

NJIT Research Newsletter

Issue: ORN-2016-034

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/>

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(Related to research funding)

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NJIT Research Related Events hosted by the Office of Research

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 2016 Event Schedule:

Office of Research Open House: September 26, 2016, 12:00 PM - 4:00 PM (Light Lunch), Ballroom A

NJIT Panel Discussion Event on NSF Faculty Early Career Development Program (CAREER) Award: October 10, 2016; 2:00 PM – 3:30 PM, 112 Eberhardt Hall

Undergraduate Research and Innovation Workshop (Students Seed Grants): October 20, 2016, 2:00 PM-5:30 PM, Ballroom A

Faculty Research Advisory Board Meeting: November 14, 2016, 12:00 PM-2:00 PM, (light lunch), Ballroom B

2016 NJIT Research Center Showcase: November 17, 2015, 11:00 AM–4:00 PM (Light Lunch and networking), Ballroom A & B

Undergraduate Research and Innovation Workshop (Students Seed Grants): December 8, 2016, 2:00 PM-5:30 PM, Ballroom A

Fall 2016 Office of Research Open House
Ballroom A, Campus Center
September 26, 2016; 12.00 PM to 4.00 PM
(Light lunch will be served)

We are pleased to announce the “Fall 2016 Research Open House” hosted by the Office of Research with participation from offices of Accounts Payable, Budget Purchasing, Treasury, and Human Resources. We will have 9 information stations (tables) with respective staff representatives on research grants related processes. During the open house, faculty and staff members can stop by a specific information station, ask a question to the staff on the table, and move to another table to ask another question. The objective is to provide information about recent changes and answer questions of research faculty and staff with a conversation that will help strengthening our relationships in the NJIT community and also provide feedback on recent changes. The agenda is as follows.

12:00 PM – 12:40 PM: Greetings, Networking and Lunch

12:40 PM – 12:50 PM: Welcome and Opening Remarks by Provost Fadi Deek

12:50 PM – 1:10 PM: Introductions and Summary of Recent Changes in Research Related Processes by Vice Provost for Research Atam Dhawan

1:10 PM – 3:50 PM: Faculty and Staff Interactions at Information Stations

3:50 PM – 3:55 PM: Closing Remarks

Research Open House 2016
Information Stations and Staff Representatives
(Please visit anti-clockwise from Information Station 1 to 9)

- 1. Ambassadors-Proposal Submission Processes**
- 2. Implementation of Streamlyne Grant Management Software**
- 3. Research Compliance**
- 4. Subcontracts, Consulting, Legal Agreements and IP**
- 5. Personnel Requisitions & Personnel Action Forms**
- 6. Fair Labor Standard Act**
- 7. Purchase Requisitions, Travel Reimbursement and Vendor Payment:**
- 8. Post-Award, Budget Management, Federal Uniform Guidance, Financial Reporting and Grants Accounting**
- 9. URI Opportunities/grants for Undergraduate Students**

NJIT Panel Discussion Event
NSF Faculty Early Career Development Program (CAREER) Award
October 10, 2016; 2.00 PM – 3.30 PM
112 Eberhardt Hall

Faculty Panel

Tara Alvarez, Professor, Biomedical Engineering

Andrei Sirenko, Professor, Physics

Alexei Khalizov, Assistant Professor, Chemistry and Environmental Sciences

Casey Diekman, Assistant Professor, Mathematical Sciences

Moderator: Atam Dhawan, Vice Provost for Research

Scope: The NSF Faculty CAREER proposal submission guidelines will be presented with best practices. All panelists, past and current winners of NSF Faculty CAREER Award will share their experiences on preparation and submission of NSF CAREER proposal. All eligible faculty members are invited to participate in the panel discussion and ask questions about successful proposal submission to panelists.

NSF Faculty CAREER Award: The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Such activities should build a firm foundation for a lifetime of leadership in integrating education and research. NSF encourages submission of CAREER proposals from junior faculty members at all CAREER-eligible organizations and especially encourages women, members of underrepresented minority groups, and persons with disabilities to apply.

Grant Opportunity Alerts

Keywords and Areas Included in Grant Opportunity Alerts

NJIT: Undergraduate Research and Innovation (URI) Student Seed Grants

NSF: Scalable Parallelism in the Extreme (SPX); Scalable Nano-manufacturing for Integrated Systems; Algorithms in the Field (AitF); Science of Learning (SL); Solar and Planetary Research Grants (SPG); Smart and Connected Health; ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers

NIH: NIAID Career Transition Award (K22); Antimicrobial Resistance Rapid, Point-of-Care Diagnostic Test Challenge Competition

Department of Defense/US Army/DARPA/ONR: Medical Simulation and Information Sciences; Microsystems Technology Office Office-wide Broad Agency Announcement

Department of Energy: Request For Information On Potential Technical Focus Areas For Advanced Manufacturing - Related Traineeships

NASA: Research Opportunities for Post-Doctoral Fellowships in Space Biology to Study the Microbiome of the ISS as a Built Environment; NASA Space Technology Research Fellowship

Bill and Melinda Gates Foundation: Global Challenges

Fahs-Beck Fund For Research And Experimentation: Faculty/Post-Doc Research Awards.

