NJIT Research Newsletter

Issue: ORN-2016-01

Happy New Year!

NJIT Research Newsletter includes ***Grant Opportunity Alerts,*** recent awards, and announcements of research related seminars, webinars and special events. The Newsletter is posted on the NJIT Research Website http://www.njit.edu/research/

Recent Research Grant and Contract Awards

Congratulations to faculty and staff on receiving research grant and contract awards!

PI: Joyoung Lee (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Smart Bus System under Connected Vehicle Environment
Funding Agency: CUNY Contract
Duration: 06/01/15-05/31/16

PI: Jay Meegoda (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Drainage Identification Analysis and Mapping, Phase2
Funding Agency: CUNY Contract
Duration: 08/01/15-10/31/16

PI: Somenath Mitra (PI)
Department: Chemistry and Environmental Sciences
Grant/Contract Project Title: Water Treatment
Funding Agency: EPRI
Duration: 04/08/13-12/30/16

PI: Michel Boufadel (PI)
Department: Center for Natural Resources Development and Protection
Grant/Contract Project Title: Dispersion Research on Oil: Physics and Plankton Studies (DROPPS II)
Funding Agency: University of Texas Contract
Duration: 01/01/15-12/31/17

PI: Matthew Adams (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Bridge Resource Program: Mass Concrete in Drilled Shafts
Funding Agency: Rutgers University Contract
Duration: 10/01/15-12/31/16

PI: Lazar Spasovic (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Intelligent Transportation Systems Resource Center
Funding Agency: NJDOT
Duration: 12/17/15-12/31/16

PI: Lisa Axe (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Collaborative Biogeochemical Research Initiatives
Funding Agency: The Chemours Co.
Duration: 12/02/14-05/31/17

Events and Announcements

Event: NJIT President's Forum and 2016 Faculty Research Showcase
When: February 22, 2016: 10.00 AM – 3.00 PM
Where: President's Forum and Keynote Address: Atrium, Campus Center
Faculty Research Presentations and Poster Session: Ballroom A
President's Forum Speaker: Michael, Doyle, Founding Chairman and CTO, Eolas Technologies inc.; Founder and Chairman, National Museum of Health and Medicine; Founder and Chairman, CodeAbode
Title of the Talk: Treading Water in the Digital Ocean: Diving-In Over the Head Can Sometimes Lead to Surfing the Big Waves
Biographical Sketch of the Speaker: Dr. Michael Doyle is the Chairman and CTO of Eolas Technologies Inc., and is the founder and Chairman of the National Museum of Health and Medicine Chicago. He is an active angel investor and co-founder in several Chicago-area tech startups, and is the founder of CodeAbode, the nation's first code bootcamp focused in the areas of health, medicine and fitness.

Dr. Doyle received his PhD from the Department of Cell & Structural Biology at the University of Illinois at Urbana-Champaign. While a student there, he received his first patent for his invention of the first open-distributed hypermedia browser, an architecture later popularized by the World Wide Web. He went on to serve as Director of the UIC Biomedical Visualization Laboratory from 1989 to 1993, during which he also served on the oversight board of the Visible Human Project at the National Library of Medicine. While at UIC, Dr. Doyle pioneered the application of fractal analysis to the early diagnosis of osteopenia-related trabecular bone loss from routine dental x-rays.

Prior to founding Eolas in 1994, Dr. Doyle served as Director for the Center for Knowledge Management at the University of California, San Francisco. While at UCSF Medical Center, in 1993, Dr. Doyle led the research team that invented the fundamental web

technologies which enabled Web browsers for the first time to act as platforms for fully-interactive remotely-distributed applications, in the process pioneering the revolutionary Web technologies today known as streaming media and cloud computing. Dr. Doyle successfully guided Eolas through the development of several key technologies in use throughout the Internet. Dr. Doyle's seminal research in next-generation Web applications, hypermedia navigation, mobile telecommunications, 3-D biomedical visualization, and morpho-spatial genomic activity mapping has led to advances that have gained worldwide recognition. His invention of the field of transient-key cryptography led to the technology which comprises the x9.95 ANSI National Standard for secure timestamps, and forms the basis for the revolutionary new eCheck system from Deluxe Check Company. Dr. Doyle's Transient-Key Cryptography system also inspired other major advances in cryptographic science, including the algorithms behind both perfect-forward secrecy and the Bitcoin digital cash system.

Dr. Doyle has been a contributor to, and supporter of, the open-source Tcl/Tk programming language community since the mid-1990s. His 1998 book, "Interactive Web Applications with Tcl/Tk," published by Academic Press, is still available on Amazon.

From 2000-2004, Dr. Doyle served as Chief Scientist on the Visible Embryo Project Next Generation Internet Project, a contract from the National Institutes of Health funding development of new kinds of applications that would work with powerful computers over high-speed networks. As part of this project, the University team reconstructed over 30 embryos from the Carnegie Collection and made them available on computers at the San Diego Supercomputer Center at the University of California San Diego, enabling scientists at Johns Hopkins University to compare the reconstructed Carnegie Collection data to 3D ultrasounds to detect birth defects and plan intrauterine surgeries to correct them.

In 2012, Dr. Doyle led the development of the Eolas vScope interactive cloud-based streaming virtual microscope system, and its adaptation to create the first neuroanatomical atlas of Albert Einstein's brain, released in September of that year as the Einstein Brain Atlas app in Apple's iPad app store, an event which received worldwide press coverage, including coverage on the Today Show and Good Morning America.

Dr. Doyle currently serves on the Board of Trustees of Beloit College, and the Advisory Council of the UIC College of Applied Health Sciences. He was the 2013 recipient of the UIC AHS Distinguished Alumni Achievement Award, and is a member of ACM, IEEE, Sigma Xi, Phi Kappa Phi, Mensa, the Triple Nine Society, and the Ultranet. He is an active philanthropist, supporting a variety of charitable causes in the sciences and the arts both personally and through his family foundation, the Buonacorsi Foundation.

Event Description: The 2016 NJIT Faculty Research Showcase will start with the President's Forum with the Keynote Address by Dr. Michael Doyle. The showcase will introduce new NJIT faculty who have joined us in academic year 2015-16 with brief presentations on their research work. New faculty presentations will be followed by the electronic posters and networking session featuring research projects with recipients of the 2015 NJIT Faculty Seed Grants. Faculty, staff and students are welcome to join us at this interdisciplinary networking event to learn about exciting ongoing research projects, and explore future collaborative opportunities.

Event: Fall 2015 NSF Grants Conference Presentations

Website: https://www.signup4.net/public/ap.aspx?EID=NATI644E&OID=162

Abstract: Presentations and other documents for the Fall 2015 NSF Grants Conference are now posted as they become available. Please click on the following links to view and/or download individual presentations/documents. The presentation material provides description of the

changes in polices related to proposal submission and grant management. Summary of the proposed changes was included in the Newsletter ORN-2015-37 posted on the research website http://www.njit.edu/research/. A summary of the changes effective January 1, 2016 is provided in the next section. The complete information is available on the NSF Website: http://www.nsf.gov/pubs/policydocs/pappguide/nsf16001/sigchanges.jsp

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Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences: *Challenges at the Intersection of Nuclear Physics and Astrophysics*
Host: NSF
When: January 25, 2016 2:00 PM
Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=136075&org=NSF
Contact for More Information: Andrew J. Lovinger, (703) 292-4933, alovinge@nsf.gov.

NSF Announcement
Significant Changes and Clarifications to the
***Proposal & Award Policies & Procedures Guide* (PAPPG)**

Effective January 25, 2016

Editorial changes have been made to either clarify or enhance the intended meaning of a sentence or section or ensure consistency with data contained in NSF systems or other NSF policy documents. Throughout the PAPPG, website references and Division or Office names have been updated to reflect current information.

