research and algorithmic game theory. In joint work with Dan Spielman, Shang-Hua introduced smoothed analysis, a new framework that has served as a basis for advances in optimization, machine learning and data mining. His work laid foundations for many algorithms central in network analysis, computational economics and game theory.

Patrick Hayden – THEORETICAL PHYSICS  
Stanford University  
Patrick Hayden’s work on the requirements for secure communication through quantum channels transformed the field of quantum information, establishing a general structure and a set of powerful results that subsumed most of the previous work in the field as special cases. More recently, he has used quantum information theory concepts to obtain new results related to the quantum physics of black holes.

Marc Kamionkowski - THEORETICAL PHYSICS  
The Johns Hopkins University  
Marc Kamionkowski is one of the leading theorists working at the intersection of particle physics, cosmology and astrophysics. His early work helped found the field of precision cosmology, showing how observations of the angular structure of the cosmic microwave background revealed information about fundamental-physics effects in the early Universe. He has also done work that has been crucial to our understanding of the physics of dark matter. His review articles and talks have helped define this new and growing field. Kamionkowski’s recent work centers on the development of new methods for the use of astrophysical measurements to probe properties of fundamental physical interest.

Leo Radzihovsky - THEORETICAL PHYSICS  
University of Colorado at Boulder  
Leo Radzihovsky is a condensed matter physicist whose work bridges the divide between the classical and quantum aspects of the subject, using mathematical tools and insights developed in one field to make seminal contributions in the other. His focus is on systems where fluctuations and heterogeneity play qualitative roles. He is known for his work on bent-core and other exotic liquid crystals; on fluctuating membranes and driven elastic media in the presence of quenched disorder, including the prediction of the transverse smectic phase; and on degenerate atomic gasses, where his rigorous work on the BCS-BEC crossover, particularly in systems with narrow Feshbach resonances, with and without “spin” imbalance, uncovered a host of new phenomena including topological phase transitions.

Rachel Somerville - THEORETICAL PHYSICS  
Rutgers University  
Rachel Somerville is a theoretical astrophysicist known for her contributions to the development of ‘semianalytic modeling’ methods that combine computational and pencil-and-paper theory, and her use of these methods, to further our understanding of the physical mechanisms of the formation, structural evolution and nuclear activity of galaxies. Her work has enabled, for example, the development of a comprehensive picture of the way in which the growth of supermassive black holes, and the energy they release during their formation, is linked with the structural properties of galaxies as well as their star formation activity.

Anatoly Spitkovsky - THEORETICAL PHYSICS  
Princeton University  
Anatoly Spitkovsky’s large-scale computer simulations of astrophysical plasmas have been instrumental in bringing a new level of quantitative precision to the field. His work on particle acceleration in astrophysical shocks is changing the way we understand high-energy astrophysics, and he is also known for his work on pulsar magnetospheres.

Iain Stewart - THEORETICAL PHYSICS  
Massachusetts Institute of Technology  
Iain Stewart works in the physics of elementary particles, investigating fundamental questions in quantum chromodynamics, i.e., the interactions of quarks and gluons via the strong force. He is particularly known for his role in inventing soft collinear effective field theory, a theoretical tool for understanding the particle jets produced by high energy collisions in accelerators such as the LHC. He has established factorization theorems that enable the clear interpretation and physical understanding of the collision products. Methods he has developed have been used in the search for the Higgs boson, to gain new insights into effects of CP violation in B-meson production and to test for beyond-standard-model physics.
Foundation Awards and Competitions

Simons Foundation
Simons Investigators in the Mathematical Modeling of Living Systems

Deadlines: 10.28.15 (nomination)
Amount: $550,000 (over 5 years)

