NJIT Research Newsletter

Issue: ORN-2016-042

NJIT Research Newsletter includes recent awards, and announcements of research related seminars, webinars, national and federal research news related to research funding, and ***Grant Opportunity Alerts***. The Newsletter is posted on the NJIT Research Website http://www.njit.edu/research/ . **This Newsletter features a new section on "Recent Patents".**

NJIT Office of Research
Event Calendar
Save the Date

NJIT Faculty Research Advisory Board Meeting:
November 14, 2016; 12.00 PM – 1.30 PM; Ballroom B, Campus Center

NJIT 2016 Research Centers and Laboratories Showcase:
November 17, 2016; 10.30 AM – 2.30 PM; Ballroom B, Campus Center
Agenda:
10.00 AM- 10.30 AM: Uploading of power-point files on individual tables
10.30 AM - 10.45 AM: Introductions and Welcome
10.45 AM - 12.00 PM: Keynote Talk and Q&A: Dr. Nora Savage, Program Director, Biological and Environmental Interactions of Nanoscale Materials, Chemical, Bioengineering, Environmental and Transport Systems (CBET) Division, NSF
12.00 PM - 12.30 PM: Lunch and Networking
12.30 PM - 2.30 PM: Poster Session and Networking

Keynote Title: NSF– Nine Strategies for Funding

Abstract: The development and use of nanotechnology could have a dramatic impact on our global society, due to the potential to substantially improve the characteristics and performance of a number of systems and commercial products. Potential applications include medical imaging and therapies, environmental restoration and protection, electronics, energy storage, generation and distribution, food protection and production and water remediation and conservation. The Biological and Environmental Interactions of Nanoscale Materials is focused on enabling these advances through the acquisition of fundamental scientific knowledge elucidating the mechanistic behavior of nanoparticles. As society moves away from passive employment of nanoparticles in composites and materials towards active devices and structures, embedded with intelligence, this understanding becomes increasingly important.

This presentation will provide a description of the National Science Foundation funding opportunities, highlighting the Biological and Environmental Interactions of Nanoscale Materials

Program within the Chemical, Bioengineering, Environmental and Transport Systems (CBET) Division in the Engineering Directorate. Tips for successful proposals will be offered. Details about specific programs offered by the Foundation will be shared as well as opportunities to interact with NSF. In addition, information concerning the National Nanotechnology Initiative will be provided along with unique opportunities to engage with the National Nanotechnology Coordination Office.

Speaker Biographical Sketch: Dr. Nora Savage obtained her bachelor's degree in Chemical Engineering in 1992 from Prairie View A&M University located in Prairie View, Texas. She received two Masters Degrees (in Environmental Engineering and Environmental Science) from the University of Wisconsin-Madison, located in Madison, Wisconsin in1995, and a doctoral degree in Environmental Science from the same institution in 2000. Nora has worked for the U.S. federal government for almost twenty years. In this capacity she has served the environmental nanotechnology research community through her contributions to strategic research direction. Nora served as a Team Lead for nanotechnology within the Office of Research and Development within the U.S. Environmental Protection Agency. She currently serves as Program Director within the Engineering Directorate of the National Science Foundation.

Nora has authored and co-authored numerous articles on nanotechnology and emerging technologies in leading journals, including the Journal of Nanoparticle Research and Toxicological Sciences. She served as lead editor for the books "Emerging Technologies: Socio-Behavioral Life Cycle Approaches" and for "Nanotechnology for Water Applications") now in its second edition) and has contributed chapters to several other books, including the Oxford Handbook of Nanoscience and Technology, vol. III.

Grant Opportunity Alerts

Keywords and Areas Included in the Grant Opportunity Alert Section Below

NSF: Cyberlearning and Future Learning Technologies (Cyberlearning); Integrative Strategies for Understanding Neural and Cognitive Systems (NSF-NCS) INTEGRATIVE FOUNDATIONS and CORE+ SUPPLEMENTS; National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0); Industry-University Cooperative Research Centers Program (IUCRC)

NIH: Research Education: Initiative for Maximizing Student Development (IMSD) Program (R25); Exploratory Research for Technology Development (R21); BRAIN Initiative: Proof of Concept Development of Early Stage Next Generation Human Brain Imaging (R01)

Department of Defense/US Army/DARPA/ONR: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology

Department of Energy: Scientific Discovery through Advanced Computing: Scientific Computation Application Partnerships in Earth System Science II – Pilot Projects; PNDIODES

NASA: ROSES 2016: Solar System Working

National Endowment of Humanities: Public Humanities Projects; Creating Humanities Communities

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Recent Research Grant and Contract Awards

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

PI: Maggie Cheng (PI)
Department: School of Management

Grant/Contract Project Title: Collaborative Research: Computationally Efficient Solvers for Power System Simulation
Funding Agency: NSF
Duration: 10/01/16-07/31/17

PI: Casey Dickman (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Multisensory Integration by Circadian Clocks
Funding Agency: NSF
Duration: 10/01/16-01/31/17

Agency Announcements and In the News…

(National and Federal News Related to Research Funding and Grant Opportunities)

NIH Announcement: Adjustment to Stipend Levels for Postdoctoral Trainees and Fellows on Ruth L. Kirschstein National Research Service Awards (NRSA) Notice Number: NOT-OD-17-002:
Release Date: November 7, 2016
Related Announcements
NOT-OD-16-134
NOT-OD-16-062
Issued by
National Institutes of Health (NIH)
Purpose
The purpose of this Notice is to announce the process whereby recipients of Kirschstein-NRSA institutional training grant and individual fellowship awards supporting currently active postdoctoral trainees or fellows with 0, 1, or 2 years of experience as of December 1, 2016, will received increased stipends. The Notice also provides instructions for requesting one-time supplemental funding to cover the stipend increase.
As previously announced (NOT-OD-16-134), stipend levels for postdoctoral NRSA recipients with 0, 1 or 2 years of experience will be increased in furtherance of the NIH mission. This increase is distinct from a projected cost-of-living adjustment for postdoctoral stipends that is subject to the availability of FY 2017 appropriations.
Current NRSA stipend levels at years 0, 1 and 2 years of postdoctoral experience are shown below along with the amount of the increase for each career level.