McKnight Endowment Fund for Neuroscience: McKnight Scholar Awards

Recent Research Grant and Contract Awards

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

PI: Kamlesh Sirkar (PI)

Department: Chemical, Biological and Pharmaceutical Engineering

Grant/Contract Project Title: Improved Hydrogen Purification

Funding Agency: Compact Membrane Systems, Inc (CMS)

Duration: 06/26/14-09/30/16

PI: Angelo Perna (PI)
Department: McNair Achievement Program
Grant/Contract Project Title: NJIT Ronald E. McNair Post-baccalaureate Achievement Program
Funding Agency: US Department of Education
Duration: 10/01/12-09/30/17

PI: Linda Cummings (PI) and Lou Kondic (Co-PI)
Department: Mathematical Sciences
Grant/Contract Project Title: GOALI: Predicting performance and fouling of membrane filters
Funding Agency: NSF
Duration: 09/15/16-08/31/19

PI: Maggie Chang (PI)
Department: School of Management
Grant/Contract Project Title: CPS: Synergy: Collaborative Research: Real-time Data Analytics for Energy Cyber-Physical Systems
Funding Agency: NSF
Duration: 08/24/16-08/31/18

PI: Kurt Rohloff (PI)
Department: Cynbersecurity Research Center, Computer Science
Grant/Contract Project Title: PALISADE: Program obfuscation Advancement with Lattice Implementation for Scalable Application Demonstration of Efficiency
Funding Agency: DARPA
Duration: 08/03/15-11/02/16

PI: Gale Spak (PI)
Department: CPE
Grant/Contract Project Title: Advanced Manufacturing Talent Network
Funding Agency: NJ DOL
Duration: 01/01/16-13/31/16

PI: Brittany Froese (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Numerical Methods for Optimal Transportation
Funding Agency: Simons Foundation
Duration: 09/01/16-08/31/17

PI: Michel Boufadel (PI)
Department: Natural Resources Development and Protection Center
Grant/Contract Project Title: Bench Scale Treatability Study
Funding Agency: Langan Engineering and Environmental Services, Inc.
Duration: 12/17/14-06/15/17

PI: William Marshall
Co-PIs: Costos Gogos, John Federici, Laurent Simon, Alexander Haimovich, Haim Grebel, Somenath Mitra, and Zafar Iqbal
Department: Chemical, Biological and Pharmaceutical Engineering , Physics, Electrical and Computer Engineering, Chemistry and Environmental Sciences

Grant/Contract Project Title: Development, Integration, Testing, and Training (DITT) of Systems and Processes for Systems & Facilities Optimization Mod 4
Funding Agency: US Army – Picatinny Arsenal
Duration: 09/16/16-09/15/17

In the News...

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

Energy and Commerce Committee Congressional Hearing on Robotics: Robots have transformed a number of industries from manufacturing, health care, energy, and beyond. The International Federation of Robotics (IFR) reports that global sales of industrial robots rose twelve percent in 2015 to 248,000 units. By 2018, the IFR estimates that 2.3 million robotic units will be deployed worldwide in factories, a fifty percent increase from 2009. The United States saw a three percent increase in sales during that time frame.¹⁴ Sales in South Korea, Japan, China, Germany, and the United States account for seventy five percent of the world's industrial robotics sales.¹⁵ Top industries purchasing industrial robots include the metal industry, the plastics and rubber industry, and the electronics industry.

Major universities across the country have developed robotics centers. For example, Carnegie Mellon is home to the Robotics Institute's National Robotics Engineering Center focused on connecting research and development with commercialization through established proof of concepts and pre-production prototypes. Stanford University is home to the Stanford Robotics Lab where OceanOne, a "bimanual underwater humanoid robot with haptic feedback," completed its maiden voyage in April 2016. Massachusetts Institute of Technology's Biomimetic Robotics Lab is working on the HERMES humanoid robot system, and the Field and Space Robotics Laboratory is working on a sensorless tactile exploration application for oil well mapping and long-life micro fuel cell power-supplies for field sensors. These are only a few examples, but they are illustrative of the breadth and depth of work in the United States dedicated to advanced robotics technologies and applications.. More information on <https://energycommerce.house.gov/hearings-and-votes/hearings/disrupter-series-advanced-robotics> .

Funding Agencies Collaborate on the Grand Challenge on Brain Science and Engineering: Due to revolutionary new technologies, neuroscientists are poised to significantly advance our understanding of the brain and behavior, with profound implications for health and society. To enhance collaboration and better coordinate global efforts in fundamental neuroscience research, the National Science Foundation (NSF) will support a conference of scientists and government representatives from countries with significant investments in neuroscience research. Attendees, many of whom are members of the [U.S. BRAIN Initiative](#), a public-private collaborative effort aimed at accelerating the development and application of new technologies to revolutionize our understanding of the brain, will exchange ideas and information about their efforts and identify new opportunities for collaboration. NSF and The Kavli Foundation will support the event, hosted by Rockefeller University in cooperation with Columbia University.