Significant Changes to the PAPPG Part I: *Grant Proposal Guide* (GPG)

Chapter I.F, When to Submit Proposals, has been updated to remove the ability to use other than 5 p.m. submitter's local time in solicitations. Failure to submit by 5 p.m. submitter's local time will result in the proposal not being accepted.
Chapter I.G.2, How to Submit Proposals, has been revised to reflect that an Authorized Organizational Representative (AOR) must provide the proposal certifications concurrently with submission of the proposal. This change is consistent with the process used in Grants.gov. In addition, proposal file updates and revised budgets (Chapter III.C and D, respectively) must be signed and submitted by an AOR and only an AOR can perform a withdrawal function on behalf of a proposing organization (Chapter IV.A).
Chapter II.C.1.d, Proposal Certifications, has been supplemented with a new certification regarding Dual Use Research of Concern.
Chapter II.C.1.e, Collaborators & Other Affiliations Information, is a new single-copy document that requires each senior project personnel to provide information regarding collaborators and other affiliations. This information used to be provided as part of the Biographical Sketch. The new format no longer requires proposers to identify the total number of collaborators and other affiliations when providing this information.
Chapter II.C.2.f, Biographical Sketch(es), has been supplemented to inform proposers that they may use third-party solutions to develop their biographical sketch, however, the information they submit must be compliant with NSF proposal preparation requirements. In addition, it is no longer allowable for the biographical sketches of all senior personnel to be

grouped together in a single PDF file. Biographical sketches must now be uploaded separately for each individual identified on the proposal as senior personnel. Biographical sketches for Other Personnel and for Equipment proposals (Chapter II.C.2.f(ii) and (iii) respectively), however, should be uploaded as a single PDF file in the Other Supplementary Documents section of the proposal.

Chapter II.C.2.h, Current and Pending Support, has been revised to reflect that all current project support should be listed in this section of the proposal, including internal funds allocated toward specific projects. Current and pending support must now be uploaded as a single PDF file or inserted as text for all senior personnel. It is no longer allowable for the current and pending support of all senior personnel to be grouped together in a single PDF file.

Chapter II.D.14, Dual Use Research of Concern (DURC), is an entirely new section and serves, in conjunction with coverage in the *Award & Administration Guide*, as NSF's implementation of the US Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

Clarifications and Other Changes to the GPG

Chapter I.G.4, NSF ID, has been updated to specify that each individual user of NSF systems should not have more than one NSF ID.

Chapter II.B.2, Format of the Proposal, has been revised to show that solicitations will no longer may specify different type size, margin, or spacing requirements. All NSF funding opportunities will follow the formatting instructions contained in this section of the GPG.

Chapter II.C.1, Single-Copy Documents, has been changed to reflect that, since proposers submit the Information about PIs/PDs and co-PIs/co-PDs as part of the PI profile, it has been deleted from the list of single-copy documents. Also, when submitting a list of suggested reviewers, PIs should include the email address and institutional affiliation of persons they believe are well qualified to review the proposal.

Chapter II.C.2.a(4)(h), Cover Sheet, contains guidance on the procedure to follow if the specific location of an international conference is not known at the time of proposal submission. A parallel change has been made to Chapter II.C.2.j.

Chapter II.C.2.b, Project Summary, has been modified to remind proposers that only Project Summaries that use special characters may be uploaded in the Supplementary Documents section. Such Project Summaries must contain separate headings for Overview, Intellectual Merit and Broader Impacts or the proposal will be returned without review.

Chapter II.C.2.d(ii), Project Description, has been updated to state that URLS must not be used in the Project Description.

Chapter II.C.2.d(iii), Results from Prior NSF Support, has been revised to reflect that the information must be provided for any PI or co-PI that has received NSF funding with a start date in the past five years (including any current funding and no-cost extensions). Information also has been added on which types of NSF awards must be reported on in this section of the proposal.

Chapter II.C.2.g(i)(b), Salaries and Wages, has been updated to parallel the language in 2 CFR § 200.413 on administrative and clerical salaries and wages.

Chapter II.C.2.g(v), Participant Support, has been supplemented with information on the types of costs that may be proposed and under what scenarios they are allowable.

Chapter II.C.2.g(vi)(f), Visa Costs, has been removed now that the Uniform Guidance contains coverage on this topic.

Chapter II.C.2.j, Special Information and Supplementary Documentation, now specifies the format that must be used for letters of collaboration.

Chapter II.D.5.b, Collaborative Proposals, reminds proposers that should a collaborative proposal from multiple organizations be awarded, both the lead and non-lead organizations are required to submit separate annual and final project reports.

Chapter II.D.7, Proposals Involving Vertebrate Animals, contains updated guidance on the information that must be provided in the Project Description for projects that involve use of vertebrate animals and the procedure to follow if IACUC approval has not been obtained prior to submission. For some types of vertebrate animals (i.e., chimpanzees), additional review may be required.

Chapter II.D.9, Conference Proposals, has been supplemented to show that information on support from other sources should be described in the Facilities, Equipment and Other Resources section of the proposal. Information has been added on the types of costs that may be proposed for conferences and under what scenarios they are allowable.

Exhibit II-1, Proposal Preparation Checklist, has been updated to reflect the changes made to the GPG and NSF's electronic systems and streamlined to emphasize the most relevant items. Proposers are strongly encouraged to conduct an administrative review prior to submission, to ensure that proposals comply with the instructions in the GPG and/or the program solicitation, in the format specified.

Chapter III.E, Funding Recommendation, coverage on award abstracts and titles has been updated for consistency with NSF Important Notice 136 on transparency and accountability.

Chapter III.F, NSF's Risk Management Framework and the Decision to Award or Decline Proposals, has been supplemented with language regarding NSF's implementation of the Federal Awardee Performance and Integrity Information System. The risk-based framework cumulative threshold has increased from $200,000 to $225,000 for proposers who have not received NSF funding the last five years.

Significant Changes to the PAPPG Part II, *Award and Administration Guide* (AAG)

Chapter I, NSF Awards, has been revised to reflect that requests for NSF-approved extensions submitted after the grant end date must include justification for why they were not submitted earlier.

Chapter II.A.2, Grantee Notifications to NSF and Requests for NSF Approval, has been revised to state that, with the exception of significant changes in methods or procedures and significant changes, delays or events of unusual interest, all notifications and requests must be electronically signed and submitted by the AOR via use of NSF's electronic systems.

Chapter II.D, Technical Reporting Requirements, has been revised to state that, in the case of annual project reports, the reports should be submitted no later than 90 days prior to the end of the current budget period. For final project reports and project outcomes reports for the general public, reports should be submitted no later than 120 days following expiration of the grant. Grants will be financially closed out on the first day of each month for all awards with end dates of 120 or more days prior to the financial closeout day. Parallel changes have been made to section II.C.3 with regard to annual and final cost sharing reports.

Chapter III.E, Award Financial Reporting Requirements – Final Disbursement Reporting, Consolidated Listing of Program- and Cost-Related Grantee Notifications to, and Requests for Approval from, the National Science Foundation, has been revised to reflect that grantees must liquidate all obligations incurred under their awards not later than 120 calendar days after the award end date and that NSF will financially close awards 120 days after the award end date.

Chapter VI.B.5, Life Sciences Dual Use Research of Concern (DURC), is an entirely new section and serves, in conjunction with coverage in the GPG, as NSF's implementation of the US Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.
Chapter VI.D.2.c, Public Access to Copyrighted Material, is an entirely new section which provides information on NSF's Public Access Policy. This policy also is referenced in Chapter VI.E.1 on publication and distribution of grant materials.