Career Level	Years of Experience	Actual Stipend for FY 2016	Projected Stipend Effective December 1, 2016	Projected Monthly Stipend, Effective December 1, 2016	Projected Monthly Stipend Increase
Postdoctoral	0	$43,692	$47,484	$3,957	$316
	1	$45,444	$47,844	$3,987	$200
	2	$47,268	$48,216	$4,018	$79

Process

In order to acknowledge the significant contributions of postdoctoral researchers to our research mission, eligible NRSA awardees may request supplemental funds as outlined below. Specifically, recipients of Kirschstein-NRSA institutional training grant and individual fellowship awards supporting currently active postdoctoral trainees and fellows at levels 0, 1, and 2, ending after December 1, 2016, may apply for one-time supplemental funding to support the stipend increase using the Parent Announcement for Administrative Supplements to Existing NIH Grants, PA-16-287.

For Institutional Training Grants:

Applications may be submitted based only on the number of appointees at levels 0, 1, and 2. Applicants may not increase the number of appointees under the current award as a result of this supplemental funding notice. Applications must remain consistent with the current experience level of each postdoctoral appointee, which cannot be adjusted as a result of this notice.

Applicants must be careful to accurately identify the number of postdocs at each level and request an accurate, corresponding supplemental dollar amount. Applicants should only request funds to cover increases in stipends at these levels from December 1, 2016 up to the end date of the current period of appointment.

Examples:

Institution A has 3 postdocs at Level 0, 1 at Level 1, and 2 at Level 2 with periods of appointment ending on January 31, 2017. Its supplemental funding request would be:

Level	**Projected Monthly Stipend Increase**	**# Postdoc Slots**	**Multiplied by #Postdoc Slots**	**Multiplied by # months (12/1/16 – 1/31/17)**	**Total**
0	$316	3	$948	2	$1,896
1	$200	1	$200	2	$400
2	$79	2	$158	2	$316
					$2,612

Institution B has 3 postdocs at Level 0, 1 postdoc at Level 1, and 2 postdocs at Level 2 with periods of appointment ending on August 31, 2017 for all except for the Level 1 postdoc, whose period of appointment ends earlier, on June 30, 2017. Its supplemental funding request would be:

Level	**Projected Monthly Stipend Increase**	**# Postdoc Slots**	**Multiplied by # Postdoc Slots**	**Multiplied by # months from 12/1/2016 through end of period of appointment**	**TOTAL**
Level 0	$316	3	$948	9	$8,532
Level 1	$200	1	$200	7	$1,400
Level 2	$79	2	$158	9	$1,422
					$11,354

Note: For periods less than a whole month (i.e., days and weeks) stipends should be prorated as appropriate.

Additionally, in the interest of providing additional funds as quickly as possible, recipients should not propose within the supplemental funding application any change to the grant that would otherwise require prior approval from the awarding Institute/Center. Once a supplement has been issued, it will not be revised to account for any errors within an application.

*Current NRSA awardees that meet the criteria above wishing to apply for this one-time supplemental funding must submit an application to the awarding IC*as soon as possible*, and applications will be reviewed as quickly as possible in an effort to issue these awards expeditiously.*

Appointments of postdoctoral trainees at the Levels 0, 1, and 2 made via xTrain as of December 1, 2016 will reflect these new stipend levels. Additional guidance will be forthcoming about adjustments to appointment records for currently active trainees at those levels.

For Individual NRSA Postdoctoral Fellowships:

Applications may be submitted to cover projected stipend increases for individual NRSA postdoctoral fellows at levels 0, 1, and 2. Applicants should only request funds to cover increases in stipends for postdoctoral fellows at levels 0, 1 or 2 from December 1, 2016 up to the end date of the current budget year of the award. The subsequent Notice of Award (NOA) for the next budget year will reflect the FY 2017 stipend levels.

Examples:

Individual fellowship budget year ends June 30, 2017. Supplemental funding requests for fellows at career levels 0, 1 or 2 would be as follows:

Level	**Projected Monthly Stipend Increase**	**Multiplied by # months (12/1/16 – 6/30/17)**	**Total**
0	$316	7	$2,212
1	$200	7	$1,400
2	$79	7	$553

Individual fellowship budget year ends August 31, 2017. Supplemental funding requests for fellows at career levels 0, 1 or 2 would be as follows:

Level	**Projected Monthly Stipend Increase**	**Multiplied by # months (12/1/16 – 8/31/17)**	**Total**
0	$316	9	$2,844
1	$200	9	$1,800
2	$79	9	$711

* For periods less than a whole month (i.e., days and weeks) stipends should be prorated as appropriate.