"Brain diseases and disorders affect millions of families worldwide, leading to billions of dollars in medical expenses and lost productivity," said NSF Director France Córdova, who will deliver opening remarks at the event. "This event is intended to promote collaboration and cooperation in emerging, large-scale international brain projects to further advance

neuroscience research. NSF plays a pivotal role in funding brain research, bringing the research community together and shaping the vision for a global brain initiative."

The U.S. State Department, the Global Partnerships Forum, The Kavli Foundation and NSF will also host a complementary event at the U.N. headquarters in New York City on Sept. 19. More information on

http://www.nsf.gov/news/news_summ.jsp?cntn_id=189711&WT.mc_id=USNSF_51&WT.mc_ev=click

The BRAIN Initiative: <http://www.braininitiative.org>

NSF Understanding the Brain: <https://www.nsf.gov/brain>

Coordinating Global Brain

Projects: <http://www.rockefeller.edu/research/intercenter/globalbrain>

Equity PARTNERS: The National Science Foundation's Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE) program "will support partnerships of two or more non-profit academic institutions and/or STEM organizations to increase gender equity in STEM academics. . . . Partnering STEM organizations can include any entity eligible for NSF support. Partners may include professional societies, industry, non-profit organizations, publishers, policy and research entities, state systems of higher education, higher education organizations, as well as institutions of higher education." Join a [pre-proposal webinar Sept. 21](#). Please see information about the seminar in the next section.

Webinar and Events

Event: A Global Conversation to Advance Brain Research

When: September 19, 2016 8.00 AM – 5.30 PM

Where: Caspary Auditorium at The Rockefeller University

Website:

http://www.nsf.gov/news/news_summ.jsp?cntn_id=189711&WT.mc_id=USNSF_51&WT.mc_ev=click

Brief Description: To enhance collaboration and better coordinate global efforts in fundamental neuroscience research, the National Science Foundation (NSF) will support a conference of scientists and government representatives from countries with significant investments in neuroscience research. Attendees, many of whom are members of the [U.S. BRAIN Initiative](#), a public-private collaborative effort aimed at accelerating the development and application of new technologies to revolutionize our understanding of the brain, will exchange ideas and information about their efforts and identify new opportunities for collaboration.

Coordinating Global Brain Projects: To facilitate international collaborations to advance our understanding of the brain by bringing together scientists and administrators who represent public and private neuroscience projects worldwide. For the agenda and list of speakers, visit the [official workshop webpage](#). Use the hashtag [#globalbrain](#) to follow the conversation on social media or [tune in live](#). To learn more about the grand challenges for global brain science, read a [summary](#) of discussions that took place at two recent workshops. For the latest on NSF's efforts to understand the brain, visit [NSF.gov/brain](#).

Event: ADVANCE Partnerships pre-proposal Technical Assistance Webinars

When: September 21, 2016 2.00 PM – 3.00 PM

Website:

http://www.nsf.gov/events/event_summ.jsp?cntn_id=135008&WT.mc_id=USNSF_13&WT.mc_e v=click

Brief Description: The ADVANCE program office will hold a pre-proposal technical assistance webinar on the ADVANCE *Partnership* track described in the ADVANCE solicitation 16-594.

The *Partnership* track will support partnerships of two or more non-profit academic institutions and/or STEM organizations to increase gender equity in STEM academics. Projects should have national or regional impact and result in systemic change within one STEM discipline, several STEM disciplines, or all STEM disciplines. Partners may include professional societies, industry, non-profit organizations, publishers, policy and research entities, state systems of higher education, higher education organizations, as well as institutions of higher education. *Partnership* proposals must include a final year focused on sustainability and/or scale-up, communication, and evaluation. The other ADVANCE tracks will be outlined briefly during this webinar so you are aware of the different program tracks but the focus will be on the *Partnership* track.

Please be sure to review the solicitation for the official guidelines and information on preparing and submitting proposals before the webinar so you can ask questions during the Q and A. Note that for *Partnership* proposals non-binding letters of intent are required by December 14, 2016 and full proposals are due January 11, 2017.

Registration Website:

https://nsf.webex.com/mw3100/mywebex/default.do?service=1&siteurl=nsf&nomenu=true&main_url=%2Fmc3100%2Ffe.do%3Fsiteurl%3Dnsf%26AT%3DMI%26EventID%3D494004607%26UID%3D0%26Host%3DQUhTSwAAAAKfbUDT18065GRZpculB3BklT2eI88YekMxK6lUJdkgZa6P0rO5UEG2YfORBbOGfeMgSjtqnkKNBELDtsCdk9nG0%26RG%3D1%26FrameSet%3D2%26RGID%3Drbc44b12e8a6cd6a731f5f6d91be983cd

Event: Safe Genes Proposer Day; Solicitation Number: DARPA-SN-16-67

When: Friday, September 30, 2016 from 8:30 AM to 5:00 PM ET at the United States Institute of Peace (2301 Constitution Ave NW, Washington, DC 20037). Advance registration is required.

