NJIT Research Newsletter

Issue: ORD-GOA-2015-32

Recent Awards **Events and Announcements** **Grant Opportunities**

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: Kurt Rohloff (PI)
Department: Computer Science
Grant/Contract Project Title: Cybersecurity Protocols
Funding Agency: Federal Agencies
Duration: 09/11/15-09/08/16

PI: Reza Curtmola (PI)
Department: Computer Science
Grant/Contract Project Title: TOTO: Securing Software Supply Chain Logistics
Funding Agency: DARPA
Duration: 09/11/15-11/01/17

PI: Louis Lanzerotti (PI)
Department: CSTR, Physics
Grant/Contract Project Title: Radiation Belt Storm Probes Science Investigations (RBSPICE)
Funding Agency: NASA
Duration: 01/01/09-02/29/16

PI: William O'Byrne (PI)
Department: NJHITEC
Grant/Contract Project Title: Transfer of M3 Eligible Providers
Funding Agency: UD Department HHS
Duration: 06/01/15-01/31/16

PI: Chase Wu (PI)
Department: Computer Science
Grant/Contract Project Title: CSR: Small: Collaborative Research: An Integrated Approach to Performance Modeling and Optimization of Big-Data Scientific Workflows
Funding Agency: NSF
Duration: 08/28/15-09/30/17

PI: Joyoung Lee (PI)
Department: Civil and Environmental Engineering
Grant/Contract Project Title: Simulation for Research on Automated Longitudinal Vehicle Control
Funding Agency: US DOT
Duration: 07/22/13-11/22/15

PI: Andrew Gerrard (PI)
Department: CSTR, Physics
Grant/Contract Project Title: Scientific Studies from a Network of Sustainable, Robotic Observatories Across the Antarctic Ice-shelf: A New Approach to Polar Research
Funding Agency: NSF
Duration: 09/15/15-08/31/16

PI: Rajesh Dave (PI), Ecevit Bilgili (Co-PI), Zafar Iqbal
Department: CBPE
Grant/Contract Project Title: Development of regulatory science for continuous manufacturing of strip-film based drug dosage forms capable of real-time release
Funding Agency: NIH
Duration: 09/15/15-08/31/18

PI: Rajesh Dave (PI)
Department: CBPE
Grant/Contract Project Title: The Impact of Dry Coating on the Powder Properties of Needle Shaped APIs
Funding Agency: BMS (Bristo Myers Squib)
Duration: 08/20/15-08/20/16

PI: Boris Khusid (PI)
Department: CBPE
Grant/Contract Project Title: Kinetics of Electric Field-Driven Phase Transitions in Polarized Colloids
Funding Agency: NASA
Duration: 09/11/15-08/12/18

PI: Judith Sheft (PI)
Department: CBPE
Grant/Contract Project Title: GTKE: The EU and the US: Partners Working Together for Transatlantic Opportunities
Funding Agency: European Union
Duration: 09/01/15-08/13/17

Events and Announcements

Faculty Research Related Events hosted by Office of Research and Development

The following research related events are organized for faculty and staff to provide information and promote collaborative research. All research faculty and staff members are invited. More details and information will be published in the future newsletters and also posted on the research website.

Fall 2015 Event Schedule:

Office of Research Open House: September 28, 2015, 12:00 Noon-3:00 PM (Light Lunch), Ballroom A

First NJIT Research Center Showcase: November 16, 2015, 12:00 Noon–4:00 PM (Light Lunch and networking), Ballroom A &B

Faculty Research Advisory Board Meeting: October 22, 2015, 3:00 PM-5:00 PM, Ballroom B

Faculty Research Advisory Board Meeting: November 24, 2015, 12.00 PM-2:00 PM, Ballroom B

Undergraduate Research and Innovation Workshop (Students Seed Grants): October 13, 2015, 1:00 PM-5:30 PM, Ballroom A

Undergraduate Research and Innovation Workshop (Students Seed Grants Winners Demos): December 8, 2015, 1:00 PM-5:30 PM, Ballroom A

Event: **COMSOL Multiphysics & Application Builder Workshop**
When: October 16, 2015; 9.00 AM – 12.00 PM
Where: Electrical and Computer Engineering Center Room 202, NJIT
Registration Website: http://comsol.com/c/2rtx
Brief Description: Join us for this unique opportunity to advance your skills in multiphysics simulation. This half-day workshop begins with a walk-through of the fundamental modeling steps in COMSOL Multiphysics®. Attendees will then have the chance to set up and solve a simulation through a hands-on exercise, guided by a COMSOL expert. You will leave with new skills to work on your own applications using your free, two-week COMSOL trial.

During the workshop you will:
- Learn the fundamental modeling steps in COMSOL Multiphysics
- Convert existing COMSOL models into Apps using the COMSOL Application Builder
- Set up and solve a simulation through a hands-on exercise
- Free, 2 week COMSOL trial

Contact for More Information: Prof. Sagnik Basuray at sagnik.basuray@njit.edu.