*Current NRSA awardees that meet the criteria above wishing to apply for this one-time supplemental funding must submit an application to the awarding IC*as soon as possible*, and applications will be reviewed as quickly as possible in an effort to issue these awards expeditiously.*

Reminder of Other Relevant Policies

For institutional training grants (T32, T90, TL1) and individual fellowships (F32), the stipend level for the entire first year of support is determined by the number of full years of relevant postdoctoral experience when the award is issued. Relevant experience may include research experience (including industrial), teaching, internship, residency, clinical duties, or other time spent in a health-related field beyond that of the qualifying doctoral degree.
Kirschstein-NRSA support for postdoctoral research training is limited to three years. The presence of eight discrete levels of experience does not constitute an endorsement of extended periods of postdoctoral research training. The NIH provides eight postdoctoral stipend levels to accommodate individuals who complete other forms of health-related training prior to accepting a Kirschstein-NRSA supported position for research training.
Inquiries

General inquiries about this notice may be directed to:
Division of Grants Policy
Office of Policy for Extramural Research Administration
National Institutes of Health
6705 Rockledge Drive, Suite 350
Bethesda, MD 20892
Phone: 301-435-0938
Email: GrantsPolicy@od.nih.gov

For any specific financial or grants management questions regarding the administrative supplement notice (PA-16-287) please contact the Grants Management Specialist or Grants Management Officer listed on the NoA of the most recent parent award.

Additional Information

Note that the interpretation and implementation of the FLSA and the DOL overtime regulations are under the authority of the DOL and the courts. While NIH plans to raise its NRSA stipends for consistency with spirit of the DOL's support for increased pay, as reflected in its recent revisions to the overtime regulations, the NIH takes no position on the applicability of the overtime regulations to a particular worker supported by NIH grants. Institutions should consult their own counsel and/or local Department of Labor office about the applicability of the overtime regulations and for information on overtime obligations.

Notice on the website: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-002.html .

Nih Picturing the Brain: The National Institute of NIBIB alerts investigators of two new BRAIN Initiative FY17 opportunities: Development of Next Generation Human Brain Imaging Tools and Technologies: Stage 2 (U01) "aims to support full development of entirely new or next generation noninvasive human brain imaging tools and methods that will lead to transformative advances in our understanding of the human brain." Proof of Concept Development of Early Stage Next Generation Human Brain Imaging (R01) "aims to support early stage development of entirely new and novel noninvasive human brain imaging technologies and methods that will lead to transformative advances in our understanding of the human brain." More information on: http://grants.nih.gov/grants/guide/rfa-files/RFA-EB-17-001.html (also in the Grant Opportunity section below).

Webinar and Events

Event: NSF Webinar: ADVANCE Resource and Coordination Network
When: November 15, 2016 2.00 PM – 3.00 PM
Website: https://www.nsf.gov/events/event_summ.jsp?cntn_id=190111&org=NSF

Brief Description: Organizations interested in partnering to develop a ARC Network proposal are encouraged to participate in this webinar. Click here to register for the webinar
The goal of the ARC Network is to advance gender equity for STEM faculty nationally by facilitating the adoption and implementation of evidence-based systemic changes by institutions of higher education and other STEM organizations that affect those in STEM academic careers. The ARC Network is expected to have the range of expertise and the infrastructure needed to implement the network activities which may require a partnership among multiple existing organizations.

ADVANCE anticipates supporting one ARC Network project for five years. Proposals may request a total budget of $5 million, for an average of $1 million each year for five years. Proposers are advised to discuss the ARC Network proposal with the ADVANCE program officers before submitting. Please review the program solicitation and the NSF Grant Proposal Guide (GPG) when preparing and submitting an ARC Network proposal (PAPP Guide).
Target date for ARC Network proposals: March 15, 2017

Event: NSF Webinar: Transdisciplinary Research in Principles of Data Science (TRIPODS) Webinar
When: November 15, 2016 2:30 PM - 3:30 PM
Website:
https://www.nsf.gov/events/event_summ.jsp?cntn_id=190270&WT.mc_id=USNSF_13&WT.mc_ev=click
Brief Description: *Transdisciplinary Research In Principles Of Data Science* (TRIPODS) aims to bring together the statistics, mathematics, and theoretical computer science communities to develop the theoretical foundations of data science through integrated research and training activities. Phase I, described in this solicitation, will support the development of small collaborative Institutes. Phase II (to be described in an anticipated future solicitation, subject to availability of funds) will support a smaller number of larger Institutes, selected from the Phase I Institutes via a second competitive proposal process. All TRIPODS Institutes must involve significant and integral participation by all three of the aforementioned communities.
This webinar will cover the solicitation and submission requirements. There will be a question and answer session following the discussion.
To Join the Webinar: Please register at:
https://nsf.webex.com/nsf/j.php?RGID=r6d651909215999bda871e2753bffdfaf by 11:59pm EST on Monday November 15, 2016.

Event: 2016 NRT (NSF Research Traineeship) Program Information Webinar
When: November 9, 2015 1:00 AM to December 9, 2016 11:45 PM
Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=134466&org=NSF
Brief Description: The NSF Research Traineeship program (NRT) prerecorded informational videos to provide an overview of the NRT program and describe the key similarities and differences of the two tracks. The aim of these webinars was to give potential principal investigators information on program announcement 16-503 by emphasizing several key features and requirements of each track.

Grant Opportunities

National Science Foundation

Grant Program: Cyberlearning and Future Learning Technologies (Cyberlearning)
Agency: National Science Foundation NSF 17-520
RFP Website: https://www.nsf.gov/pubs/2017/nsf17520/nsf17520.htm
Brief Description: The purpose of the ***Cyberlearning and Future Learning Technologies*** program is to integrate opportunities offered by emerging technologies with advances in what is known about how people learn to advance three interconnected thrusts:

- **Cyber innovation**: Developing next-generation cyberlearning approaches through high-risk, high-reward advances in computer and information science and engineering;
- **Learning innovation**: Inventing and improving next-generation genres (types) of learning technologies, identifying new means of using technology for fostering and assessing learning, and proposing new ways of integrating learning technologies with each other and into learning environments to foster and assess learning; and
- **Advancing understanding of how people learn in technology-rich learning environments**: Enhancing understanding of how people learn and how to better foster and assess learning, especially in technology-rich learning environments that offer new opportunities for learning and through data collection and computational modeling of learners and groups of learners that can be done only in such environments.