Clarifications and Other Changes to the AAG

Chapter II.B.2.e and 3, Changes in Project Direction or Management, has been updated to reflect that, when a grant is being transferred, if funding is requested to support a postdoctoral researcher, a mentoring plan must be provided and the PI must report on the mentoring activities in their NSF project reports. The same procedures must be followed if a request to subaward, transfer or contract out part of an NSF award includes funding to support a postdoctoral researcher and the original proposal did not include a mentoring plan.
Chapter III.D.3, Interest Earned on Advance Payments, has been updated with guidance that implements the applicable portions of 2 CFR § 200.305 on interest income.
Chapter V.A, Basic Considerations, has been supplemented with language noting that NSF policies which have a post-award requirement are implemented in the grant terms and conditions.
Chapter V.B.2, Administrative and Clerical Salaries & Wages Policy, is a new section that articulates when direct charging of these costs may be appropriate, in accordance with 2 CFR § 200.413.
Chapter V.D, Indirect Costs, has updated the language on predetermined rates in order to conform to the coverage in the Uniform Guidance. In addition, it discusses under what circumstances NSF may elect to set award specific rates.
Chapter V.F.4, Passports and Visas, has been revised to refer to the Uniform Guidance for coverage on visa costs.
Chapter VII.A.2, Suspension and Termination, has been supplemented with language regarding NSF's implementation of the Federal Awardee Performance and Integrity Information System.
Chapter VII.B.3, Informal Resolution of Grant Administration Disputes, contains revised procedures to be followed when a grantee disagrees with or disputes a post-award decision made by an NSF Grants and Agreements Officer.

Grant Opportunity Alerts

Keywords and Areas Included in Grant Opportunity Alerts**:**

NSF: Data Infrastructure Building Blocks (DIBBs); Petascale Computing Resource Allocations (PRAC); Ideas Lab: Science of Learning: Collaborative Networks (SL-CN); STEM + Computing Partnerships (STEM+C); Energy-Efficient Computing: from Devices to Architectures (E2CDA); Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE); Innovations at the Nexus of Food, Energy and Water Systems (INFEWS)
NIH: NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00); BRAIN Initiative: Next-Generation Invasive Devices for Recording and Modulation in the Human

Central Nervous System (U44); Fogarty Global Injury and Trauma Research Training Program (D43); BRAIN Initiative: New Concepts and Early - Stage Research for Large - Scale Recording and Modulation in the Nervous System (R21)
DoD/ONR/AFOSR/ARL: Strategic Technologies; Research and Technology Development; DoD Joint Program Committee-2/Military Infectious Diseases Applied Research Award; AFRL RD/RV University Cooperative Agreement
The Simon Foundation: Targeted Grants in Mathematics and Physical Sciences
Elsa U. Pardee Foundation: EUP Grants

Grant Opportunities

National Science Foundation

Grant Program: Data Infrastructure Building Blocks (DIBBs)
Agency: National Science Foundation NSF 16-530
RFP Website: http://www.nsf.gov/pubs/2016/nsf16530/nsf16530.htm
Brief Description: The NSF vision for a Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) considers an integrated, scalable, and sustainable cyberinfrastructure to be crucial for innovation in science and engineering (see www.nsf.gov/cif21). The Data Infrastructure Building Blocks (DIBBs) program is an integral part of CIF21. The DIBBs program encourages development of robust and shared data-centric cyberinfrastructure capabilities, to accelerate interdisciplinary and collaborative research in areas of inquiry stimulated by data.

DIBBs investments enable new data-focused services, capabilities, and resources to advance scientific discoveries, collaborations, and innovations. The investments are expected to build upon, integrate with, and contribute to existing community cyberinfrastructure, serving as evaluative resources while developments in national-scale access, policy, interoperability and sustainability continue to evolve.

Effective solutions will bring together cyberinfrastructure expertise and domain researchers, to ensure that the resulting cyberinfrastructure address researchers' data needs. The activities should address the data challenges arising in a disciplinary or cross-disciplinary context. (Throughout this solicitation, 'community' refers to a group of researchers interested in solving one or more linked scientific questions, while 'domains' and 'disciplines' refer to areas of expertise or application.) The projects should stimulate data-driven scientific discoveries and innovations, and address broad community needs.
This solicitation includes two classes of science data pilot awards:

- **Early Implementations** are large "at scale" evaluations, building upon cyberinfrastructure capabilities of existing research communities or recognized community data collections, and extending those data-focused cyberinfrastructure capabilities to additional research communities and domains with broad community engagement.
- **Pilot Demonstrations** address advanced cyberinfrastructure challenges across emerging research communities, building upon recognized community data collections and disciplinary research interests, to address specific challenges in science and engineering research.

Prospective PIs should be aware that DIBBs is a multi-directorate activity, and are encouraged to submit proposals that have broad, interdisciplinary interest. PIs are encouraged to refer to

NSF core program descriptions, Dear Colleague Letters, and recently posted initiatives on directorate and divisional home pages to gain insight as to the priorities for the relevant area(s) of science and engineering in which their proposal may be responsive. **It is strongly recommended that a prospective PI contact a Cognizant Program Officer in the organization(s) closest to the major disciplinary impact of the proposed work to ascertain whether the scientific focus and budget of the proposed work are appropriate for this solicitation.**

Awards: Standard Grants. The anticipated funding amount is $23,500,000 total for this solicitation.

- The award size for Early Implementation Awards is anticipated to be up to $4,000,000 total per award for up to 5 years.
- The award size for Pilot Demonstration Awards is anticipated to be up to $500,000 total per award for up to 3 years

Letter of Intent: Not Required

Full Proposal Deadlines: April 4, 2016

Contacts:

- Amy Walton, Program Director, CISE/ACI and DIBBs Solicitation Manager, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Robert Chadduck, Program Director, CISE/ACI, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Anita Nikolich, Program Director, CISE/ACI, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Peter H. McCartney, Program Director, BIO/DBI, telephone: (703) 292-8470, email: DIBBsQueries@nsf.gov
- Sylvia Spengler, Program Director, CISE/IIS, telephone: (703) 292-8930, email: DIBBsQueries@nsf.gov
- John C. Cherniavsky, Senior Advisor, EHR, telephone: (703) 292-5136, email: DIBBsQueries@nsf.gov

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Grant Program: Petascale Computing Resource Allocations (PRAC)

Agency: National Science Foundation NSF 16-529

RFP Website: http://www.nsf.gov/pubs/2016/nsf16529/nsf16529.htm

Brief Description: In 2013, a new NSF-funded petascale computing system, Blue Waters, was deployed at the University of Illinois at Urbana-Champaign. The goal of this project and system is to open up new possibilities in science and engineering by providing computational capability that makes it possible for investigators to tackle much larger and more complex research challenges across a wide spectrum of domains. The purpose of this solicitation is to invite research groups to submit requests for allocations of resources on the Blue Waters system. Proposers must show compelling science or engineering challenges that require petascale computing resources. Proposers must also be prepared to demonstrate that they have science or engineering research problems that require and can effectively exploit the petascale computing capabilities offered by Blue Waters. Proposals from or including junior researchers are encouraged, as one of the goals of this solicitation is to build a community capable of using petascale computing.

Awards: Standard Grants

Letter of Intent: Not Required

Full Proposal Deadlines: April 4, 2016

Contacts:

- Edward Walker, Program Director, CISE/ACI, telephone: (703) 292-4863, email: edwalker@nsf.gov
- Rudolf Eigenmann, Program Director, CISE/ACI, telephone: (703) 292-2598, email: reigenma@nsf.gov
- Simon Malcomber, telephone: (703) 292-8227, email: smalcomb@nsf.gov
- J. Gordon Burleigh,635.13, telephone: (703) 292-7836, email: burleig@nsf.gov
- Anne M. Maglia, telephone: (703) 292-8470, email: amaglia@nsf.gov
- Judith E. Skog, telephone: (703) 292-7909, email: jskog@nsf.gov