DESCRIPTION
The Simons Investigators in the Mathematical Modeling of Living Systems (MMLS) are outstanding scientists, often with mathematics or theoretical physics backgrounds, who are now engaged in mathematical-model-based research in the life sciences and to whom the Simons Foundation is dedicated to providing long-term support for their work. Mathematical-model-based approaches are making increasingly important contributions to the life sciences. The MMLS program aims to support such approaches and to foster a scientific culture of theory-experiment collaboration similar to that prevailing in the physical sciences. To encourage young researchers to pursue this endeavor, the MMLS program will provide a long-term, stable base of support, enabling a focus on model-based approaches to important issues in the life sciences. An Investigator will receive research support in an amount initially set at $100,000 per year; an additional $10,000 per year will be provided to the Investigator’s department. The institution administering the award will receive an additional 20 percent per year in indirect costs on the Investigator and departmental funds. In 2015 the foundation anticipates appointing up to four Investigators in the Mathematical Modeling of Living Systems.

NOTE: This is a new Investigator program.

NOMINATION / APPLICATION
The foundation asks each invited university to submit one nomination.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
To be an Investigator, a scientist must be engaged in research related to the program and must have a primary appointment as a faculty member at a United States or Canadian institution with a Ph.D. program and not have previously been a Simons Investigator.

At the time of appointment an Investigator should be in the early stages of an academic career (within five years of the start of his/her first faculty position) and typically holding an assistant professorship or equivalent position.

A broad spectrum of research areas within the life sciences will be considered, ranging from cellular-level issues of organization, regulation, signaling, and dynamics through morphogenesis to the properties of large organisms, as well as neuroscience and evolution; however, preference will be given to areas in which modeling approaches are less established, and for this reason bioinformatics and genomics will fall outside the scope of the program. In all cases, preference will be given to work that relates closely to experiment, developing models that can explain data, suggest new classes of experiments, and introduce important new concepts.

Investigators are expected to attend annual meetings at the Simons Foundation (at the foundation’s expense) to discuss their activities.

REVIEW CRITERIA / SELECTION PROCESS
The nominees are judged on their potential for innovative new contributions to science over the coming years.

ADVISORY / SELECTION COMMITTEE
Not available.
PREVIOUS YEAR RECIPIENTS - 2014

Paul François
McGill University
Paul François is known for his work on physical aspects of embryonic development, in particular his analysis of the mechanisms underlying embryonic patterning, for example, the role of genetic oscillators in the development of vertebrae. His research plans involve investigations of the physical bounds for information processing in the immune system and further investigation of the physical mechanisms of vertebrae formation.

Oskar Hallatschek
University of California, Berkeley
Oskar Hallatschek studies how large-scale patterns such as collective motion, synchronization, random genetic drift or Darwinian selection emerge in populations from the joint actions of heterogeneous individuals. He is particularly known for his work on the influence of spatial structure on biological processes, for example, how noisy traveling waves control the speed of many important dynamical processes, including biochemical reactions, range expansions, epidemic outbreaks or biological evolution. Hallatschek’s research plan involves extending his work to study the feedback between ecology and evolution, for example, how populations can evolve to become invasive, using growing biofilms as a model system.

Pankaj Mehta
Boston University
Pankaj Mehta works on collective behaviors in cell dynamics. He is particularly known for his information theoretic analysis of quorum sensing (where groups of many cells are much more sensitive to changes in environment than single cells). His theoretical work, in collaboration with the Bassler experimental group, demonstrated the importance of interference between different signaling channels and provided a mathematical model of the concentrations of receptor cells, which adjust themselves in response to multiple and time-varying signals so as to respond optimally to environmental cues. His research plans include the development and testing of a new quantitative framework for modeling high-dimensional ‘epigenetic landscapes’ and work on understanding collective behavior in cell populations.