The intention of this program is to advance technologies that specifically focus on the experiences of learners; innovations that simply focus on making teaching easier will not be funded. Proposals that focus on teachers or facilitators as learners are invited; the aim in these proposals should be to help teachers and facilitators capitalize on the affordances of technology and fundamental knowledge about how people learn to make the learning experiences of learners more effective.

Proposals are expected to address all three of the program's thrusts. Of particular interest are technological advances that (1) foster deep understanding of content coordinated with masterful learning of practices and skills; (2) draw in and encourage learning among populations not served well by current educational practices; and/or (3) provide new ways of assessing understanding, engagement, and capabilities of learners. It is expected that research funded by this program will shed light on how technology can enable new forms of educational practice. This program does not support proposals that aim simply to implement and evaluate a particular software application or technology in support of a specific course.
Awards: Standard Grants. Anticipated funding amount: $6,000,000 in FY17.
Letter of Intent: Not Required
Full Proposal Submission Due Date: February 10, 2017
Contacts:

- Tatiana Korelsky, co-lead CISE, Program Officer, CISE/IIS, telephone: (703)292-8930, email: tkorelsk@nsf.gov
- Amy L. Baylor, co-lead EHR, Program Officer, EHR/DRL, telephone: (703) 292-5126, email: abaylor@nsf.gov
- William Bainbridge, Program Officer, CISE/IIS, telephone: (703)292-7470, email: wbainbri@nsf.gov

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Grant Program: Integrative Strategies for Understanding Neural and Cognitive Systems (NSF-NCS) INTEGRATIVE FOUNDATIONS and CORE+ SUPPLEMENTS
Agency: National Science Foundation NSF 17-519
RFP Website: https://www.nsf.gov/pubs/2017/nsf17519/nsf17519.htm
Brief Description: The complexities of brain and behavior pose fundamental questions in many areas of science and engineering, drawing intense interest across a broad spectrum of disciplinary

perspectives while eluding explanation by any one of them. Rapid advances within and across disciplines are leading to an increasingly interconnected fabric of theories, models, empirical methods and findings, and educational approaches, opening new opportunities to understand complex aspects of neural and cognitive systems through integrative multidisciplinary approaches. This program calls for innovative, integrative, boundary-crossing proposals that can best capture those opportunities. NSF seeks proposals that are bold, risky, and transcend the perspectives and approaches typical of single-discipline research efforts. This cross-directorate program is one element of NSF's broader effort directed at Understanding the Brain, a multi-year activity that includes NSF's participation in the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (http://www.nsf.gov/brain/). NSF envisions a connected portfolio of transformative, integrative projects that create synergistic links across investigators and communities, yielding novel ways of tackling the challenges of understanding the brain in action and in context.

Integrative Strategies for Understanding Neural and Cognitive Systems is open to proposals to advance the foundations of one or more of the following integrative research themes, described within the solicitation:

1. ***Neuroengineering and Brain-Inspired Concepts and Designs***
2. ***Individuality and Variation***
3. ***Cognitive and Neural Processes in Realistic, Complex Environments***
4. ***Data-Intensive Neuroscience and Cognitive Science***.

Within each theme, advances in theory and methods, technological innovations, educational approaches, research infrastructure, and workforce development are all of significant interest. Proposals must be consistent with the missions of the participating directorates. High-risk, high-payoff approaches are expected. Proposals must directly address risks and how they will be managed, potentially transformative payoffs, and the relationship between the risks and rewards at stake.

Awards: Standard Grants. Anticipated funding amount: $10,000,000

Letter of Intent: Submission of Letters of Intent is required. Please see the full text of this solicitation for further information; January 09, 2017

Full Proposal Submission Due Date: February 06, 2017

Contacts:

- Mitra Basu, Directorate for Computer & Information Science & Engineering, telephone: (703) 292-8910, email: mbasu@nsf.gov
- Rita V. Rodriguez, Directorate for Computer & Information Science & Engineering, telephone: (703) 292-8950, email: rrodrigu@nsf.gov
- Aude Oliva, Directorate for Computer and Information Science and Engineering, telephone: (703) 292-8114, email: auoliva@nsf.gov

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Grant Program: National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0)
Agency: National Science Foundation NSF 17-518

RFP Website: https://www.nsf.gov/pubs/2017/nsf17518/nsf17518.htm

Brief Description: The goal of the National Robotics Initiative (NRI) is to support fundamental research that will accelerate the development and use of robots in the United States that work beside or cooperatively with people. The original NRI program focused on innovative robotics research that emphasized the realization of collaborative robots (co-robots) working in symbiotic relationships with human partners. The NRI-2.0 program significantly extends this theme to focus on issues of **scalability**: how teams of multiple robots and multiple humans can interact and

collaborate effectively; how robots can be designed to facilitate achievement of a variety of tasks in a variety of environments, with minimal modification to the hardware and software; how robots can learn to perform more effectively and efficiently, using large pools of information from the cloud, other robots, and other people; and how the design of the robots' hardware and software can facilitate large-scale, reliable operation. In addition, the program supports innovative approaches to establish and infuse robotics into educational curricula, advance the robotics workforce through education pathways, and explore the social, behavioral, and economic implications of our future with ubiquitous collaborative robots. Collaboration between academic, industry, non-profit, and other organizations is encouraged to establish better linkages between fundamental science and engineering and technology development, deployment and use. Well-justified international collaborations that add significant value to the proposed research and education activities will also be considered.