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Grant Program: Ideas Lab: Science of Learning: Collaborative Networks (SL-CN)
Agency: National Science Foundation NSF 16-528
RFP Website: http://www.nsf.gov/pubs/2016/nsf16528/nsf16528.htm
Brief Description: The goals of the Science of Learning (SL) Program are to: advance fundamental knowledge about learning through integrative research; connect the research to specific scientific, technological, educational, and workforce challenges; and enable research communities to capitalize on new opportunities and discoveries. The program supports projects that emphasize consilience of knowledge, adopting diverse disciplinary approaches to shared research questions. The program seeks to develop robust and integrated accounts of contexts, mechanisms, and effective strategies of learning.
This solicitation invites proposals for the creation of new research networks to address important integrative questions in the science of learning. Each network must identify an integrative research goal involving convergence of evidence from the diverse disciplinary approaches represented by participants in the network. The proposed research must substantially advance understanding of learning in more than a single discipline. Networks may focus on advancing basic research through experiments and theory, as well as translating findings from basic research on learning to applications in order to benefit society and further inform fundamental theories of learning. This solicitation is for proposals that do not fit into existing NSF programs, by virtue of the emphasis on interdisciplinarity in service of knowledge consilience and integration.
Each network is expected to engage in both of the following activities:

- Partnership-building activities among the network participants to optimize scientific exchange for the co-design and execution of network goals; and

Collaborative, integrative research to be conducted by the network participants. Integrative research must address questions of genuine significance across multiple disciplines, or multiples levels of analysis.
Awards: Standard Grants. Anticipated available funding: $9,750,000
Letter of Intent: Required; Deadline: March 01, 2016
Full Proposal Deadlines: April 04, 2016
Contacts:

- Soo-Siang Lim, SBE/BCS, telephone: (703) 292-7878, email: slim@nsf.gov
- Charles Kalish, SBE/BCS, telephone: (703) 292-7369, email: ckalish@nsf.gov
- Gregg Solomon, EHR/DRL, telephone: (703) 292-8333, email: gesolomo@nsf.gov
- Tatiana Korelsky, CISE/IIS, CISE/CNS, telephone: (703) 292-8930, email: tkorelsk@nsf.gov
- Elliot Douglas, ENG/EEC, telephone: (703) 292-7051, email: edouglas@nsf.gov
- Bruce P. Palka, MPS/DMS, telephone: (703) 292-4856, email: bpalka@nsf.gov
- Anne L. Emig, OD/OISE, telephone: (703) 292-7241, email: aemig@nsf.gov
- Michelle Elekonich, BIO/IOS, telephone: (703) 292-7202, email: melekoni@nsf.gov

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Grant Program: STEM + Computing Partnerships (STEM+C)
Agency: National Science Foundation NSF 16-527
RFP Website: http://www.nsf.gov/pubs/2016/nsf16527/nsf16527.htm
Brief Description: The STEM+Computing Partnerships program seeks to significantly enhance the learning and teaching of science, technology, engineering, mathematics (STEM), and computing by K-12 students and teachers through research on, and development of, courses, curriculum, course materials, pedagogies, instructional strategies, models, or pedagogical environments that innovatively integrate computing into one or more other STEM disciplines, or integrate STEM content into the teaching and learning of computing. In addition, STEM+C seeks to build capacity in K-12 computing education with foundational research and focused teacher preparation. Projects in the STEM+C program should build on research in STEM education and prior research and development efforts that provide theoretical and empirical justification for proposed projects. Pre-service and in-service teachers who participate in STEM+C projects are expected to enhance their understanding and teaching of STEM and computing content, practices, and skills.
STEM+C invites creative and innovative proposals that address emerging challenges in the learning and teaching of STEM and computing. The program offers proposers two tracks: (1) Integration of Computing in STEM Education and (2) Computing Education Knowledge and Capacity Building. The second track is discipline-specific and may be expanded to include additional disciplines in future releases of the solicitation.
Awards: Standard Grants; Total available funding: $47,000,000
Letter of Intent: Not Required
Full Proposal Deadlines: March 28, 2016
Contacts:

- Arlene M. de Strulle, DRL/EHR, telephone: (703) 292-8620, email: adestrul@nsf.gov
- Janice Cuny, CNS/CISE, telephone: (703) 292-8900, email: jcuny@nsf.gov
- Kamau Bobb, CNS/CISE, telephone: (703) 292-4291, email: kbobb@nsf.gov
- Catherine Eberbach, EHR/DRL, telephone: (703) 292-4960, email: ceberbac@nsf.gov
- Michael A. Erlinger, EHR/DUE, telephone:(703) 292-7855, email: merlinge@nsf.gov
- David L. Haury, EHR/DRL, telephone: (703) 292-8614, email: dhaury@nsf.gov
- Margret Hjalmarson, EHR/DRL, telephone: (703) 292-4313, email: mhjalmar@nsf.gov
- Christopher Hoadley, EHR/DRL, telephone: (703) 292-7906, email: choadley@nsf.gov
- Paul W. Jennings, EHR/DRL, telephone: (703) 292-5307, email: pjenning@nsf.gov
- Rebecca Kruse, EHR/DRL, telephone: (703) 292-4211, email: rkruse@nsf.gov
- Julio E. Lopez-Ferrao, EHR/DRL, telephone: (703)292-5183, email: jlopezfe@nsf.gov

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Grant Program: Energy-Efficient Computing: from Devices to Architectures (E2CDA)
Agency: National Science Foundation NSF 16-526
RFP Website: http://www.nsf.gov/pubs/2016/nsf16526/nsf16526.htm
Brief Description: There is a consensus across the many industries touched by our ubiquitous computing infrastructure that future performance improvements across the board are now severely limited by the amount of energy it takes to manipulate, store, and critically, transport data. While the limits and tradeoffs for this performance-energy crisis vary across the full range of application platforms, they have all reached a point at which evolutionary approaches to addressing this challenge are no longer adequate.

Truly disruptive breakthroughs are now required, and not just from any one segment of the technology stack. Rather, due to the complexity of the challenges, revolutionary new approaches are needed at each level in the hierarchy. Furthermore, simultaneous co-optimization across all levels is essential for the creation of new, sustainable computing platforms.

These simultaneous technical and organizational challenges have never been as complex or as critically important as they are now. The urgency of solving the multi-disciplinary technical challenges will require new methods of collaboration and organization among researchers.

Therefore, a comprehensive and collaborative approach must be undertaken to maximize the potential for successfully identifying and implementing revolutionary solutions to break through the bottleneck of energy-constrained computational performance. Programmers, system architects, circuit designers, chip processing engineers, material scientists, and computational chemists must all explore these new paths together to co-design an optimal solution path.

The National Science Foundation (NSF) and the Semiconductor Research Corporation (SRC) recognize this need, and agree to embark on a new collaborative research program to support compelling research that is of paramount importance to industry, academia and society at large. This partnership will specifically support new research to minimize the energy impacts of processing, storing, and moving data within future computing systems, and will be synergistic with other research activities that address other aspects of this overarching energy-constrained computing performance challenge.

The jointly supported research effort aligns with interagency initiatives and priorities, including the National Strategic Computing Initiative and the Nanotechnology-Inspired Grand Challenge for Future Computing.

Awards: Standard Grants; Total available funding: $4,000,000

Letter of Intent: Not Required

Full Proposal Deadlines: March 28, 2016

Contacts:

- Sankar Basu, Program Director, Computing & Communication Foundations Division, NSF, telephone: (703) 292-7843, email: sabasu@nsf.gov
- Dimitris Pavlidis, Program Director, Electrical, Communications & Cyber Systems Division, NSF, telephone: (703) 292-2216, email: dpavlidi@nsf.gov
- Thomas Theis, Executive Director, Nanoelectronic Research Initiative, Semiconductor Research Corporation, telephone: (914) 945-2244, email: thomas.theis@src.org
- Jonathan Candelaria, Program Director, Semiconductor Research Corporation, telephone: (919) 941-9482, email: jon.candelaria@src.org

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Grant Program: Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)

Agency: National Science Foundation NSF 16-525

RFP Website: http://www.nsf.gov/pubs/2016/nsf16525/nsf16525.htm

Brief Description: The Centers of Research Excellence in Science and Technology (CREST) program provides support to enhance the research capabilities of minority-serving institutions (MSI) through the establishment of centers that effectively integrate education and research. MSIs of higher education denote institutions that have undergraduate enrollments of 50% or more (based on total student enrollment) of members of minority groups underrepresented

among those holding advanced degrees in science and engineering fields: African Americans, Alaska Natives, American Indians, Hispanic Americans, Native Hawaiians, and Native Pacific Islanders. CREST promotes the development of new knowledge, enhancements of the research productivity of individual faculty, and an expanded presence of students historically underrepresented in science, technology, engineering, and mathematics (STEM) disciplines. CREST Postdoctoral Research Fellowship (PRF) awards provide research experience and training for early career scientists to work at active CREST Centers to meet the CREST Program goal of building the research capacity of MSIs and advancing the nation's STEM workforce and leadership. HBCU-RISE awards specifically target HBCUs to support the expansion of institutional research capacity as well as the production of doctoral students, especially those from groups underrepresented in STEM, at those institutions.