Website:

<https://www.fbo.gov/index?s=opportunity&mode=form&id=9eeb8015fe08ce14143d5fd77f21f38c&tab=core&cvview=0>

Brief Description: The Biological Technologies Office (BTO) of the Defense Advanced Research Projects Agency (DARPA) is hosting a Proposers Day for the potential proposer community in support of a planned Broad Agency Announcement (BAA) for the Safe Genes Program.

The goals of the Proposers Day include:

1. Introducing the Safe Genes program vision and goals;
2. Explaining the mechanics of a DARPA program in general and the objectives and milestones of this program in particular; and
3. Encouraging and promoting teaming arrangements among organizations that have the relevant expertise, research facilities, and capabilities for executing research and development responsive to the Safe Genes program goals.

The Proposers Day will include brief overview presentations by government personnel, an information session to respond to questions from participants, "lightning" talks (three minutes, one PowerPoint slide) and posters for potential proposers to highlight technical capability or interest to promote teaming, and private sidebar meetings with the DARPA

government team and potential proposer teams that can be scheduled beforehand on the registration website.

Attendance at this event is not a requirement for submission of a proposal or selection for funding. Information relayed during the Proposers Day will be made available on the BTO section of the DARPA Opportunities page: <http://www.darpa.mil/work-with-us/opportunities> .

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

Undergraduate Research

Grant Program: Undergraduate Research and Innovation (URI) Student Seed Grants

Phase-1 URI Student Seed Grants

Phase-2 URI Student Seed Grants

Funding: NJIT Internal and External Grants

Website: <http://centers.njit.edu/uri/programs/index.php>

Description: NJIT 2020 Vision strategic plan emphasizes providing undergraduate students an outstanding education with opportunities to have research and innovation experience as part of their NJIT learning enabling them to succeed and assume leadership roles in our society.

The Undergraduate Research and Innovation (URI) program has evolved as a significant part of the education and research experience at NJIT. The URI website <http://centers.njit.edu/uri/> summarizes undergraduate research and innovation opportunities and provides information about resources and competitions. The proposal can be submitted for Track-1 Technology/Product Development and Innovation, or Track-2 Application based Research.

We are pleased to announce the Undergraduate Research and Innovation Student Grant (URISG) program to provide students Phase-1 Student Seed Grants of \$500 per project to pursue preliminary research or demonstrate an initial proof-of-concept/prototypes. URI Phase-2 Student Seed Grants provides up to \$3,000 per project to pursue research further or develop a complete prototype. Funds can only be used to order project supplies and prototyping through the Office of Undergraduate Research and Innovation. Phase-2 proposals may be submitted by former Phase-1 Student Seed Grant winners who have completed Phase-1 work, as well as new students who have a research or product idea that has shown the preliminary proof of concept, market assessment or application-based research to establish the need, significance and basic approach. The student may prepare URI Student Phase-1 or Phase-2 Seed Grant proposals following the template with format and guidelines on the URI website <http://centers.njit.edu/uri/programs/index.php>

Information Session: Information session on the proposal format and guidelines on how to prepare the URI Student Seed Grant proposals will be held on September 27, 2016 from 12.00 PM to 2.00 PM in Room 240, Campus Center. A pizza lunch will be served. URI External

Advisory Board members will be available to discuss format requirements and review process for student seed grant proposals.

Awards: Expected number of awards: 15-20

Up to \$500 for Phase-1 Student Seed Grants

Up to \$3,000 for Phase-2 Student Seed Grants

Deadline: All proposals should be submitted by **October 14, 2016** following the URI Phase-1 or Phase-2 Student Project Grant Proposal Format Guidelines posted on the URI website <http://centers.njit.edu/uri/programs/index.php>. Students working with a faculty member may submit URI Student Seed Grant proposals in the required format to Ms. Angela Retino at aretino@njit.edu. All proposals will be reviewed to select up to 15 finalist proposals for presentation to the External Advisory Board in the URI Workshop to be held on October 20, 2016 at the Campus Center Ballroom A from 2.00 PM to 5.00 PM.

Contact Information: Any questions about the program or Information Session should be directed to Ms. Angela Retino, URI Program Administrator, at aretino@njit.edu.

Internal Competition: National Science Foundation

Grant Program: National Science Foundation Research Traineeship (NRT) Program

Agency: National Science Foundation NSF 16-503

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16503/nsf16503.htm>

Brief Description: The NSF Research Traineeship (NRT) program is designed to encourage the development and implementation of bold, new, and potentially transformative models for STEM graduate education training. The NRT program seeks proposals that ensure that graduate students in research-based master's and doctoral degree programs develop the skills, knowledge, and competencies needed to pursue a range of STEM careers. The NRT program includes **two tracks:** the **Traineeship Track** and the **Innovations in Graduate Education (IGE) Track**. For More information, please see the previous NJIT Research Newsletter **Issue: ORN-2016-032** or **Issue: ORN-2016-033**.

NJIT Internal Competition for Selection of Proposals

Internal Competition Deadline: Submit an internal Letter of Intent following the NSF LOI instructions (copied below) to your college/school dean by October 7, 2016.