The NRI-2.0 program is supported by multiple agencies of the federal government including the National Science Foundation (NSF), the U.S. Department of Agriculture (USDA), the U.S. Department of Energy (DOE), and the U.S. Department of Defense (DOD). Questions concerning a particular project's focus, direction and relevance to a participating funding organization should be addressed to that agency's point of contact listed in section VIII of this solicitation.

Awards: Standard Grants. Anticipated funding amount: $45,000,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: February 02, 2017

Contacts:

- Reid Simmons, CISE/IIS, telephone: (703) 292-4767, email: resimmon@nsf.gov
- Radhakishan Baheti, ENG/ECCS, telephone: (703) 292-8339, email: rbaheti@nsf.gov
- Jordan M. Berg, ENG/CMMI, telephone: (703) 292-5365, email: jberg@nsf.gov

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Grant Program: Industry-University Cooperative Research Centers Program (IUCRC)
Agency: National Science Foundation NSF 17-516

RFP Website: https://www.nsf.gov/pubs/2017/nsf17516/nsf17516.htm

Brief Description: The Industry-University Cooperative Research Centers (IUCRC) program develops long-term partnerships among industry, academe, and government. The Centers are catalyzed by an investment from the National Science Foundation (NSF) and are primarily supported by industry Center members, with NSF taking a supporting role in the development and evolution of the Center. Each Center is established to conduct research that is of interest to both the industry members and the Center faculty. An IUCRC contributes to the nation's research infrastructure base and enhances the intellectual capacity of the engineering and science workforce through the integration of research and education. As appropriate, an IUCRC uses international collaborations to advance these goals within the global context.

Awards: Standard Grants. Anticipated funding amount: $20,500,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: January 03, 2017

Contacts:

- Leland M. Jameson, Program Director, NSF MPS/DMS, telephone: (703) 292-4883, email:ljameson@nsf.gov
- Robert Lund, Program Director, NSF MPS/DMS, telephone: (703) 292-2407, email:rlund@nsf.gov
- John Greer, Program Director, National Geospatial Intelligence Agency, telephone: (571) 557-2944, email: John.B.Greer@nga.mil

National Institutes of Health

Grant Program: Research Education: Initiative for Maximizing Student Development (IMSD) Program (R25)
Agency: National Institutes of Health PAR-17-053
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-17-053.html
Brief Description: The goal of the IMSD program is to provide research experiences for students in the institution and to enhance the pool of students from underrepresented groups who successfully complete Ph.D. degrees in biomedical sciences. In doing so, the expectation is that by supporting new and ongoing institutionally-designed student developmental programs, the IMSD program will help reduce the gap in the completion of Ph.D. degrees between underrepresented and non-underrepresented students in the biomedical sciences at the national level. The IMSD program should make available structured, career development advising and learning opportunities (e.g., workshops, discussions, Individual Development Plans). Through such opportunities, all students are expected to obtain a working knowledge of various potential career paths that would make strong use of the knowledge and skills gained during research experience and the steps required to transition successfully to the next stage of their chosen career. At the institutional level, the IMSD program should develop undergraduate and/or graduate students who are proficient in biomedical science for the purpose of training the next generation of the modern research workforce. Furthermore, the institution is expected to identify and address the barriers that might impede the participation and retention of all students, with attention to the types of issues that students from underrepresented backgrounds face. Specifically, it is expected that the following objectives will be achieved:

- Enhancement of the pool of underrepresented students that complete a Ph.D. and continue in biomedical research careers.
- At least 60% of IMSD-supported undergraduate and 80% of Ph.D. students will complete the Ph.D. degree.
- Contribute to ongoing student and faculty efforts to reduce the gap in the completion of Ph.D. degrees between underrepresented students and those from other backgrounds in participating departments.

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.
Awards: Although the size of award may vary with the scope of the research education program proposed and there are no specific budget limitations, the requested direct costs must be reasonable, well documented, fully justified and commensurate with the scope of the proposed program. All awards are subject to the availability of funds. The total amount to be awarded is approximately $5 million (total costs) per year. Awards issued under this FOA are contingent upon the availability of funds and the submission of a sufficient number of meritorious applications.
Letter of Intent: Not required
Deadline: January 27, 2017; January 26, 2018; and January 28, 2019, 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.

Grant Program: Exploratory Research for Technology Development (R21)
Agency: National Institutes of Health PAR-17-046
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-17-046.html
Brief Description: For the purpose of this FOA, technology refers to tools that enable research. This includes laboratory instruments and other devices, algorithms and software, chemical reagents and processes by which biomedically related molecules are produced and modified, and the manipulation of biological systems to produce or become research tools. This FOA calls for exploratory technology development predicated on a broad need or challenge in biomedical research that can be described explicitly. This need should be beyond the ability of the current technology development regime to meet. It should be clear that something fundamentally different is needed. The proposed technology should have the potential to address basic biomedical research needs or technical problems that occur broadly across multiple systems or diseases. Specific examples may be cited. Exploratory research into technologies specific to only one disease or system are not appropriate for this FOA.

No Preliminary Data: Availability of preliminary data is an indication that the proposed project has advanced beyond the exploratory stage defined by this program, and will make the application unsuitable for this funding opportunity. Consideration should be given to submitting such projects to the companion R01 program (PAR-17-045).