The CREST program supports the following types of projects:

CREST Center awards provide multi-year support (typically 5-years) for eligible minority-serving institutions that demonstrate a strong research and education base, a compelling vision for research infrastructure improvement, and a comprehensive plan with the necessary elements to achieve and sustain national competitiveness in a clearly defined area of national significance in science or engineering research. Successful Center proposals will demonstrate a clear vision and synergy with the broad goals of the CREST Program and the Human Resource Development Division with respect to development of a diverse STEM workforce. CREST Centers are expected to provide leadership in the involvement of groups traditionally underrepresented in STEM at all levels (faculty, students, and postdoctoral researchers) within the Center. Centers are required to use either proven or innovative mechanisms to address issues such as recruitment, retention and mentorship of participants from underrepresented groups.

CREST Partnership Supplements support the establishment or strengthening of partnerships and collaborations between active CREST Centers and nationally or internationally recognized research centers including NSF-supported research centers, and private sector research laboratories, K-12 entities including museums and science centers or schools, as appropriate to enable the CREST Centers to advance knowledge and education on a research theme of national significance.

CREST Postdoctoral Research Fellowship (PRF) awards recognize beginning CREST Center investigators with significant potential and provide them with research experiences that broaden perspectives, facilitate interdisciplinary interactions and establish them in positions of leadership within the scientific community. Fellows conduct research on topics aligned with the research focus of the host CREST Center. The fellowships are also designed to provide active mentoring to the Fellows by the sponsoring CREST Center scientists who, in turn, will benefit from the incorporation of these talented scientists into their research groups.

HBCU Research Infrastructure for Science and Engineering (RISE) awards support the development of research capability at Historically Black Colleges and Universities that offer doctoral degrees in science and engineering disciplines. Supported projects must have a unifying research focus in one of the research areas supported by NSF, a direct connection to the long-term plans of the host department(s), institutional strategic plan and mission, and plans for expanding institutional research capacity as well as increasing the production of doctoral students, especially those underrepresented in STEM.

SBIR/STTR Phase IIa Diversity Collaboration Supplements provide an opportunity for existing SBIR/STTR Phase II projects to initiate collaborations with minority-serving institutions that have active CREST Center or HBCU-RISE awards. These supplemental proposals are administered by and co-funded with the NSF Directorate for Engineering Division of Industrial Innovation and Partnerships (ENG/IIP).

Awards: Standard Grants; Total available funding: $17,800,000
Letter of Intent: Required; Deadline: March04, 2016
Full Proposal Deadlines: June 10, 2016
Contacts:

- Victor A. Santiago, Program Director, telephone: (703) 292-4673, email: vsantiag@nsf.gov
- Andrea Johnson, Program Director, telephone: (703) 292-5164, email: andjohns@nsf.gov
- Claudia Rankins, Program Director, telephone: (703) 292-8109, email: crankins@nsf.gov
- Glenn H. Larsen, Program Director, ENG/IIP, SBIR/STTR, telephone: (703) 292-4607, fax: (703) 292-9057, email: glarsen@nsf.gov
- Nicole E. Gass, Program Specialist, telephone: (703) 292-8378, fax: (703) 292-9018, email: ngass@nsf.gov

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Grant Program: Innovations at the Nexus of Food, Energy and Water Systems (INFEWS)
Agency: National Science Foundation NSF 16-524
RFP Website: http://www.nsf.gov/pubs/2016/nsf16524/nsf16524.htm
Brief Description: Humanity is reliant upon the physical resources and natural systems of the Earth for the provision of food, energy, and water. It is becoming imperative that we determine how society can best integrate across the natural and built environments to provide for a growing demand for food, water and energy while maintaining appropriate ecosystem services. Factors contributing to stresses in the food, energy, and water (FEW) systems include increasing regional and social pressures and governance issues as result of land use change, climate variability, and heterogeneous resource distribution. These interconnections and interdependencies associated with the food, energy and water nexus create research grand challenges in understanding how the complex, coupled processes of society and the environment function now, and in the future. There is a critical need for research that enables new means of adapting to future challenges. The FEW systems must be defined broadly, incorporating physical processes (such as built infrastructure and new technologies for more efficient resource utilization), natural processes (such as biogeochemical and hydrologic cycles), biological processes (such as agroecosystem structure and productivity), social/behavioral processes (such as decision making and governance), and cyber elements. Investigations of these complex systems may produce discoveries that cannot emerge from research on food or energy or water systems alone. It is the synergy among these components in the context of sustainability that will open innovative science and engineering pathways to produce new knowledge and novel technologies to solve the challenges of scarcity and variability.

The overarching goal of INFEWS is to catalyze the well-integrated interdisciplinary research efforts to transform scientific understanding of the FEW nexus in order to improve system function and management, address system stress, increase resilience, and ensure sustainability. The NSF INFEWS initiative is designed specifically to attain the following goals:

- Significantly advance our understanding of the food-energy-water system through quantitative and computational modeling, including support for relevant cyberinfrastructure;
- Develop real-time, cyber-enabled interfaces that improve understanding of the behavior of FEW systems and increase decision support capability;
- Enable research that will lead to innovative system and technological solutions to critical FEW problems; and

- Grow the scientific workforce capable of studying and managing the FEW system, through education and other professional development opportunities.

This activity enables interagency cooperation on one of the most pressing problems of the millennium - understanding interactions across the food, energy and water nexus - how it is likely to affect our world, and how we can proactively plan for its consequences. It allows the partner agencies - National Science Foundation (NSF) and the United States Department of Agriculture National Institute of Food and Agriculture (USDA/NIFA) and others - to combine resources to identify and fund the most meritorious and highest-impact projects that support their respective missions, while eliminating duplication of effort and fostering collaboration between agencies and the investigators they support.

NSF and USDA/NIFA are interested in promoting international cooperation that links scientists and engineers from a range of disciplines and organizations to solve the significant global challenges at the nexus of food, energy and water systems. Proposals including international collaboration are encouraged when those efforts enhance the merit of the proposed work by incorporating unique resources, expertise, facilities or sites of international partners. The U.S. team's international counterparts generally should have support or obtain funding through other non-NSF sources.

Below are the members of the INFEWS Working Group responsible for internal oversight of this solicitation. All questions regarding proposal submissions should be directed toINFEWSquestions@nsf.gov or the program officers on the track teams responsible for the different tracks. See program description for descriptions of the different tracks. A complete list of the program officers on these track teams can be found on the program website https://www.nsf.gov/geo/ere/ereweb/infews-contacts.jsp..

Awards: Standard Grants; Total available funding: $50,000,000; Projects may be submitted to Tracks 1, 2 or 3 as Category 1 projects (greater than $1,000,000 to no more than $3,000,000) or Category 2 projects (less than or equal to $1,000,000). Track 4 project submissions will only be considered as Category 2 effort.