Event: **Applied Mathematics Colloquium: Novel Dispersion from Metamaterials**
When: September 25, 2015; 11.30 AM – 12.30 PM
Where: Cullimore Lecture Hall II, NJIT
Speaker: Robert Lipton, Department of Mathematics, Louisiana State University
Abstract: A compelling aspect of metamaterials research is the quest for new sub-wavelength microstructures that deliver both negative bulk dielectric constant and bulk magnetic permeability across prescribed frequency intervals. In this talk we discuss the use of high contrast materials in combination with plasmonic materials for generating double negative effective properties and propagation of backward waves. We introduce a power series method for efficient representation of solutions of Maxwells Equations inside metamaterial crystals. The power series is used as a tool to identify new sub-wavelength microstructures for double negative behavior at optical frequencies. The leading order terms in the power series for the dispersion relation explicitly show that double negative properties depend on special geometrically induced plasmon and Mie resonances intrinsic to the crystal structure. We show how to control double negative behavior by tuning the plasmon and Mie resonance frequencies. This provides a basis for the rational shape design of metamaterial crystals for control of double negative behavior across prescribed frequency ranges.

Event: **NSF Webinar: Cyberlearning: Revealing knowledge bases of educational research**
When: September 25, 2015 12:30 PM – 1.30 PM
Registration Website: Register by 11:59pm EST on Thursday, September 24, 2015 at https://nsf.webex.com/nsf/j.php?RGID=ra49f536db7d272aee3b2bad73136b4e2
Brief Description: Educational research covers a diverse area of topics ranging from psychological principles of learning and the role of language in cognition to the history of educational institutions and education's economic impact. Such diversity presents integration challenges and questions how research can be connected so that collective knowledge may advance. We used a scientometric analysis to examine the knowledge bases of educational research and present a global map that consists of 18 research clusters or subfields that are connected by distinct sets of references. The nature of these sets of references varied, breaking down differently into theory-based, method-based, domain-based, empirical and consensus document references. Five of the clusters are centrally focused on research in education in that they appear to concentrate on teaching and learning directly.

Five other clusters are more peripherally focused on research in education because they also work on other topics. A comparison of the clusters with AERA Divisions and SIGs show some close one-to-one matches and we argue that this gives evidence for clusters grouping articles in way relevant to communities of practice. Lastly, we examined the place of educational research within research in social sciences and found that educational research is distributed across diverse fields, actively incorporating and connecting multiple disciplines. Our interactive on-line maps of research in education can be used by students, researchers and practitioners to explore the collectively built knowledge bases of research in education.
More Information: http://www.nsf.gov/events/event_summ.jsp?cntn_id=136350&org=NSF .

Event: **NSF Webinar: Engineering Education Program**
When: September 29, 2015 1:00 PM – 2.30 PM
Registration Website: Register at WebEx https://nsf.webex.com/mw0401lsp13/mywebex/default.do?nomenu=true&siteurl=

nsf&service=6&rnd=0.897184038093997&main_url=https%3A%2F%2Fnsf.webex.com%2Fec0701lsp13%2Feventcenter%2Fevent%2FeventAction.do%3FtheAction%3Ddetail%26confViewID%3D4070518523%26%26%26%26siteurl%3Dnsf

Brief Description: This webinar will provide guidance to prospective PIs interested in submitting proposals to the Research in the Formation of Engineers (RFE) and Research Initiation in Engineering Formation (RIEF) programs. Topics to be discussed include the overall goals of the programs, specific requirements for each program, elements of a strong proposal, and common mistakes made in proposals. There will also be a question and answer session.
Questions should be submitted via email during the webinar to the contacts listed below.
Webinar participants must register via WebEx in advance in order to receive instructions for joining the webinar.

The video capacity for the webinar is limited to the first 200 participants who register. Additional participants will have audio access.

The full audio and video transcript of the webinar will be available online. Please check the following link for information about the online transcript when it becomes available: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13540
More Information: http://www.nsf.gov/events/event_summ.jsp?cntn_id=136262&org=NSF

Grant Opportunity Alerts

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

NJIT Faculty Seed Grants
Internal Competition: NSF MRI Grants (Reminder)
NSF: MRI; Division of Environmental Biology (core programs) (DEB), Designing Materials to Revolutionize and Engineer our Future (DMREF), IUSE / Professional Formation of Engineers: REvolutionizing engineering and computer science Departments (RED)
NIH: BRAIN Initiative: Next-Generation Invasive Devices for Recording and Modulation in the Human Central Nervous System (UG3/UH3), Research on the Mechanisms and/or Behavioral Outcomes of Multisensory Processing (R01)
DoD/ONR/AFOSR/ARL: Fiscal Year 2016 Office of Naval Research Young Investigator Program
Department of Energy: Bioenergy Technologies Incubator 2 Funding Opportunity
NASA: NASA Space Technology Research Fellowships (NSTRF)
Bill and Melinda Gate Foundation: Global Grand Challenges Explorations

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Grant Opportunities

National Science Foundation

NSF Limited Submission and Internal Competition Through College/School Deans:

Grant Program: NSF Major Research Instrumentation Program: (MRI)
Agency: National Science Foundation NSF 15-504
RFP Website: http://www.nsf.gov/pubs/2015/nsf15504/nsf15504.htm

Brief Description: The Major Research Instrumentation Program (MRI) serves to increase access to shared scientific and engineering instruments for research and research training in our Nation's institutions of higher education, not-for-profit museums, science centers and scientific/engineering research organizations. The program provides organizations with opportunities to acquire major instrumentation that supports the research and research training goals of the organization and that may be used by other researchers regionally or nationally.
Limited Number of Submission: Three (3) as described below.
If three proposals are submitted, at least one of the proposals must be for instrument development (i.e., no more than two proposals may be for instrument acquisition).
Awards Range: $100,000-$4 million
Letter of Intent: Not Required
Submission Deadline: January 13, 2016
Internal Competition: Please submit up to 5 pages pre-proposal white paper to your respective Dean by November 2, 2015.
For more information and submission format for internal competition, please the Research Newsletter Issue: ORD-GOA-2015-28 posted on the website http://www.njit.edu/research/pdf/Research-Newsletter-Grant-Opportunity-Alerts-Issue-ORD-GOA-2015-28.pdf