High-Risk Exploratory Research: Applications through this FOA for exploratory research projects may propose a single specific solution to a broadly stated biomedical research need, with the goal of determining the feasibility of that approach. Alternatively, a proposed project may take a broader approach that will explore several possible solutions, leading to an improved understanding of the best technical avenues to pursue in order to create a new capability. This less directed approach may lead to a better understanding of the relative merits or likelihood of success of multiple potential approaches to be pursued in developing a technology.

This program will support proof-of-principle research leading to advances in technology. Because new ideas are essential to this process, the projects will entail a high degree of risk or novelty, which will be offset by a correspondingly high potential impact. However, the possible impact is unlikely to be immediate. Substantial additional development of the technology after completion of the project is likely to be necessary. The program will recognize and reward high risk approaches with the potential for significant impact.

No Biological Aims: Biomedical relevance is an essential element of NIH research. However, the exploratory stage of technology development should not include immediate short-term application of nascent technologies to challenging biomedical research questions because an insistence on explicit linkage to a specific research problem and the immediate demonstration of an immature technology's effectiveness in that context can distort the technology development process. It can also diminish focus on development of genuinely innovative technology in favor of incremental improvements to existing technologies. In the early stages of technology development, insistence on biomedical applications is counterproductive. Therefore, in this program, application to specific biomedical questions in the timeframe of the proposed project is considered beyond the scope of the program, and should not be included.

Milestones: A milestone is a defined event, achievement, or important stage that is used to indicate the progress of a project. Milestones should be descriptive of what will be done and when it will be completed.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project.
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.

Grant Program: BRAIN Initiative: Proof of Concept Development of Early Stage Next Generation Human Brain Imaging (R01)
Agency: National Institutes of Health RFA-EB-17-001
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-EB-17-001.html
Brief Description: The long-term objective of the overall BRAIN initiative is to accelerate technology development and the use of tools for acquiring fundamental insight about how the nervous system functions in health and disease. This FOA aims to support early stage development of entirely new and novel noninvasive human brain imaging technologies and methods that will lead to transformative advances in our understanding of the human brain.
The FOA solicits unusually bold and potentially transformative approaches and supports small scale, proof of concept development of human brain imaging based on exceptionally innovative, original and/or unconventional concepts. The goal is to accelerate early stage development of promising and entirely new concepts that require some initial stage of development and testing before launching into full scale tool development. Applications submitted in response to this FOA should focus on innovative approaches and proof of principle initial stage development for breakthrough, noninvasive imaging technology to measure human brain processes in ways that are currently unachievable via imaging technologies in live persons. The proposed concepts and approaches are expected to be high-risk, high-impact, and disruptive (c.f. C. Christensen "The Innovator's Dilemma", 1997; http://en.wikipedia.org/wiki/Disruptive_innovation).

This FOA will support early stage development of novel interdisciplinary research and technology for noninvasive next generation human brain imaging, with the intention that the technologies be capable of being used practically and ethically in healthy humans irrespective of disease state at any point in the life span. To this end, this FOA will support interdisciplinary teams from diverse research domains to conduct research and development activities such as data exchange, prototype development projects, and small-scale studies in mammals or humans to generate preliminary results. The teams should be prepared, by the completion of the award period, to commence fully developing the next-generation brain imaging technology for use in healthy humans within the timeframe of the BRAIN Initiative ("BRAIN 2025: A Scientific Vision," http://braininitiative.nih.gov/).

Achieving this goal will likely require leveraging the expertise of an interdisciplinary team. This FOA will provide the needed resources to support teams to meet the grand challenges of developing novel and transformative interdisciplinary approaches to human brain imaging. Academic - industrial partnerships are strongly encouraged, although not required.

Effort supported under this FOA should not be restricted to only new hardware development, but could address any of the steps along the chain of brain imaging data acquisition including hardware and probes. Advanced, adaptive sampling and analytic approaches for image acquisition and image processing that can scale from macro to micro-levels of the brain (in space and/or time) are encouraged. Creative efforts using both theory and experiment to bridge multiple scales in human neuroimaging are strongly encouraged.

Innovative, impactful next generation imaging tools span a wide array of approaches. These include hardware, software, and methods that have a potential to revolutionize the way non-invasive human neuroimaging is conducted today. This FOA solicits applications proposing early stage development of entirely new concepts for next generation human brain imaging, including but not limited to:

- New classes of noninvasive human neuroimaging (e.g. not based on MRI, PET, or MEG)
- Disruptive, new approaches that dramatically improve spatiotemporal resolution of current human neuroimaging
- Behaviorally active human neuroimaging that allows for movement in space/place during imaging in more natural environments while maintaining high resolution
- Innovative approaches for bridging multiple scales in human neuroimaging

Developmental activities and efforts may be supported by this FOA include but are not limited to:

- Developing actionable plans and approaches to further research concepts, and identify anticipated challenges for achieving the proposed team's research focus and goals
- Conducting small-scale studies in mammals or human
- Prototype development, along with pilot studies to provide proof of concept and generate preliminary data

The breakthrough technologies that overcome existing barriers, if fully developed, would enable imaging and measuring brain processes in ways that are currently unachievable, thereby acquiring fundamental novel insight about how the human brain is organized and functions. The noninvasive imaging technologies can be focused at multiple scales from molecules to cells to circuits to larger structures. However, all technologies must have the goal of being applied to live humans within the course of the NIH BRAIN Initiative. Applications that do not have this objective will not be considered responsive and will not be reviewed.

Solutions describing well-established and/or currently existing approaches to human brain imaging, especially those that are commonly used strategies, will not be considered responsive to this FOA unless a compelling case is made that significant, quantifiable advances will result. Applicants proposing proof of concept development of early stage next generation human brain imaging technologies in non-human species that will have little or no potential to be applied to imaging of healthy human brain within the time frame of the BRAIN initiative will be considered unresponsive. Such applicants should consider whether their application might be responsive to other BRAIN funding opportunities.