Letter of Intent: Not Required

Full Proposal Deadlines: March 22, 2016

Contacts:

- Thomas Torgersen, Co-Chair, Directorate for Geosciences, telephone: 703-292-4738, email: ttorgers@nsf.gov
- JoAnn Lighty, Co-Chair, Directorate for Engineering, telephone: 703-292-5382, email: jlighty@nsf.gov
- David Corman, Directorate for Computer & Information Science & Engineering, telephone: 703-292-8754, email: dcorman@nsf.gov
- Alan Tessier, Directorate for Biological Sciences, telephone: 703-292-7198, email: atessier@nsf.gov
- Carol Bessel, Directorate for Mathematical & Physical Sciences, telephone: 703-292-4906, email: cbessel@nsf.gov

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National Institutes of Health

Grant Program: The NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00)
Agency: National Institutes of Health RFA-CA-16-005
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-CA-16-005.html

Brief Description: The objective of the NCI Predoctoral to Postdoctoral Fellow Transition Award (F99/K00) is to encourage outstanding, late-stage graduate students with a demonstrated potential and interest in pursuing careers as independent researchers by facilitating the successful transition to their postdoctoral positions.

The F99/K00 award is intended for individuals who require 1-2 years to complete their Ph.D. dissertation research training (F99 phase) before transitioning to mentored postdoctoral research training (K00 phase). Consequently, applicants are expected to propose an individualized research training plan for the next 1-2 years of dissertation research training and a plan for 3-4 years of mentored postdoctoral research and career development activities that will prepare them for independent cancer-focused research careers.

The F99/K00 award is meant to provide up to 6 years of support in two phases. The initial (F99) phase will provide support for 1-2 years of dissertation research (final experiments, dissertation preparation, and selection of a postdoctoral mentor). The transition (K00) phase will provide up to 4 years of mentored postdoctoral research career development support, contingent upon successful completion of the dissertation degree requirements and securing a postdoctoral position for further research training and career development leading to research independence. The two award phases are intended to be continuous in time. A K00 award will be made only to a PD/PI who has successfully completed the F99-supported training, secured a postdoctoral appointment, and provided NCI with a strong research and career development plan.

Awards: NCI intends to commit $1.4M in FY 2016 to fund up to 30 awards. For the F99 phase, award budgets are composed of stipends, tuition and fees, and institutional allowance, as described below. For the K00 phase, award budgets are composed of salaries and fringe benefits, tuition and fees, research and career development support, and indirect costs.

Letter of Intents: January 19, 2016

Deadline: February 19, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

No late applications will be accepted for this Funding Opportunity Announcement.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: BRAIN Initiative: Next-Generation Invasive Devices for Recording and Modulation in the Human Central Nervous System (U44)

Agency: National Institutes of Health RFA-NS-16-011

U44 Small Business Innovation Research (SBIR) Cooperative

RFA-NS-16-009, UH2/UH3 Cooperative Agreement

RFA-NS-16-010, UH3 Cooperative Agreement

RFA-NS-16-018 U44 Cooperative Agreement (Direct to Phase II)

RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-NS-16-011.html

Brief Description: This Funding Opportunity Announcement (FOA) is related to Section III of the BRAIN 2025 Report, and addresses the goal of developing "innovative technologies to understand the human brain and treat its disorders". Initial first-in-human studies are a key point in the development of innovative new clinical technologies. The leap from animal studies to humans is large, and initial clinical studies are often necessary to address critical scientific questions about the function of a device in human patients and/or inform a final device design suitable for eventual FDA market approval. Initial demonstrations of novel device function in humans have become increasingly required to encourage the industry and venture capital investment necessary to develop a final safe, reliable, and efficacious device that can be

manufactured at scale suitable for regulatory approval, yet at a price point sufficient for sustainable commercial market given insurance reimbursement.

As recommended in the BRAIN 2025 Report, this FOA will support non-clinical testing necessary to enable initial clinical studies of "implantable devices with recording and/or stimulation capabilities that both advance clinical diagnostic or therapeutic applications and maximize their scientific research value", and a subsequent small clinical study for such devices. Clinical studies supported may consist of acute or short-term procedures that are deemed Non-Significant Risk (NSR) by an Institutional Review Board (IRB), or Significant Risk (SR) studies that require an Investigational Device Exemption (IDE) from the FDA, such as chronic implants.

Objectives of this FOA

The purpose of this FOA is to encourage small business concerns (SBCs) to pursue translational and clinical studies for recording and/or stimulating devices to treat nervous system disorders and better understand the human brain. This FOA utilizes a cooperative agreement mechanism to support non-clinical testing to enable IRB approval and/or a successful IDE submission necessary to conduct a small clinical study, and the subsequent small clinical study (e.g., Early Feasibility Study, see http://www.fda.gov/downloads/MedicalDevices/DeviceRegulati%20onandGuidance/GuidanceDocuments/UCM279103.pdf2 for details/definition). ***This funding opportunity supports non-clinical testing and clinical studies to answer key questions about the function or final design of a device. This final device design may require most, if not all, of the non-clinical testing on the path to more advanced clinical trials and market approval. The clinical study is expected to provide information that cannot be practically obtained through additional non-clinical assessments (e.g., bench top or animal studies) due to the novelty of the device or its intended use, yet is critical to enable next-generation diagnostic or therapeutic devices.*** Activities that can be supported in this program include testing of clinical prototype devices, design verification and validation activities, demonstration of non-clinical safety and efficacy, pursuit of U.S. regulatory approval for clinical study, and a single small clinical study. As applicants must have comprehensive supporting data, including proof-of-concept demonstration with a near final prototype in a relevant animal model prior to entry, innovation will in part be judged on presenting a credible path towards an IDE or an NSR clinical study.

All projects will have two phases, Phase I and Phase II, using the Fast-track mechanism. The initial Phase I will support non-clinical testing toward filing of an IDE for an SR study or obtaining IRB approval for an NSR clinical study. All projects will start at Phase I, and the length of Phase I will depend on the maturity of the project at entry. Only those Phase I projects that have met specific criteria (see below) will transition to the subsequent Phase II after NIH administrative review. The Phase II will support a small clinical study.

This FOA is milestone-driven and involves NIH program staff's participation in developing the project plan, monitoring the research progress, and making go/no-go decisions. NIH staff will also provide assistance to academic investigators in familiarizing them with the clinical device development process and the criteria needed to advance therapeutic leads and diagnostics to the clinic. The expectations of the program are in line with those of industry in regards to advancing devices through the translational developmental pipeline. As such, an inherent high rate of attrition is expected within this program.

Scope of This FOA

For this funding opportunity announcement phase I clinical testing, studies or trials refer to the common phases of a clinical trial. U44 Phase I and II refer to the project phases of the SBIR program.

Awards: NIH intends to commit up to $6,500,000 in FY2016 to fund approximately five awards. Application budgets are not limited but must reflect the actual needs of the proposed project. Applications should rarely exceed $1,000,000 in total cost per year during the Phase I and $1,500,000 in total costs per year during the Phase II.
Letter of Intent: Not Required.
Deadline: April 26, 2016, by 5:00 PM local time of applicant organization.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: Fogarty Global Injury and Trauma Research Training Program (D43)
Agency: National Institutes of Health RFA-TW-16-001
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-TW-16-001.html
Brief Description: Injury and trauma are among the leading causes of death and disability in the world. Injuries are among the top five leading causes of death globally among people ages 5 to 49 years. WHO estimated that more than 5 million deaths occur per year globally due to injuries, more than the combined deaths due to HIV/AIDS, tuberculosis, malaria and Ebola in 2014. Road traffic injuries are the leading cause of death globally among 15 to 29 year olds http://www.who.int/violence_injury_prevention/media/news/2015/Injury_violence_facts_2014/en/. The greatest proportion of the burden of injury falls in LMICs, where sufficiently trained health workers, infrastructure and financial support are limited.

Injury and trauma are also major contributors to disability globally. For every death due to injuries, several thousand injured persons survive and often suffer life-long health consequences. The Global Burden of Diseases study in 2010 estimated that injuries cost the global population about 275 million years of healthy life every year, causing 11% of disability-adjusted life years worldwide. The burden of disease attributed to injuries is expected to rise in the years ahead. By the year 2020, injuries are predicted to be the third leading cause of death and disability worldwide www.who.int/violence_injury_prevention/en.