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Grant Program: Division of Environmental Biology (core programs) (DEB)
Agency: National Science Foundation NSF 15-609
RFP Website: http://www.nsf.gov/pubs/2015/nsf15609/nsf15609.htm
Brief Description: The Division of Environmental Biology (DEB) supports fundamental research on populations, species, communities, and ecosystems. Scientific emphases range across many evolutionary and ecological patterns and processes at all spatial and temporal scales. Areas of research include biodiversity, phylogenetic systematics, molecular evolution, life history evolution, natural selection, ecology, biogeography, ecosystem structure, function and services, conservation biology, global change, and biogeochemical cycles. Research on organismal origins, functions, relationships, interactions, and evolutionary history may incorporate field, laboratory, or collection-based approaches; observational or manipulative experiments; synthesis activities; as well as theoretical approaches involving analytical, statistical, or computational modeling.

Proposals are welcome in all areas of science supported by the Division of Environmental Biology. Unsolicited proposals to any of the below programs and special categories are subject to submission limits.

*Ecosystem Science Cluster:*http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503663&org=DEB&from=home

- Ecosystem Studies Program

Evolutionary Processes Cluster: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503664&org=DEB&from=home

- Evolutionary Ecology Program
- Evolutionary Genetics Program

Population and Community Ecology Cluster: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503665&org=DEB&from=home

- Population and Community Ecology Program

Systematics and Biodiversity Science Cluster: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503666&org=DEB&from=home

- Biodiversity: Discovery and Analysis
- Phylogenetic Systematics

Special Categories

1) Small Grants

The Division welcomes proposals for Small Grants to the core programs via this solicitation. Projects intending total budgets of $150,000 or less should be identified as such with the designation "SG:" as a prefix to the project title in the preliminary proposal and, if invited, the full proposal. These awards are intended to support full-fledged research projects that simply require smaller budgets. Small Grant projects will be assessed based on the same merit review criteria as all other proposals. REU, RET, and RAHSS projects can be requested as part of the full proposal for a Small Grant as long as the total request remains within the $150,000 cap. Small Grants are also eligible to request post-award supplements for REU, RET and RAHSS projects in excess of the cap.

2) Research in Undergraduate Institutions (RUI)

Preliminary proposals for RUIs must be submitted to the core programs via this DEB solicitation by the listed deadlines. Invited **full RUI proposals** should comply with the instructions in this solicitation, include the required RUI documentation and **be submitted to the current RUI solicitation**. If the invited full proposal is a collaborative, only the undergraduate institution(s) should submit to the RUI solicitation, other institutions should submit to this DEB solicitation. Additional information on the scope of RUI projects and the format of those proposals can be found at (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518&org=NSF&sel_org=NSFW&from=fund). Please note: Neither preliminary nor full proposals from RUI-eligible institutions are required to use the RUI designation. An invited full proposal from an RUI-eligible institution may choose to submit through the RUI solicitation or not regardless of whether the preliminary proposal was identified as an RUI.

3) NERC and BSF International Collaborative Proposals

The core programs will accept preliminary proposals for international collaborative research following DEB Dear Colleague Letters that announced two distinct international activities: one with the Natural Environment Research Council (NERC) [http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf14098] of the United Kingdom and the other with the U.S.–Israel Binational Science Foundation (BSF) [http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf14094]. These international collaborative proposal submissions (whether reviewed by NSF or international partners) will be subject to the submission limits in this solicitation for any PI, co-PI, or PI of a subaward on the proposal. Questions regarding these activities can be directed to NSFDEB-NERC@nsf.gov or NSFDEB-BSF@nsf.gov respectively.

4) Long Term Research in Environmental Biology (LTREB)

New LTREB proposals require a preliminary proposal. All preliminary, invited full, and renewal LTREB proposals must be submitted to the core programs via the separate LTREB solicitation by the listed deadlines [http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13544]. LTREB proposals must address the additional review criteria as described in the LTREB solicitation

Awards: Various levels, Anticipated Funding Available: $72,000,000.

Letter of Intent: Not required

Preliminary Proposal Due Date: ***(required)*****(due by 5 p.m. proposer's local time)*:**

January 25, 2016

Full Proposal Deadlines: August 02, 2016

Contacts:

- Division of Environmental Biology, telephone: (703) 292-8480, email: debquestions@nsf.gov