Dean's recommendations with the internal Letter of Intent (not more than 2 for the Traineeship Track and 2 for the Innovation in Graduation Track) should be submitted to the Office of Research for Institutional Reviews and selection by October 17, 2016. PIs and deans will be notified for selected LOIs by October 24.

National Science Foundation

Grant Program: Scalable Parallelism in the Extreme (SPX)

Agency: National Science Foundation NSF 16-605

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16605/nsf16605.htm>

Brief Description: Computing systems have undergone a fundamental transformation from the single-core processor-devices of the turn of the century to today's ubiquitous and networked devices with multicore/many-core processors along with warehouse-scale computing via the cloud. At the same time, semiconductor technology is facing fundamental physical limits and single-processor performance has plateaued. This means that the ability to achieve performance

improvements through improved processor technologies alone has ended. In recognition of this obstacle, the recent [National Strategic Computing Initiative](#) (NSCI) encourages collaborative efforts to develop, “over the next 15 years, a viable path forward for future high-performance computing (HPC) systems even after the limits of current semiconductor technology are reached (the 'post-Moore's Law era').”

Exploiting parallelism is one of the most promising directions to meet these performance demands. While parallelism has already been studied extensively and is a reality in today's computing technology, the expected scale of future systems is unprecedented. At extreme scales, factors that have small impacts today can become highly significant. For example, even short serial program sections can prove destructive to performance. Heterogeneity of processing elements [Central Processing Units (CPUs), Graphics-Processing Units (GPUs), and accelerators] and their memory hierarchies pose significant management challenges. High system complexity may lead to unacceptable latencies and mean time between failures, even if built with highly reliable components. Furthermore, the interconnectedness of large-scale distributed architectures poses an enormous challenge of understanding and providing guarantees on performance behavior. These are just four of many issues arising in the new era of parallel computing that is upon us.

The Scalable Parallelism in the Extreme (SPX) program aims to support research addressing the challenges of increasing performance in this modern era of parallel computing. This will require a collaborative effort among researchers in multiple areas, from services and applications down to micro-architecture. SPX encompasses all five NSCI [Strategic Objectives](#), including supporting foundational research toward architecture and software approaches that drive performance improvements in the post-Moore's Law era; development and deployment of programmable, scalable, and reusable platforms in the national HPC and scientific cyberinfrastructure ecosystem; increased coherence of data analytic computing and modeling and simulation; and capable extreme-scale computing. Coordination with industrial efforts that pursue related goals are encouraged.

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

Letter of Intent: Not Required

Full Proposal Submission Due Date: January 10, 2017

Contacts:

- Anindya Banerjee, Program Director, CISE/CCF, telephone: (703) 292-7885, email: abanerje@nsf.gov
- Tracy Kimbrel, Program Director, CISE/CCF, telephone: (703) 292-8910, email: tkimbrel@nsf.gov
- Tao Li, Program Director, CISE/CCF, telephone: (703) 292-8238, email: taoli@nsf.gov

Grant Program: Scalable Nano-manufacturing for Integrated Systems

Agency: National Science Foundation NSF 16-604

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16604/nsf16604.htm>

Brief Description: The National Science Foundation (NSF) announces a 7th (seventh) year of a solicitation on collaborative research and education in the area of Scalable Nanomanufacturing for Integrated Systems (SNM-IS). This solicitation is in response to and is a component of the National Nanotechnology Initiative (NNI) Signature Initiative: Sustainable Nanomanufacturing - Creating the Industries of the Future (<http://www.nano.gov/NSINanomanufacturing>).

Many nanofabrication techniques have demonstrated the ability to synthesize small quantities of nanomaterials and nanostructures for characterization and evaluation and simple nanodevices for analysis and testing purposes. The emphasis of the Scalable Nanomanufacturing for

Integrated Systems (SNM-IS) solicitation is on research in new nano-scale manufacturing concepts and integration methods to realize complex integrated systems based on nanotechnology. The research will focus on overcoming the key scientific and engineering barriers that prevent the translation of laboratory-scale discoveries in nano-enabled integrated systems to an industrially relevant scale, reliably, affordably and within sustainability and environmental, health and safety (EHS) guidelines. The goal of the SNM-IS solicitation is to study and formulate the fundamental principles of scalable nanomanufacturing and integration for nanotechnology-based integrated systems towards the eventual manufacture of useful nano-enabled products.

The SNM-IS solicitation is driven by the discovery of numerous new nanomaterials with unique properties (2D atomic layer, transition metal dichalcogenides, van der Waals heterostructures, perovskites, metal-organic frameworks, metamaterials, origami, etc.) in recent years and invention of many novel fabrication methods (nano additive manufacturing, strain engineering processing, bio-nanomanufacturing, etc.) to synthesize nanostructures with different geometries, 'microstructures' and functionalities. These nanomaterials and nanostructures need to be assembled into larger-scale components and devices, which, in turn, need to be integrated into higher-order subsystems and systems so novel and useful products can be made for a variety of applications in the areas of functional and structural materials, mechanics, optics, electronics, chemical, biomedical, catalysis, environmental, energy, sensing, security, defense, etc. Integration will need to be across material sets (0D, 1D, 2D, 3D, hierarchical nanoparticles, etc.), across length-scales (molecular to nano to micro to meso to macro), and across function (mechanical, electrical, optical, chemical, biological, thermal, etc.) and across processes (top-down, bottom-up). Integration will involve the study and implementation of hybrid manufacturing and assembly processes and methods. The research will be driven by the need to understand and establish, among others, design rules for integrated systems, manufacturing and integration process and control models, and measurement science and technology. The desired outcome will be a nano-enabled integrated system that combines many different functions together to work as one entity and that is made up of component subsystems that are designed to perform in a unified manner.