Applicants proposing full-scale development of entirely new or next generation noninvasive human brain imaging, that are beyond the proof of concept stage, should consider the companion FOA, RFA-EB-17-002 entitled "BRAIN Initiative: Development of Next Generation Human Brain Imaging Tools and Technologies (U01)".

Awards: Application budgets are limited to $300,000 in direct costs in any project year.

Letter of Intent: December 20, 2016

Deadline: January 20, 2017, 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.

Department of Defense/US Army/DARPA/ONR

Grant Program: Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology

Agency: Office of Naval Research ONR BAA N00014-17-S-B001
Website: http://www.onr.navy.mil/~/media/Files/Funding-Announcements/BAA/2017/N00014-17-S-B001.ashx
Brief Description: The ONR seeks a broad range of proposals for augmenting existing or developing innovative solutions that directly maintain, or cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority. The goal of any proposed effort must provide solutions that will establish and maintain pathways of diverse U.S. citizens who are interested in uniformed or civilian DoN (or Navy and Marine Corps) STEM workforce opportunities. As the capacity of the DoN Science and Technology (S&T) workforce is interconnected with the basic research enterprise and STEM education system, ONR recognizes the necessity to support efforts that can jointly improve STEM student outcomes and align with Naval S&T current and future workforce needs. This announcement explicitly encourages projects that improve the capacity of education systems and communities to create impactful STEM educational experiences for students including active learning approaches and incorporating 21st century skills. Projects must aim to increase student engagement in STEM and persistence of students in STEM degrees, while improving student technical capacity. ONR encourages proposals to utilize current STEM educational research for informing project design and advancing our understanding of how and why students choose STEM careers and opportunities of naval relevance.While this announcement is relevant for any stage of the STEM educational system, funding efforts will be targeted primarily toward the future and current DoN (naval) STEM workforce in High School, all categories of Post-Secondary institutions, the STEM research enterprise, and efforts that enhance the current naval STEM workforce and its mission readiness.
Awards: Various
Full Proposal Deadline:
Grant proposals submitted Use this start date
October 1 through December 31, 2016 March 1, 2017
January 1 through March 31, 2017 July 1, 2017
April 1 through June 30, 2017 September 1, 2017
July 1 through September 30, 2017 January 1, 2018
Contact Information:
Further information may be found at
(http://www.onr.navy.mil/ScienceTechnology/Departments/Code-30/All-Programs/C4.aspx).

Department of Energy

Grant Program: Scientific Discovery through Advanced Computing: Scientific Computation Application Partnerships in Earth System Science II – Pilot Projects
Agency: Department of Energy DE-FOA-0001682
Website: http://science.energy.gov/~/media/grants/pdf/foas/2017/SC_FOA_0001682.pdf
Brief Description: This Biological and Environmental Research/Advanced Scientific Computing Research (BERASCR) Scientific Discovery Thru Advanced Computing (SciDAC) Partnership FOA will enable scientists to conduct complex scientific and engineering computations at a level of fidelity needed to simulate real-world climate conditions, by supporting deep, necessary, and productive collaborations between climate scientists on the one hand and applied mathematicians and computer scientists on the other, that overcome the barriers between these disciplines and consequently fully exploit the capabilities of Department of Energy (DOE) High Performance

Computing (HPC) systems in order to accelerate advances in climate science. This SciDAC opportunity targets three particular topics of high-priority for DOE climate research that are expected to be transformed by effective climate-computational partnerships: the development of new and innovative methods to predict sea-level change; the development of a theoretical statistical-numerical framework to improve climate prediction; and the development of improved methods for model -omponent coupling. The next-generation climate model capabilities will contribute to the newly launched Accelerated Climate Model for Energy (ACME) and further its progress toward design of climate codes for leadership class computers and in support of energy science and mission requirements.
Awards: Various
Pre-Application Deadline: January 17, 2017
Full Proposal Deadline: March 15, 2017, 4:00 p.m..
Contact Information:
Dr. Dorothy Koch (BER) 301-903-0105 Dorothy.Koch@science.doe.gov
Dr. Randall Laviolette (ASCR) 301-903-5195 Randall.Laviolette@science.doe.gov

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Grant Program: Power Nitride Doping Innovation Offers Devices Enabling SWITCHES (PNDIODES)
Agency: Department of Energy ARPA-E DE-FOA-0001691
Website: https://arpa-e-foa.energy.gov/#FoaIdbd858bf1-0a35-4ab2-9a64-6490fd8ec1c7
Brief Description: The PNDIODES (Power Nitride Doping Innovation Offers Devices Enabling SWITCHES) program seeks to fund transformational advances and mechanistic understanding in the process of selective area doping in the III-Nitride wide band gap (WBG) semiconductor material system and the demonstration of arbitrarily placed, reliable, contactable, and generally useable p-n junction regions that enable high-performance and reliable vertical power electronic semiconductor devices. The microscopic mechanistic understanding and transformational technologies will address the major obstacle in the fabrication of vertical GaN power electronic devices experienced by most of the teams in the ARPA-E SWITCHES (Strategies for Wide Bandgap, Inexpensive Transistors for Controlling High-Efficiency Systems) program. This challenge has been the lack of a viable GaN selective area doping or selective area epitaxial regrowth process that yields material of sufficiently high quality to enable a defect-free p-n junction on patterned GaN surfaces. Success in this area will allow further development of a revolutionary and powerful class of vertical GaN power electronic devices suitable for 1200V to 10kV broad range of applications (consumer electronics, power supplies, solar inverters, wind power, automotive, motor drives, ship propulsion, rail, and the grid).
Awards: Up to $2,500,000
Submission Deadline for Full Proposal: January 4, 2017