Increasing burdens from injury and trauma demand effective and timely responses from the global community. In September 2015, the United Nations General Assembly adopted the Sustainable Development Goals which include "By 2020, halve the number of global deaths and injuries from road traffic accidents." Evidence-based interventions to prevent and reduce injury and trauma-related mortality and morbidity are especially needed in LMICs. One goal of this FOA is to strengthen injury and trauma research capacity in LMICs so that scientists are better prepared to develop and/or enhance evidence -based injury and trauma interventions.

The overall objective of this Funding Opportunity Announcement (FOA) is to strengthen injury research capacity at academic institutions in LMICs through research training programs. The specific objectives of this FOA are:

- Provide in depth training in research design, methods, and analytic techniques appropriate for the proposed research area(s);
- Support trainees to conduct mentored research using state-of-the-art methods;
- Provide training in scientific presentation and publication;
- Support trainees to obtain advanced degrees (master's and Ph.D.) in injury and trauma research; and

Support research faculty/mentors to strengthen injury and trauma research capacity at LMIC institutions, and to contribute to national and global injury research initiatives and networks.
Awards: Applicants may request up to $250,000 per year (direct costs). FIC intends to commit $2.16 million in FY 2016 to fund 8 awards.
Letter of Intent: 30 days prior to the application due date.

Deadline: February 24, 2016, by 5:00 PM local time of applicant organization. All types of applications allowed for this funding opportunity announcement are due on this date.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date. No late applications will be accepted for this Funding Opportunity Announcement.

Grant Program: BRAIN Initiative: New Concepts and Early - Stage Research for Large - Scale Recording and Modulation in the Nervous System (R21)
Agency: National Institutes of Health RFA-EY-16-001
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-EY-16-001.html
Brief Description: This FOA is related to sections II.2, II.3, and II.4 from the BRAIN 2025 Report. These three recommendations call for accelerated development of new large-scale recording technologies and tools for neural circuit manipulation. These new technologies and approaches will provide unprecedented opportunities for exploring how the nervous system encodes, processes, utilizes, stores, and retrieves vast quantities of information. A better understanding of this dynamic neural activity will enable researchers to seek new ways to diagnose, treat, and prevent brain disorders.

Achieving these goals requires the ability to record simultaneously from thousands or tens-of- thousands of neurons contributing to the dynamic activity in a neural circuit. The relevant activity may be in clusters of cells packed closely together or may be in widely distributed circuits. Current microelectrode and imaging technologies are limited in the number of cells from which activity can be isolated and sampled simultaneously, by the size or location of the area to be sampled, by the depth of penetration, and by the invasiveness of the technique that might prohibit their use in human experimentation. Non-invasive technologies suitable for use in humans are currently limited in spatial resolution and temporal dynamics, as well as in their reflection of on-going electrical activity in circuit elements. This FOA seeks entirely new ideas, concepts and/or approaches from physics and engineering, and biology, for how these limitations might be overcome to enable increased recording capabilities on the scale of one or more orders of magnitude beyond that of current technology.

Dissecting the function of neural circuits also requires the ability to manipulate neural activity in order to investigate underlying mechanisms and demonstrate causality. Current technologies such as microstimulation and optogenetic approaches are limited in specificity, temporal dynamics, and by the invasiveness of the technique. This FOA also seeks novel ideas for technology capable of manipulating activity in circuits that overcome the limitations of current invasive and non-invasive approaches.

Applications are expected to propose the development of ideas in the earliest stages for entirely new approaches for large-scale neural recording and/or manipulation of neural activity. Such ideas could encompass unique and innovative combinations of existing technology that create a synergistic result. An important goal is to stimulate new thinking and concepts for accelerating development of novel technologies that break current barriers to neural recording and/or manipulation. In addition to experimental approaches, this FOA may support early-stage testing using calculations, simulations, computational models, or other mathematical techniques for demonstrating that the signal sources and/or measurement technologies are theoretically capable of meeting the demands of large-scale recording or manipulation of circuit activity in humans or animal models. The support might also be used for building and testing phantoms, prototypes, in-vitro or other bench-top models in order to validate underlying theoretical assumptions in preparation for future FOAs aimed at proof-of concept testing in animal models.

Applications are expected to propose research that will explore ideas in their earliest stages of development in order to be responsive to goals and objectives of this FOA. Some examples of non-responsive applications might be: i) further development of existing technology; ii) hypothesis-testing; iii) validation and/or refinement of current technology; or iv) development of analytical methods to be applied to existing technology and/or data. Applications proposing work that does not meet the goals of this FOA will be deemed non-responsive and will not be reviewed.

The technologies that would ultimately evolve from these new approaches should be compatible with experiments in humans and/or behaving animals, and should dramatically increase the capacity for recording and manipulating neural activity in order to enable experiments that are currently not possible.

Applications from individuals not usually associated with neuroscience research or teams that cross boundaries forming interdisciplinary collaborations capable of bringing new and untested ideas are particularly encouraged. Accordingly, applicants might consider, where appropriate, multi-PD/PI applications that integrate appropriate expertise, including but not limited to biological, chemical and physical sciences, engineering, computational modeling and statistics.

Award: The combined budget for direct costs for the two-year project period may not exceed $300,000. No more than $200,000 may be requested in any single year.

Letter of Intent: 30 days before each receipt date.

Deadline: March 15, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

DoD/US Army/Office OF Naval Research/Air Force Office of Scientific Research

Grant Program: Strategic Technologies

Agency: Department of Defense; DARPA - Strategic Technology Office DARPA-BAA-16-18

RFP Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=ca75353021370d80db072912da8dda66&tab=core&_cview=0

Brief Description: DARPA is seeking innovative ideas and disruptive technologies that offer the potential for significant capability improvement across the Strategic Technology Office focus areas. This includes technology development related to Battle Management, Command and Control (BMC2), Communications and Networks, Electronic Warfare, Intelligence, Surveillance, and Reconnaissance (ISR), Position, Navigation, and Timing (PNT), Maritime, and Foundational Strategic Technologies and Systems. Proposed research should investigate approaches that enable revolutionary advances in science, devices, or systems. DARPA anticipates funding a limited number of proposals under this BAA.

1.1.1 Battle Management, Command and Control (BMC2)

Warfare is increasingly conducted by networks of platforms, weapons, sensors, and EW systems. The BMC2 of such networks poses complex algorithmic and software challenges, particularly with intermittent connectivity, limited data rates, and robustness against network disruption from electronic and physical attack. Of particular interest are BMC2 technologies and systems for mixtures of manned and unmanned systems. Efforts in this area should develop and

incorporate realistic assumptions concerning allocation of functions between human operators and automated systems.

1.1.2 Communications and Networks

The success of military operations depends on assured, secure, communications at every military echelon, from the continental U.S. to the forward-deployed warfighter. DARPA seeks system

concepts and enabling technologies that will provide assured high-capacity mobile communication capabilities in space, air, ground, sea surface, and underwater environments. This will include systems with and without access to infrastructure. The goal is delivering relevant and timely information to the warfighter anytime and anywhere while denying the same capabilities to our adversaries. Approaches to this goal include developing new system concepts and technologies that: improve network availability; increase network capacity and scaling; enable tolerance to network degradation; mitigate extremely high levels of man-made and natural electromagnetic interference; defeat network and RF exploitation techniques; and counter denial of service techniques.

1.1.3 Electronic Warfare

The proliferation of highly capable RF technology has created a new emphasis on positive control of the electromagnetic (EM) spectrum. Many adversaries are increasing their reliance on RF sensing and communications in order to provide significant improvements to their offensive and defensive systems. This includes short-range tactical communications, long-range C2 communications networks, networked defensive systems, and RF seekers. DARPA is looking for system approaches for active and passive EW techniques in order to counter these advanced networked and agile systems using technologies such as distributed systems, coherent systems, disposable systems providing asymmetric capabilities, and close-in remote sensing coupled with advanced jamming and spoofing.