The SNM-IS solicitation seeks proposals that investigate novel scalable nanomanufacturing and integration methods for nano-enabled integrated systems with a clear commercial relevance. Proposals should consider addressing key aspects of the nanomanufacturing value chain comprised of nano-scale building-blocks → complex nanomaterials and nanostructures → functional components and devices → integrated subsystems and systems:

- Novel nanomanufacturing processes and integration strategies for large-area or continuous manufacturing or customized manufacturing of nano-scale materials and structures and their assembly into larger-scale components and devices and the integration of the components and devices into higher order structures, subsystems and systems;
- Fundamental scientific research in key, well-defined technical areas that are compellingly justified as approaches to overcome critical scientific and engineering barriers to nanomanufacturing scale-up, customized nanomanufacturing and multi-scale integration; and
- Design principles for production systems leading to nanomanufacturing tools, and platforms; identification of manipulation and control methodologies, and metrology, instrumentation, and standards needed for process monitoring and control and to assess quality and yield; determination of process models and simulations to guide processing and integration; identification of environmental and energy footprints, as applicable.

Competitive proposals will incorporate the following three elements in their research plans:

1. A persuasive case that the nano-enabled integrated system to be manufactured has or is likely to have sufficient demand to justify eventual scale-up or meet demands for low-volume specialty materials or device systems;
2. A clearly identified set of research challenges requiring science and engineering solutions that must be addressed to enable the realization of integrated systems for the cost-effective manufacture of high quality nano-enabled products in large quantities or low-volume specialty products; and
3. A compelling research plan with clear objectives and approaches to overcome the identified research challenges. This may include environmentally benign approaches and life-cycle considerations.

These elements should be carefully explained and justified in proposals, since both the scientific novelty and the feasibility of the methods being researched will be important evaluation factors.

The SNM-IS solicitation is NOT seeking research proposals in large-scale manufacturing of single component nanomaterials and nanostructures. Novel ideas in novel nanomanufacturing processes and scale-up may be sent to the core Nanomanufacturing (NM) Program.

Competitive proposals are expected to address the training and education of students in nanomanufacturing, system integration and related areas. Since Scalable Nanomanufacturing for Integrated Systems research will involve addressing multiple scientific and engineering challenges in the design and manufacture of complex nano-enabled integrated systems, an interdisciplinary approach is strongly encouraged. Disciplines could range from the physical sciences (physics, chemistry, biology, materials science and others) to engineering (materials, mechanical, electrical, chemical, biomedical, industrial and others) and could include mathematics and computer science. While not required, collaborative activities with industrial or small business companies (e.g., through the GOALI program) are welcome and collaborations in which industrial partners develop industrially relevant test-beds where university and company researchers can experiment and interact are encouraged. It is advisable that such firms be consulted early in the proposal preparation process and that their intellectual contributions be clearly explained in the proposal.

Other research and education projects in nanoscale science and engineering will continue to be supported in the appropriate programs and divisions.

Awards: Standard Grants. Anticipated funding amount: \$5,000,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: January 13, 2017

Limit on Number of Proposals per Organization: **1.** An academic institution – a university, or a campus in a multi-campus university -- may submit no more than one (1) proposal on which it is the lead organization in response to this solicitation. Potential PIs are advised to contact their institutional office of research regarding processes used to select proposals for submission. The same organization may be a collaborative partner in any number of other multi-organization group proposals in which it is not the lead. A proposal involving more than one organization must be submitted as a single proposal in which a single award is requested, with the managing principal investigator from the lead organization and subawards administered by the lead organization to any other participating organizations.

Internal Notification and Competition: **Any PI interested in submitting this proposal must notify Atam Dhawan, Vice Provost for Research at dhawan@njit.edu through the office of the respective college dean with a Letter of Intent no later than November 1, 2016. College and institutional level reviews will be set-up as needed.**

Contacts:

- Khershed Cooper, telephone: (703) 292-7017, email: khcooper@nsf.gov
 - Nora F. Savage, telephone: (703) 292-7949, email: nosavage@nsf.gov
 - Nadia El-Masry, telephone: (703) 292-8153, email: nelmasry@nsf.gov
 - Diana Farkas, telephone: (703) 292-7576, email: dfarkas@nsf.gov
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Grant Program: Algorithms in the Field (AitF)**Agency: National Science Foundation NSF 16-603****RFP Website:** <http://www.nsf.gov/pubs/2016/nsf16603/nsf16603.htm>

Brief Description: Algorithms in the Field encourages closer collaboration between two groups of researchers: (i) theoretical computer science researchers, who focus on the design and analysis of provably efficient and provably accurate algorithms for various computational models; and (ii) other computing and information researchers including a combination of systems and domain experts (very broadly construed – including but not limited to researchers in computer architecture, programming languages and systems, computer networks, cyber-physical systems, cyber-human systems, machine learning, artificial intelligence and its applications, database and data analytics, etc.) who focus on the particular design constraints of applications and/or computing devices. Each proposal must have at least one co-PI interested in theoretical computer science and one interested in any of the other areas typically supported by CISE. Proposals are expected to address the dissemination of both the algorithmic contributions and the resulting applications, tools, languages, compilers, libraries, architectures, systems, data, etc.