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Grant Program: Designing Materials to Revolutionize and Engineer our Future (DMREF)
Agency: National Science Foundation NSF 15-608
RFP Website: http://www.nsf.gov/pubs/2015/nsf15608/nsf15608.htm
Brief Description: DMREF is the primary program by which NSF participates in the Materials Genome Initiative (MGI) for Global Competitiveness. MGI recognizes the importance of materials science to the well-being and advancement of society and aims to "deploy advanced materials at least twice as fast as possible today, at a fraction of the cost." DMREF integrates materials discovery, development, property optimization, and systems design and optimization, with each employing a toolset to be developed within a materials innovation infrastructure. The toolset will synergistically integrate advanced computational methods and visual analytics with data-enabled scientific discovery and innovative experimental techniques to revolutionize our approach to materials science and engineering.
Accordingly, DMREF will support activities that accelerate materials discovery and development by building the fundamental knowledge base needed to design and make materials with specific and desired functions or properties from first principles. This will be accomplished by understanding the interrelationships of composition, structure, properties, processing, and performance. Achieving this goal will involve modeling, analysis, and computational simulations, validated and verified through sample preparation, characterization, and device demonstration. It will require new data analytic tools and statistical algorithms; advanced simulations of material properties in conjunction with new device functionality; advances in predictive modeling that leverage machine learning, data mining, and sparse approximation; data infrastructure that is accessible, extensible, scalable, and sustainable; the development, maintenance, and deployment of reliable, interoperable, and reusable software for the next-generation design of materials; and new collaborative capabilities for managing large, complex, heterogeneous, distributed data supporting materials design, synthesis, and longitudinal study.
The multidisciplinary character of this effort dictates the involvement of programs in the NSF Directorates of Mathematical and Physical Sciences, Engineering, and Computer and Information Science and Engineering. Three or four year awards totaling $750,000 – $1,600,000 for the award period are anticipated. To cover the breadth of this endeavor, it is expected that proposed projects will be directed by a team of at least two Senior Personnel with complementary expertise.
Awards: 20-25 new awards.. Anticipated Funding Amount**:** $29,750,000
Letter of Intent: Not Required
Full Proposal Deadlines: January 04, 2016 - January 19, 2016
Contacts:

- Almadena Chtchelkanova,CISE/CCF, 1115N, telephone: (703) 292-8910, email: achtchel@nsf.gov
- Eugene C. Gartland,MPS/DMS, 1025N, telephone: (703) 292-2279, email: egartlan@nsf.gov
- Daniel Katz,CISE/ACI, 1270N, telephone: (703) 292-2254, email: dkatz@nsf.gov
- Alexis Lewis,ENG/CMMI, 545S, telephone: (703) 292-2624, email: alewis@nsf.gov
- William Olbricht,ENG/CBET, 565S, telephone: (703) 292-2563, email: wolbrich@nsf.gov
- Dimitris Pavlidis,ENG/ECCS, 525N, telephone: (703) 292-2216, email: dpavlidi@nsf.gov

- John Schlueter,MPS/DMR, 1080N, telephone: (703) 292-7766, email: jschluet@nsf.gov
- Sylvia Spengler,CISE/IIS, 1125S, telephone: (703) 292-8930, email: sspengle@nsf.gov
- Suk-Wah Tam-Chang,MPS/CHE, 1055S, telephone: (703) 292-8684, email: stamchan@nsf.gov
- Ralph Wachter,CISE/CNS, 1175N, telephone: (703) 292-8950, email: rwachter@nsf.gov

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Grant Program: IUSE / Professional Formation of Engineers: REvolutionizing engineering and computer science Departments (RED)
Agency: National Science Foundation NSF 15-607
RFP Website: http://www.nsf.gov/pubs/2015/nsf15607/nsf15607.htm
Brief Description: In FY 2016, the Directorates for Engineering (ENG), Computer and Information Science and Engineering (CISE) and Education and Human Resources (EHR) are continuing a program aligned with the Improving Undergraduate STEM Education (IUSE) framework: *REvolutionizing engineering and computer science Departments (herein referred to as RED)*. This funding opportunity enables engineering and computer science departments to lead the nation by successfully achieving significant sustainable changes necessary to overcome longstanding issues in their undergraduate programs and educate inclusive communities of engineering and computer science students prepared to solve 21st-century challenges.

In 2014, ENG launched an initiative, the *Professional Formation of Engineers* (PFE), to create and support an innovative and inclusive engineering profession for the 21st century. At the same time, in 2014, NSF launched the agency-wide Improving Undergraduate STEM Education (IUSE) framework, which is a comprehensive effort to accelerate improvements in the quality and effectiveness of undergraduate education in all STEM fields. The RED program was first offered in FY 2015 as a PFE initiative aligned with the IUSE framework. Additional programs have been created within the IUSE framework across NSF, such as the IUSE: EHR program within EHR.

Even as demographic and regional socio-economic factors affect engineering and computer science departments in unique ways, there are certain tenets of sustainable change that are common across institutions. For instance, the development and engagement of the entire faculty within a department are paramount to the process, and they must be incentivized. Departmental cultural barriers to inclusion of students *and* faculty from different backgrounds must be identified and addressed. Finally, coherent technical and professional threads must be developed and woven across the four years, especially (1) in the core technical courses of the middle two years, (2) in internship opportunities in the private and public sectors, and (3) in research opportunities with faculty. These and other threads aim to ensure that students develop deep knowledge in their discipline more effectively and meaningfully, while at the same time building their capacities for 21st-century and "T-shaped" professional skills, including design, leadership, communication, understanding historical and contemporary social contexts, lifelong learning, professional ethical responsibility, creativity, entrepreneurship, and multidisciplinary teamwork. It is expected that, over time, the awardees of this program will create knowledge concerning sustainable change in engineering and computer science education that can be scaled and adopted nationally across a wide variety of academic institutions. The research on departmental change that results from these projects should inform change more broadly across the STEM disciplines.