1.1.4 Intelligence, Surveillance, and Reconnaissance (ISR)

The U.S. military has become accustomed to collecting large quantities of ISR data in permissive environments, such as recent operations in Iraq and Afghanistan, and in processing and exploiting this information with ground-based exploitation and C2 centers. However, in contested environments, new approaches are needed to provide survivable, standoff sensing that is difficult for adversaries to detect, exploit and counter. DARPA is seeking new, innovative methods for finding difficult targets in contested environments that could include combining existing or new sensor modalities, novel in-sensor Automatic Target Recognition (ATR) techniques, new algorithms, and new system concepts and processing techniques. DARPA is also interested in new approaches for the design of low-cost, adaptable sensors that leverage commercial technologies and processes to reduce development time and cost, and increase adaptability and technology refresh rate of sensor systems.

Awards: Various awards

Full Proposal Deadline: BAA Closing Date: December 21, 2016

Grant Program: DoD Joint Program Committee-2/Military Infectious Diseases Applied Research Award

DoD Joint Program Committee/Military Infectious Diseases Clinical Study Award

Agency: Department of Defense; Dept. of the Army – USAMRAA

W81XWH-17-DMRDP-MID-ARA Applied Research Award

W81XWH-17-DMRDP-MID-CSA Clinical Study Award

RFP Website: http://open-grants.insidegov.com/l/41461/DoD-Joint-Program-Committee-2-Military-Infectious-Diseases-Applied-Research-Award-W81XWH-17-DMRDP-MID-ARA

Brief Description: The FY17 JPC-2/MIDRP ARA seeks to fund applied research applications focused on the reduction of combat-related or trauma-induced wound infection morbidity and mortality. These projects are expected to inform and identify which potential health products, approaches, or technologies are best positioned for human testing. The intent of the FY17 JPC-2/MIDRP ARA is to support the following: • Hypothesis-testing and/or proof-of-concept studies in in vitro and/or in vivo models; • Refinement of concepts and ideas into potential solutions with a view toward evaluating technical feasibility of emerging approaches, technologies, and promising new products; • Evaluation, maturation, and/or down-selection of potential product candidates (drugs, biologic/vaccine constructs, or devices/systems) in vitro and/or in vivo; and • Completion of preclinical safety and/or toxicity studies sufficient to support Investigational New Drug/Investigational Device Exemption (IND/IDE) applications. Awards may support studies involving human subjects but not clinical trials. A clinical trial is defined as a prospective accrual of human subjects where an intervention (e.g., device, drug, biologic, surgical procedure, rehabilitative modality, behavioral intervention, or other) is tested on a human subject for a measurable outcome with respect to exploratory information, safety, effectiveness, and/or efficacy. This outcome represents a direct effect on the human subject of that intervention or interaction. Principal Investigators (PIs) seeking support for a clinical trial should apply to the FY17 JPC-2/MIDRP Clinical Studies Award (Funding Opportunity Number: W81XWH-17-DMRDP-MID-CSA). Awards may not be used to support early-stage, fundamental basic research. Basic research is defined as research directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward process or products in mind. Applications must include preliminary and/or published data that is relevant to the award and the proposed research project. Investigators must demonstrate logical reasoning and a sound scientific rationale established through a critical review and analysis of the literature for the application to be competitive. Research projects should include a well-formulated, testable hypothesis based on strong scientific rationale. Partnering PI Option: The FY17 JPC-2/MIDRP ARA mechanism supports applications that include meaningful and productive collaborations. The Partnering PI Option under this mechanism is structured to accommodate up to three PIs who will each receive a separate award. One partner is identified as the Initiating PI and the other partner(s) as the Partnering PI(s). All investigators should collaborate in the development and submission of the proposed research project. It should be clear that each investigator has a significant level of intellectual input and brings complementary strengths to the project. Multidisciplinary and multi-organizational projects are allowed. If multi-organizational, all participating organizations must be willing to resolve potential intellectual and material property issues and remove any barriers that might interfere with successful completion of the research.
Awards: Number of Awards: 10. Anticipated total funding available: $13,900,000
Full Proposal Deadline: May 09, 2016

Grant Program: AFRL RD/RV University Cooperative Agreement
Agency: Department of Defense; Air Force -- Research Lab
RFP Website: http://www.grants-gov.net/grants_gov_display.php?program=BAA-RVKV-2015-0003
Brief Description: This is a 5 year, open BAA. The AFRL Directed Energy Directorate (RD) and Space Vehicles Directorate (RV) are interested in receiving proposals under this announcement in order to establish university Cooperative Agreements (CA) to provide funds to students/professors in a timely manner for the purpose of engaging U.S./U.S. territories' colleges and universities in directed energy and space vehicles-related basic, applied, and advanced

research projects that are of interest to the Department of Defense (DoD). The scope of the research will include the entire spectrum of RD and RV technology that is applicable to the Air Force, including all peripherally-related RD and RV research.
Awards: Available Funding: $24,500,000
Full Proposal Deadline: Open until November 23, 2020

The Simons Foundation

Grant Program: Targeted Grants in Mathematics and Physical Sciences
Agency: The Simons Foundation
RFP Website: https://www.simonsfoundation.org/funding/funding-opportunities/mathematics-physical-sciences/targeted-grants-in-mps/
Brief Description: The Simons Foundation's Mathematics and Physical Sciences (MPS) division invites applications for its new Targeted Grants in MPS program.
Rationale: The program is intended to support high-risk projects of exceptional promise and scientific importance on a case-by-case basis.
How to Apply: Applicants may submit a Letter of Intent (LOI) through proposalCENTRAL (https://proposalcentral.altum.com/default.asp) beginning August 1, 2015. The deadline is rolling and an applicant can submit at any time.
Please coordinate submission of the proposal with the appropriate officials in accordance with institution policies. **Please refer to the Application Instructions for further information on and requirements for submitting an application.**
For projects with Principal Investigator (PIs) at different institutions, the LOI should be signed submitted by the PI designated as the main PI and his/her institution.
LOI Requirements Include:

- Research plan (two-page limit, plus up to one page for references and figures): Signed by the main PI on letterhead, which includes a brief summary of the support requested, including the names of the other PI(s) involved, if applicable, the scientific goals, background relevant to the application, and a brief budget justification.
- A tentative yearly budget (two-page limit) indicating total amount and major expense categories with proposed start and end dates.

Applicants will be notified within two months of the LOI submission..
Awards: A typical Targeted Grant in MPS provides funding for up to five years. The funding provided is flexible and based on the type of support requested in the proposal. There is no recommended funding limit. Expenses for experiments, equipment, or computations, as well as for personnel and travel, are allowable.
Indirect costs are limited to 20 percent of direct costs, with the following exceptions: equipment, tuition, and any subcontracts with budgets, including indirect expenses. Indirect costs paid to a subcontractor may not exceed 20 percent of the direct costs paid to the subcontractor.
Letter of Intent: Required; Deadline: August 1, 2015
For More Information: Please contact Eric Blitz at blitz@njit.edu

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Elsa U. Pardee Foundation

Grant Program: Elsa U. Pardee Foundation Grants
Agency: Elsa U. Pardee Foundation
RFP Website: http://www.pardeefoundation.org/grants.aspx

Brief Description: The Elsa U. Pardee Foundation funds research to investigators in United States non-profit institutions proposing research directed toward identifying new treatments or cures for cancer. The Foundation particularly encourages grant applications for a one year period which will allow establishment of capabilities of new cancer researchers, or new cancer approaches by established cancer researchers. It is anticipated that this early stage funding by the Foundation may lead to subsequent and expanded support using government agency funding. Project relevance to cancer detection, treatment, or cure should be clearly identified. Applications requesting more than 15% overhead are usually not considered. Papers verifying nonprofit status and relevant human subject and experimental animal treatment approvals from the recipient institution will be requested prior to project initiation. A final report summarizing financial expenditure and research achievement is required.

Awards: Recent awards: $80,000 to $187,000

Full Proposal Deadline: Three grant cycles

Deadline	Review
February 1	May
June 1	September
October 1	December