Awards: Standard Grants. Anticipated funding amount: \$9,000,000**Letter of Intent:** Not Required**Full Proposal Submission Due Date:** January 12, 2017 - January 26, 2017**Contacts:**

- Tracy Kimbrel, Program Director, CISE/CCF, telephone: (703) 292-8910, email: tkimbrel@nsf.gov
 - Thyagarajan Nandagopal, Program Director, CISE/CNS, telephone: (703) 292-8950, email: tnandago@nsf.gov
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Grant Program: Science of Learning (SL)**Agency: National Science Foundation NSF PD 16-004Y****RFP Website:**http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5567&org=NSF&sel_org=NSF&from=fund

Brief Description: The Science of Learning program supports potentially transformative basic research to advance the science of learning. The goals of the SL Program are to develop basic theoretical insights and fundamental knowledge about learning principles, processes and constraints. Projects that are integrative and/or interdisciplinary may be especially valuable in moving basic understanding of learning forward but research with a single discipline or methodology is also appropriate if it addresses basic scientific questions in learning. The possibility of developing connections between proposed research and specific scientific, technological, educational, and workforce challenges will be considered as valuable broader impacts, but are not necessarily central to the intellectual merit of proposed research. The program will support research addressing learning in a wide range of domains at one or more levels of analysis including: molecular/cellular mechanisms; brain systems; cognitive affective,

and behavioral processes; and social/cultural influences. The program supports a variety of methods including: experiments, field studies, surveys, secondary-data analyses, and modeling.

Examples of general research questions within scope of the Science of Learning program include:

- How does learning transfer from one context to another or from one domain to another? How is learning generalized from specific experiences? What is the basis for robust learning that is resilient against potential interference from new experiences? How is learning consolidated and reconsolidated from transient experience to stable memory?
- How does the structure of the learning environment impact rate and efficacy of learning? For example, how do timing, content, learning context, developmental time point and type of engagement (e.g., active learning, group learning) impact learning processes and outcomes?
- How can we integrate research findings and insights across levels of analysis, relating understanding of cellular and molecular mechanisms of learning in the neurons to circuit and systems-level computations of learning in the brain, to cognitive, affective, social, and behavioral processes of learning? What concepts, tools, or questions will provide the most productive linkages of across levels of analysis?
- How can insights from biological learners contribute and derive new theoretic perspectives to computational learning systems, neuromorphic engineering, materials science, and nanotechnology? Biological and non-biological systems and social systems can all display learning. What can integration across these different domains contribute to a general understanding of learning?

Awards: The Science of Learning Centers Program is currently only accepting proposals for Workshops, EARly-concept Grants for Exploratory Research (EAGER), Rapid Response Grants (RAPID), and Supplements to NSF awards (including those funded by other programs). PIs must contact the NSF program officer prior to submission of an EAGER or RAPID proposal.

Full Proposal Submission Due Date: January 18, 2017

Contacts:

- Soo-Siang Lim-Lead Program Director slim@nsf.gov (703) 292-7878
- Don Rimon-Program Specialist drimon@nsf.gov (703) 292-2960

Grant Program: Solar and Planetary Research Grants (SPG)

Agency: National Science Foundation NSF 16-602

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16602/nsf16602.htm>

Brief Description: The Solar and Planetary Research Grants (SPG) Program provides individual investigator and collaborative research grants for observational, theoretical, laboratory, and archival data studies in the science of our solar system and extrasolar planetary systems. Proposals for projects and tools that enable and enhance research in those areas may also be submitted.

Proposals addressing the astronomy and astrophysics of stars, our galaxy, external galaxies, and cosmology will be handled under a companion NSF solicitation, [NSF 16-574](#), Astronomy and Astrophysics Research Grants (AAG), not under the SPG Program. Proposals that address planet formation within circumstellar disks are appropriate for this SPG Program; proposals that address star formation are better directed to the AAG Program and will not be considered by the SPG Program. Proposals submitted to one of these two programs, and deemed more appropriate for the other program, will be routed to the other program and considered during the next proposal submission season for that program. Potential proposers are cautioned

that this could delay a proposal considered more appropriate to the AAG Program for up to a year.

Proposals that are solely or predominantly for the acquisition, analysis, or interpretation of space-based data from NASA-supported missions will be returned without review.