NASA

Grant Program: ROSES 2016: Solar System Working
Agency: NASA NNH16ZDA001N-SSW
Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={BA231B0B-067C-9D42-D770-848B361FC4CA}&path=init

Brief Description: The Solar System Workings program solicits proposals for innovative scientific research related to understanding the atmospheric, climatological, dynamical, geologic, physical, and chemical processes occurring within the Solar System. This program is open to investigations relevant to surfaces and interiors of planetary bodies, planetary atmospheres, rings, orbital dynamics, and exospheres and magnetospheres. The Solar System Workings program values the potential of interdisciplinary efforts to solve key scientific questions. The program also values research in comparative planetology. Research supported by this call may include data synthesis, laboratory studies that examine physical or chemical properties and processes, studies of sample or analog materials of other Solar System bodies, field studies of terrestrial analogs of planetary environments, or theoretical and numerical modeling of physical or chemical processes. This program seeks to understand processes that occur throughout the Solar System, as well as those specific to individual objects and systems, but inform our understanding of the fundamental processes at work. A nonexhaustive list of areas of research called for in this solicitation follows. For conciseness in this list, the term 'planetary' refers to Solar System objects other than the Sun (ranging in size from small objects, like comets and asteroids, through natural satellites, and up to planets) and structures (such as atmospheres, ionospheres, and ring systems).
Awards: $9 - $10M
Proposal Deadline: Step-1 Proposal: November 17, 2016
Contact: hq-ssw@mail.nasa.gov

National Endowment of Humanities

Grant Program: Public Humanities Projects
Agency: National Endowment of Humanities
Website: https://www.neh.gov/grants/public/public-humanities-projects
Brief Description: Public Humanities Projects grants support projects that bring the ideas and insights of the humanities to life for general audiences. Projects must engage humanities scholarship to analyze significant themes in disciplines such as history, literature, ethics, and art, or to address challenging issues in contemporary life. NEH encourages projects that involve members of the public in collaboration with humanities scholars or that invite contributions from the community in the development and delivery of humanities programming. This grant program supports a variety of forms of audience engagement. Applications should follow the parameters set out below for one of the following three formats: • Community Conversations: This format supports one- to three-year-long series of community-wide public discussions in which diverse residents creatively address community challenges, guided by the perspectives of the humanities. • Exhibitions: This format supports permanent exhibitions that will be on view for at least three years, or travelling exhibitions that will be available to public audiences in at least two venues in the United States (including the originating location). • Historic Places: This format supports the interpretation of historic sites, houses, neighborhoods, and regions, which might include living history presentations, guided tours, exhibitions, and public programs. NEH encourages projects that explore humanities ideas through multiple formats. Proposed projects may include complementary components that deepen an audience's understanding of a subject: for example, a museum exhibition might be accompanied by a website, mobile app, or discussion programs. Your application must identify one primary format for your project and follow the application instructions for that format.
Awards: Applicants may also request a combination of outright and federal matching funds. For example, if an applicant is requesting $40,000 in NEH funds, and the applicant includes in its cost

sharing $5,000 from an eligible third-party donor, the applicant should request $5,000 in federal matching funds. The balance of the NEH request ($35,000) would then be for outright funds. NEH may offer funding at a different level than that requested. In some instances, NEH may offer federal matching funds only, or it may offer a combination of federal matching and outright funds in response to a request for outright funds.
Proposal Deadline: January 11, 2017
Contact: Division of Public Programs National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8269 publicpgms@neh.gov publicpgms@neh.gov

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Grant Program: Creating Humanities Communities
Agency: National Endowment of Humanities
Website: https://www.neh.gov/grants/challenge/creating-humanities-communities
Brief Description: The Creating Humanities Communities program provides matching grants to help stimulate and proliferate meaningful humanities activities in states and U.S. territories underserved by NEH's grantmaking divisions and offices. Grantees will use the funds to establish and undertake new humanities programs. The goal of these grants is to make connections between organizations that will foster community cohesion on a local or regional level. Applicants may define community in a variety of ways (by focusing, for example, on a place such as a village or town, or on a common interest or a common theme), and the programs that the cooperating institutions carry out together must aim to enhance the importance of the humanities in people's lives.

Projects to create a humanities community might include, for example, collaborations linking

- a public library and a nearby community college to research, write, and produce a series of video biographies of the town's important personalities (to be presented in public programs at the local historical movie palace);
- several railroad museums throughout a state that join forces to write a transportation-based curriculum module for use in fourth-grade social studies classes;
- three Native American tribes to establish a cultural heritage trail highlighting important sites and collections;
- a veterans' group and a high school in developing intergenerational family programs at local historic sites; and
- a public radio station and the philosophy department at a local college to host public programs discussing industry and ethics to commemorate the hundredth anniversary of the town's paper mill.

Applicants to this program must form collaborative partnerships with at least two and at most five institutions (including the applicant organization). These partnerships may involve organizations such as public libraries, cultural centers, museums, historical societies, colleges (including community colleges) and universities, archival repositories, historic houses, school districts, civic centers, or other cultural entities.
Awards: Select the amount you wish to request from NEH from the drop-down menu. The options are $30,000, $60,000, $90,000, and $150,000. Your selection will cause other fields on the form to automatically populate, including the section titled Breakdown by Year.
Proposal Deadline: February 15, 2017
Contact: Office of Challenge Grants National Endowment for the Humanities 400 Seventh Street, SW Washington, DC 20506 202-606-8309 challenge@neh.gov challenge@neh.gov