Note: The RED program is offered in alignment with the NSF-wide undergraduate STEM education initiative, *Improving Undergraduate STEM Education (IUSE)*. More information about IUSE can be found in the Introduction of this solicitation. Prospective PIs are encouraged to consider the IUSE: EHR program for projects that are outside the scope of RED (see

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505082). Specifically, the Institutional and Community Transformation (ICT) track promotes innovative approaches to using research to catalyze change that addresses challenges across and within institutions (institutional transformation), as well as within and across specific disciplines (community transformation). **Prospective PIs are strongly discouraged from submitting identical or substantially similar proposals to RED and IUSE: EHR.**
Limited Number of Submissions: 2 per organization: Please contact Vice Provost for Research, if you would like to submit an application to this RFP.
Awards: 6-8 new awards.. Anticipated Funding Amount**:** $11,950,000
Letter of Intent: Required by November 10, 2015
Full Proposal Deadlines: December 15, 2016
Contacts:

- Elliot Douglas, Solicitation Coordinator, Program Director, Engineering Education, telephone: (703) 292-7051, email: edouglas@nsf.gov
- Kamau Bobb, Program Director, STEM + Computing Partnerships, Division of Computer and Network Systems, Computer & Information Science & Engineering Directorate, telephone: (703) 292-4291, email: kbobb@nsf.gov
- Glenn H. Larsen, Small Business Innovation Research (SBIR), Division of Industrial Innovation and Partnerships (IIP), Engineering Directorate, telephone: (703) 292-4607, email: glarsen@nsf.gov
- William Olbricht, Program Director, Designing Materials to Revolutionize and Engineer our Future, Division of Chemical, Bioengineering, Environmental, and Transport Systems, Engineering Directorate, telephone: (703) 292-2563, email: wolbrich@nsf.gov
- Zhijian Pei, Program Director, Manufacturing, Machines and Equipment, Division of Civil, Mechanical, and Manufacturing Innovation (CMMI), Engineering Directorate, telephone: (703) 292-8611, email: zpei@nsf.gov
- Yvette Weatherton, Program Director, Division of Undergraduate Education (DUE), Education and Human Resources Directorate, telephone: (703) 292-5323, email: yweather@nsf.gov

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National Institutes of Health

Grant Program: BRAIN Initiative: Next-Generation Invasive Devices for Recording and Modulation in the Human Central Nervous System (UG3/UH3)
Companion Opportunities:
PAR-15-345, X02 Pre-application
RFA-NS-16-010, UH3 Phase Innovation Awards Cooperative Agreement
Agency: National Institutes of Health RFA-NS-16-009
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-NS-16-009.html
Brief Description: This FOA utilizes a UG3/UH3 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). For NSR clinical studies that do not require an IDE, IRB approval is considered sufficient. 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 nonclinical 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 implementation 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, UG3 and UH3. The initial UG3 phase will support nonclinical testing to support the filing of an IDE for an SR study or to obtain IRB approval for an NSR clinical study. All projects will start at the UG3 phase, and the length of UG3 phase will depend on the maturity of the project at entry. Only those UG3 projects that have met specific criteria (see below) will transition to the subsequent UH3 phase after NIH administrative review. The UH3 phase will support a small clinical study. Projects for which only a clinical phase is proposed should be submitted under RFA-NS-16-010, which utilizes the UH3 activity code.

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.

NIH BRAIN Initiative Public-Private Partnership Program

This FOA for UG3/UH3 phased awards, along with companion FOAs (PAR-15-345 for X02 pre-applications, RFA-NS-16-010 for UH3 clinical research applications), is part of an NIH BRAIN Public-Private Partnership Program (BRAIN PPP), which aims to facilitate partnerships between clinical investigators and manufacturers of latest-generation stimulating and/or recording devices that are FDA-designated as Class III (invasive, posing significant risk of harm), to conduct clinical research in the CNS. Through the BRAIN Initiative, NIH is interested in reducing barriers to negotiating such partnerships, and ensuring that new clinical studies leverage manufacturers' existing data. Data demonstrating safety and utility of these devices are very costly to obtain and pose a substantial barrier to research progress.

Types of research NIH plans to support with these partnerships include:

- IRB-approved Non Significant-Risk (NSR) clinical research studies
- New Significant Risk (SR) clinical studies requiring amendments to existing Investigational Devices Exemptions (IDEs) from the FDA
- SR clinical studies in which a new IDE would require no or minimal additional non-clinical testing
- SR clinical studies in which a new IDE would require significant additional non-clinical testing, but leverages existing company device data.

The central feature of the BRAIN PPP is a set of template research agreements for collaborations between researchers, research institutions, and device manufacturers. These template agreements were generated with substantial input from industry partners, clinical researchers, the FDA and representatives from institutional tech-transfer and contracts offices, and refined from input at a workshop held on June 3-4, 2015, (video of the workshop is

publically archived at http://braininitiative.nih.gov/meetings/June-2015-PPP.htm) and a public feedback from a Request for Information issued in the NIH Guide (http://grants.nih.gov/grants/guide/notice-files/NOT-NS-15-032.html). Through these templates the NIH aims to lower the barriers to utilizing latest-generation devices for early-stage clinical research and to broaden the knowledge base regarding the mechanisms of action and potential therapeutic possibilities of those devices.
There are three sets of agreement documents associated with the program, which are available at the following website (http://braininitiative.nih.gov/BRAIN_PPP/).

- **Memoranda of Understanding (MOUs)** agreed upon by NIH and device company partners to provide a framework under which the specified proprietary devices and associated support will be provided by these partners to BRAIN PPP awardees.
- **Template Confidential Disclosure Agreements (CDA)** to be signed by researchers to initiate detailed discussions that may require knowledge of proprietary company information relevant to the devices and proposed research.
- **Template Collaborative Research Agreements (CRA)** to be used as common starting points for negotiations of agreements between the device manufacturer, researcher, and research institution.