Olga Zhaxybayeva
Dartmouth College
Olga Zhaxybayeva’s work focuses on how horizontal gene transfer influences (or influenced) the evolution of bacteria and archaea. Her work developing and implementing statistical techniques for monitoring the evolution of all of the genes in a bacterial genome showed that horizontal gene transfer has affected the evolution of much of the genomes of cyanobacteria, thermophilic bacteria and halophilic archaea. This and related work established horizontal gene transfer as an important driver of microbial evolution. Her research plan involves studying gene transfer agents (virus-like particles produced by some bacteria and archaea) to explore the possibility that horizontal gene transfer can provide an evolutionary force favoring cooperation and the emergence of complexity.
Foundation Awards and Competitions

Simons Foundation

Math+X Investigators Program

Deadlines: 10.28.15 (nomination)
Amount: $1,500,000 (over 5 years)

DESCRIPTION
The Math+X Investigators program is designed to encourage novel collaborations between mathematics and other fields in science or engineering by providing research funds to professors at United States and Canadian universities to establish programs at the interface between mathematics and another field of science or engineering. A Math+X Investigator is appointed for a period of five years and will receive research support in an amount of $300,000 per year, which includes 20 percent in indirect costs to the awardee’s institution. Renewal for an additional five years is contingent upon the evaluation of scientific impact of the Investigator. Renewal beyond the ten-year period will not be considered. In 2015 the foundation anticipates awarding up to two Math+X Investigator grants.

NOTE: This is a new Investigator program.

NOMINATION / APPLICATION
The foundation asks each invited university to submit one nomination.

GENERAL ELIGIBILITY REQUIREMENTS (SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)
The Math+X Investigator must be a current tenured faculty member at a United States or Canadian institution, with a primary appointment in the mathematics department. The Investigator will be expected to teach in both the mathematics and the X departments, be appointed in both departments by the award start date (courtesy appointments will be allowed), and attend an annual meeting at the Simons Foundation, to be arranged by the foundation. There are no citizenship requirements.

The X partner should be a department of science or engineering that will engage in significant collaboration with the mathematics department in an area where such collaboration is not the norm. Both departments must have doctoral programs.

X partners in finance and business will not be considered. Areas where there are already well-established links with mathematics, such as economics, string theory, or computational complexity, will also not be considered unless the proposal involves particularly unusual collaborations.

REVIEW CRITERIA / SELECTION PROCESS
The nominees are judged on their potential for innovative new contributions to science over the coming years.

ADVISORY / SELECTION COMMITTEE
Not available.

PREVIOUS YEAR RECIPIENTS
Not applicable as this is a new Investigator program.
Foundation Awards and Competitions

Alfred P. Sloan Foundation

Sloan Research Fellowships

**Deadlines:** 09.15.15 (application)

**Amount:** $50,000 (over 2 years)

**DESCRIPTION**
The Sloan Research Fellowships seek to stimulate fundamental research by early-career scientists and scholars of outstanding promise. These two-year fellowships are awarded yearly to 126 researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field.

**NOMINATION / APPLICATION**
Candidates must be nominated by a department head or other senior researcher. Submissions unaccompanied by a nomination from a senior researcher are not accepted. More than one candidate from a department may be nominated, but no more than three. In keeping with the Alfred P. Sloan Foundation’s longstanding support of underrepresented minorities in the sciences, the Foundation strongly encourages the nomination of qualified women and minority candidates.

**GENERAL ELIGIBILITY REQUIREMENTS** *(SEE WEBSITE FOR COMPLETE ELIGIBILITY REQUIREMENTS)*
Candidates must hold a tenure track (or equivalent) position at a college, university, or other degree-granting institution in the United States or Canada. Tenure track faculty positions at the candidate's institution must include a yearly teaching requirement.

Candidates must hold a Ph.D. (or equivalent) in chemistry, computational or evolutionary molecular biology, computer science, economics, mathematics, neuroscience, ocean sciences, physics, or a related field.

Candidates' most recent Ph.D. (or equivalent) must have been awarded on or after September 1, 2008. Exceptions may apply (see website).

**REVIEW CRITERIA / SELECTION PROCESS**
Nominations are reviewed and candidates selected by a selection committee of three distinguished scientists in each eligible field. The committees review more than 700 nominations each year. Fellows are selected on the basis of their independent research accomplishments, creativity, and potential to become leaders in the scientific community through their contributions to their field.

**ADVISORY / SELECTION COMMITTEE**
Not available.

**PREVIOUS YEAR RECIPIENTS – 2014**
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<th>Name</th>
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