Awards: The NIH anticipates providing $13.5M per year, to fund an estimated 4 to 7 awards.
Letter of Intent: Not Required
Deadline: April 26, 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: Research on the Mechanisms and/or Behavioral Outcomes of Multisensory Processing (R01)
Agency: National Institutes of Health PA-15-347
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PA-15-347.html
Brief Description: The purpose of this Funding Opportunity Announcement (FOA) is to invite applications that elucidate the mechanisms and/or behavioral outcomes of multisensory processing, the integration or processing of at least two distinct types of sensory input as defined by distinct receptor-type transduction, neural pathways and cognate perceptual quality. Specifically, multiple sensory inputs may include the major traditional modalities of hearing, vision, taste, smell, balance, and touch. Additional submodalities of body senses include but are not restricted to thermosensation, body position and proprioception, pain, itch, and general visceral sensation. This FOA encourages research grant applications investigating multisensory processing in perception or other behavioral and social outcomes and/or the mechanisms underlying multisensory processing in the context of the described specific areas of research interests from the participating NIH Institutes, Centers, and Offices (ICOs). The FOA is intended to encourage basic, behavioral, and/or clinical research projects examining the interactions between other neural systems, such as cognitive, affective, or motor processes, and multiple sensory modalities. Multisensory research applications that do not align with the specific areas of research interests described below by the participating NIH ICOs should be submitted to the parent R01 FOA, PA-13-302.

This FOA supports innovative studies using animal or human subjects to examine two or more senses (visual, auditory, olfactory, gustatory, somatosensory including pain or other submodalities of body senses, and vestibular) for the elucidation of mechanisms and behavioral

outcomes of multisensory processing. Therefore, applications submitted to this FOA should focus on mechanisms, or the behavioral impact, or both. The initiative encourages the use of diverse methodologies, including basic biochemical, molecular, cellular, genetic approaches, neuroimaging and neurophysiological analyses, experimental psychophysics, "real world" settings, immersive virtual technology, and animal models.

For this FOA, applicants should address multisensory integration across at least two of the broadly different senses (smell, sight, taste, touch, hearing, balance) or the submodalities of body senses including but not restricted to thermosensation, body position and proprioception, pain, itch, and general visceral sensation. Audio-visual, visual-vestibular and chemo-tactile integration already have been noted as examples. However, the perception of form by integrating color contrast with shape-from-shading would be considered visual, and integration of linear with angular acceleration would be considered vestibular, and not appropriate here. This FOA also supports research on the interaction of pain (as part of the somatosensation) with other sensory systems.

Awards: Standard awards

Letter of Intent: Not Required

Deadline: Standard dates apply, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

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: Fiscal Year 2016 Office of Naval Research Young Investigator Program (YIP)

Agency: Department of Navy, Office of Naval Research ONR FOA Announcement Number N00014-15-R-FO13

RFP Website: http://www.onr.navy.mil/~/media/Files/Funding-Announcements/BAA/2015/N00014-15-R-FO13.ashx

Brief Description: The Office of Naval Research (ONR) is interested in receiving proposals for its Young Investigator Program (YIP). ONR's Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track- equivalent academic appointment, have begun their first appointment on or after 01 Nov 2010, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher Education (hereafter also called "universities") to the Department of the Navy's research program, to support their research, and to encourage their teaching and research careers.

Proposals addressing research areas (as described in the ONR Science and Technology (S&T) Department section of ONR's website at www.onr.navy.mil) which are of interest to ONR Program Officers will be considered. Contact information for each Division (a subgroup of an S&T Department) is also listed within the S&T section of the website. Potential applicants are HIGHLY ENCOURAGED to contact the appropriate Program Officer who is the point of contact for a specific technical area to discuss their research ideas. Brief informal pre-proposals may be submitted to facilitate these discussions. Such discussions can clarify the content and breadth of the priority research areas and enhance the match between a subsequent proposal and

Department of the Navy research needs. Please allow adequate time for such discussions with the ONR Program Officer.

An individual wishing to apply for a Young Investigator award must submit a research proposal and a supporting letter through the appropriate university officials. ONR makes awards to institutions, not to individuals. The research proposal should follow the format described in FOA Section IV entitled, “Application and Submission Information.”

Proposals may request up to $170,000 per year for three (3) years. These funds may be budgeted against any reasonable costs related to conducting the proposed research; for example, salary for the Young Investigator, graduate student support, supplies, and applicable indirect cost. Additional funds (beyond the basic $170,000 yearly amount) for capital equipment which enhances the Young Investigator's proposed research may be requested for the first budget period based on the needs of the research.

Requesting funds for capital equipment will not decrease the probability of receiving an award. Additional support for equipment will be decided separately from award selections and will depend upon availability of funds.

Upon completion of the three (3) year award period, Young Investigators may apply to ONR for continued support under ONR's Long Range BAA. Decisions about continued funding outside the context of the YIP will be made following a review of the new proposal by the cognizant Program Officer, based on the merits of the proposal, ONR's research priorities, and the creativity and productivity exhibited during the previous Young Investigator research program.

The competition for YIP awards continues to be intense. In 2015 over 380 proposals were received resulting in 36 Young Investigator awards. Past awardees have both submitted outstanding research proposals and possessed outstanding records of prior professional accomplishments. Given that "past performance" is a selection criterion, applicants are advised that the biographical information submitted as part of the proposal (see "Qualifications" under "Proposal Content,” below) should list all relevant past and present activities. See Section V. Evaluation Information for more details regarding evaluation of submitted proposals.

Proposals not selected for the Young Investigator Program may be considered for grant award under the ONR Long Range Broad Agency Announcement. Under the ONR Long Range BAA, grant proposals would be in competition with all other research proposals submitted in response to the ONR Long Range BAA. Historically, only a limited number of proposals initially submitted to the YIP received funding under the ONR Long Range BAA. Thus, the YIP is not a "research initiation" opportunity with standards that are less demanding than ONR's other research grant programs; however, it is intended to confer honor upon awardees beyond the funding being provided. Consideration of any YIP proposal to another ONR research grant program is at the discretion of the cognizant Program Officer.

Awards: Offerors awarded grants under the ONR Young Investigator Program have the opportunity to supplement the basic $170,000 per year award through a "matching funds" enhancement available only to those receiving an ONR Young Investigator award. Proposals submitted against this FOA do not require offerors to identify if they will seek “matching funds” or provide additional documentation.

As an incentive for becoming involved with other Department of the Navy research activities, the Office of the Director of Research of ONR may match on a 1-for-1 basis, the first $25,000 of additional Department of the Navy funding which a successful applicant obtains each year to support additional, collaborative research with a Navy laboratory during the YIP award. Potential sources of research support eligible for the 1-for-1 match include Navy laboratories and ONR Program Officers. Thus, these "matching funds" can provide research support over and above the basic $170,000 per year award, e.g. to support an additional graduate student or an

additional research task. A Young Investigator is not prohibited from receiving more than $25,000 from other Department of the Navy sources; however, the Office of the Director of Research will match on a 1-for-1 basis only the first $25,000 each year, if funds are available. Other Navy support eligible for matching funds can be arranged at any time and generally will not have been identified at the time of the initial award. ONR Program Officers may assist, upon request, Young Investigators in identifying potential collaborators at Navy laboratories or other Navy organizations interested in funding additional research..

Full Proposal Deadline: December 1, 2015

Contact: See ONR Science and Technology Departments (http://www.onr.navy.mil/Science-Technology/Departments.aspx) or Technology Locator (http://www.onr.navy.mil/en/Science-Technology/Contacts.aspx) at www.onr.navy.mil to locate the cognizant ONR Program Officer.
Questions regarding YIP policy should be submitted to the YIP Program Manager:
Dr. Reginald G. Williams
Program Manager, Code 03R, YIP
Office of Naval Research
875 North Randolph Street - Suite 660 Arlington, VA 22203-1995
Email Address: reginald.g.williams@navy.mil

Department of Energy

Grant Program: Bioenergy Technologies Incubator 2 Funding Opportunity
Agency: US Department of Energy: DE-FOA-0001320
RFP Website: https://eere-exchange.energy.gov/

Brief Description: The overall strategic goal of the Bioenergy Technologies Office (BETO) is to develop commercially viable bioenergy and bioproducts to enable sustainable, nationwide production of biofuels that are compatible with today's transportation infrastructure, can reduce GHG (greenhouse gas) emissions relative to petroleum-derived fuels, and can displace a share of petroleum-derived fuels to reduce U.S. dependence on foreign oil and encourage the creation of a new domestic bioenergy industry. BETO has targeted a performance goal of validating, at pilot scale, at least one technology pathway for hydrocarbon biofuel at a mature modeled cost of $3/GGE (gasoline gallon equivalent) with GHG emissions reduction of 50% or more compared to petroleum-derived fuel by 2017, and validating two additional pathways by 2022. These high level strategic and performance goals are expanded in further detail in BETO's multi-year program plan (MYPP). BETO most recently updated its MYPP in March 2015 . The MYPP identifies many technical barriers that must be overcome through research, development and deployment in order for BETO to meet these overall strategic and performance goals. BETO has issued several Funding Opportunity Announcements (FOAs) to address the technical barriers delineated in the MYPP, and has done so in a way to focus its resources in a limited number of pathways/approaches to ensure that the program initiatives are supported at a critical mass (both in terms of dollars and time) for maximum impact and for the highest probability of success.

Awards: From $1,000,000 to $2,000,000

Proposal Submission Deadline:
Concept Paper Due Date: 09/21/2015 at 5 PM Eastern Time
Full Application Submission Deadline: 11/13/2015 5:00 PM ET

NASA

Grant Program: NASA Space Technology Research Fellowships (NSTRF)
Agency: NASA
RFP Website:
http://nspires.nasaprs.com/external/solicitations/solicitations.do?method=init&stack=push
Brief Description: The goal of NSTRF is to sponsor U.S. citizen and permanent resident graduate students who show significant potential to contribute to NASA's goal of creating innovative new space technologies for our Nation's science, exploration and economic future. NASA Space Technology Fellows will perform innovative, space-technology research at their respective campuses and at NASA Centers and/or at nonprofit U.S. Research and Development (R&D) laboratories. Awards are made in the form of training grants to accredited U.S. universities on behalf of individuals pursuing master's or doctoral degrees, with the faculty advisor serving as the principal investigator.

In addition to his/her faculty advisor, each student will be matched with a technically relevant and community-engaged researcher, usually at a NASA Center, who will serve as the student's professional research collaborator. The research collaborator will serve as the conduit into the larger technical community corresponding to the student's research interests.

NASA Space Technology Research Fellows will perform research at their respective campuses and at NASA Centers and/or at nonprofit U.S. R&D laboratories. Through this experience, NSTRF graduate researchers will have the opportunity to work collaboratively with leading engineers and scientists in the students' chosen area of study; they will be able to take advantage of broader and/or deeper space technology research opportunities directly related to their educational and career objectives, acquire a more detailed understanding of the potential end applications of their space technology efforts, directly disseminate their research results within the NASA/nonprofit U.S. R&D lab community, and enhance their understanding of the research process.

The solicitation is available by opening the NASA Research Opportunities homepage at http://nspires.nasaprs.com/ , selecting "Solicitations," then selecting "Open Solicitations," and, finally, selecting the solicitation number "NSTRF16." NASA's Space Technology Mission Directorate (STMD) seeks to sponsor U.S. citizen and permanent resident graduate student researchers who show significant potential to contribute to NASA's goal of creating innovative new space technologies for our Nation's science, exploration, and economic future. This call for graduate student fellowship applications solicits applications from individuals pursuing or planning to pursue master's (e.g., M.S.) or doctoral (e.g., Ph.D.) degrees in relevant space technology disciplines at accredited U.S. universities. NASA Space Technology Fellows will perform innovative space technology research and will improve America's technological competitiveness by providing the Nation with a pipeline of innovative space technologies. Selected candidates will perform research at their respective campuses and at NASA Centers. In addition to his or her faculty advisor, each student will be matched with a technically relevant and community-engaged researcher who will serve as the student's research collaborator. Through this collaboration, students will be able to take advantage of broader and/or deeper space technology research opportunities directly related to their educational and career objectives, acquire a more detailed understanding of the potential end applications of their space technology efforts, directly disseminate their research results within the NASA community, and enhance their understanding of the research process. Awards resulting from this competitive selection will be made in the form of training grants to accredited U.S. universities. This solicitation has two phases. Phase A is the application submission by the student. For the student applicant who is selected in Phase A, the accredited U.S. university

where the student will be enrolled for the fall 2016 term as a full-time graduate student must submit a Phase B proposal (as specified in the NSTRF16 solicitation); a complete Phase B proposal submission will result in a training grant award. Phase B proposals may only be submitted if the applicant was selected in Phase A. The financial and programmatic support for NSTRF comes from STMD. The fellowships are a component of the Space Technology Research Grants Program. Awards are planned to coincide with the start of the 2016 academic year and are subject to the availability of appropriated funds. This solicitation covers only new fellowship applications; renewal applications are handled separately.
Awards: Standard Fellowships
Deadline: Phase-A Proposal Deadline(s): All Phase A applications must be submitted electronically through NSPIRES and are due by 6 PM ET on November 05, 2015. Detailed submission instructions for applicants are provided under "Other Documents" on the NSPIRES webpage associated with the NSTRF16 solicitation. Potential student applicants are urged to access the NSPIRES electronic proposal system well in advance of the proposal due date to register with NSPIRES, familiarize themselves with its structure, and to enter the requested information. Comments and questions may be addressed by e-mail to the Space Technology Research Grants Program Executive, Claudia Meyer, at hq-nstrf-call@mail.nasa.gov. Responses to inquiries will be answered by e-mail and may also be included in the Frequently Asked Questions (FAQ) document located on the NSPIRES page associated with the solicitation; anonymity of individuals/institutions who submit questions will be preserved.
Contact: Claudia M Meyer hq-nstrf-call@mail.nasa.gov NAIS Support nais.support@nasa.gov

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Bill and Melinda Gate Foundation

Grant Program: Global Grand Challenges Explorations
Explore New Solutions in Global Health Priority Areas (Round 16)
Explore New Ways to Measure Delivery and Use of Digital Financial Services Data (Round 16)
Agency: Bill and Melinda Gate Foundation
RFP Website: http://gcgh.grandchallenges.org/grant-opportunities
Brief Description: This call for ideas is part of the 16th round of Grand Challenges Explorations (GCE). Throughout the preceding 15 rounds, we have experimented with a mix of topics – broad, open topics that leave much to the innovators' imaginations, and narrow, focused topics that provide a specific toolset or criteria – covering everything from new therapeutics, vaccines, and diagnostics to financial services for the poor and agricultural tools for smallholder farmers. One consistent lesson we have learned is that the world never seems to run out of great ideas. To elicit more of these great ideas without limiting creativity and boldness, we are setting forth a series of challenges that remain broadly unsolved in the areas where we work. Here we provide a bit of guidance around what we will and will not fund, but leave the solution itself open to your imagination.

Above all, our goal is to harness advances in science and technology to save lives, and all of our investments are driven by the need to develop and apply solutions that can be deployed, accepted, and sustained in the developing world.

The challenges laid out fit squarely within our focus areas and identify gaps in knowledge or technology that, if understood and developed, could launch us forward quickly to save lives and improve the quality of life for the worlds' poorest.

Successful proposals will:

Clearly describe how the idea, if successful, would help solve one of the challenges described in the call;

Be directly relevant to the developing world (e.g. low-cost, useful across multiple geographical and cultural settings, self-sustaining);

Have a clear and testable hypothesis and include an associated plan for how the idea would be tested or validated;

Yield interpretable and unambiguous data in Phase I, in order to be considered for Phase II funding.

Awards: Initial grants will be US $100,000 each, and projects showing promise will have the opportunity to receive additional funding of up to US $1 million.

Proposal Submission Deadline: November 11, 2015. See the submission guidelines at http://gcgh.grandchallenges.org/application-instructions