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

Letter of Intent: Not Required

Full Proposal Submission Due Date: Anytime

Contacts:

- Faith Vilas, telephone: (703) 292-8225, email: fvilas@nsf.gov
- David Boboltz, Jr., telephone: (703) 292-2199, email: dboboltz@nsf.gov

Grant Program: Smart and Connected Health (SCH)

Agency: National Science Foundation NSF 16-601

RFP Website: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf16601

Brief Description: The goal of the Smart and Connected Health (SCH) Program is to accelerate the development and use of innovative approaches that would support the much needed transformation of healthcare from reactive and hospital-centered to preventive, proactive, evidence-based, person-centered and focused on well-being rather than disease. Approaches that partner technology-based solutions with biobehavioral health research are supported by multiple agencies of the federal government including the National Science Foundation (NSF) and the National Institutes of Health (NIH).

The purpose of this program is to develop next generation health care solutions and encourage existing and new research communities to focus on breakthrough ideas in a variety of areas of value to health, such as sensor technology, networking, information and machine learning technology, decision support systems, modeling of behavioral and cognitive processes, as well as system and process modeling. Effective solutions must satisfy a multitude of constraints arising from clinical/medical needs, social interactions, cognitive limitations, barriers to behavioral change, heterogeneity of data, semantic mismatch and limitations of current cyberphysical systems. Such solutions demand multidisciplinary teams ready to address technical, behavioral and clinical issues ranging from fundamental science to clinical practice. Due in large part to advances in high throughput and connective computing, medicine is at the cusp of a sector-wide transformation that - if nurtured through rigorous scientific innovation - promises to accelerate discovery, improve patient outcomes, decrease costs, and address the complexity of such challenging health problems as cancer, heart disease, diabetes and neurological degeneration. These transformative changes are possible in areas ranging from the basic science of molecular genomics and proteomics to decision support for physicians, patients and caregivers through data mining to support behavior change through technology-enabled social and motivational support.

In addition to these scientific discoveries, innovative approaches are required to address delivery of high quality, economically-efficient healthcare that is rapidly becoming one of the key economic, societal and scientific challenges in the United States. The need for a significant healthcare transformation has been recognized by numerous organizations including the President's Council of Advisors on Science and Technology (PCAST), National Research Council (NRC), Institute of Medicine (IOM), Computing Community Consortium (CCC), and the National Academy of Engineering. Additionally, a congressionally mandated review of Networking and Information Technology Research and Development (NITRD) emphasized the critical role that networking and information technology will play in spurring innovation to solve the nation's

most pressing challenges, beginning with health and healthcare. Several of these agencies explicitly encouraged the Department of Health and Human Services (e.g., NIH, Agency for Healthcare Research and Quality (AHRQ), Office National Coordinator for Health Information Technology (ONCHIT)) to work explicitly with the National Science Foundation to realize the scientific potential of digitally supported health and healthcare. Recommendations also called for joint funding between these agencies to conduct cross-cutting research into the social, cognitive, and behavioral processes underlying efficient use of the new technologies, and the analytic demands implied by the new large scale databases. The purpose of this interagency program solicitation is the development of next generation health and healthcare research through high-risk, high-reward advances in the understanding of and applications in information science, technology, behavior, cognition, sensors, robotics, bioimaging, and engineering. Collaboration between academic, industry, non-profit and other organizations is strongly encouraged to establish better linkages between fundamental science, clinical practice and technology development, deployment and use.

This solicitation is aligned with the visions (e.g., PCAST, NRC, IOM) calling for major changes in health and wellbeing as well as healthcare delivery and is aimed at the fundamental research to enable the change. Realizing the promise of disruptive transformation in health and healthcare will require well-coordinated, multi-disciplinary approaches that draw from the social, behavioral, and economic sciences, engineering, medicine, biology, and computer and information sciences. One class of proposals will be considered in response to this solicitation, Integrative Projects (INT), with multi-disciplinary teams spanning 1 to 4 years. As detailed in this solicitation, appropriate scientific areas of investigations may be related to any of the participating funding organizations. Questions concerning a particular project's focus, direction and relevance to a participating funding organization should be addressed to the appropriate person found below and in the list of agency contacts found in section VIII of the solicitation.

Awards: Up to \$2,000,000. Anticipated funding amount: \$20,000,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: December 8, 2016

Contacts:

- Wendy Nilsen, Program Contact: Directorate for Computer and Information Science and Engineering, Division of Information and Intelligent Systems, 1125, telephone: (703) 292-2568, email: wnilsen@nsf.gov

Grant Program: ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)

Agency: National Science Foundation NSF 16-594

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16594/nsf16594.htm>

Brief Description: Despite significant increases in the proportion of women pursuing science, technology, engineering, and mathematics (STEM) doctoral degrees, women are significantly underrepresented as faculty, particularly in upper ranks, and in academic administrative positions, in almost all STEM fields. The problems of recruitment, retention, and advancement that are the causes of this underrepresentation vary by discipline and across groups of women faculty (e.g., by race/ethnicity, disability status, sexual orientation, foreign-born and foreign-trained status, and faculty appointment type). The ADVANCE program is designed to foster gender equity through a focus on the identification and elimination of organizational barriers that impede the full participation and advancement of all women faculty in academic institutions. Organizational barriers that inhibit equity may exist in areas such as policy, practice, culture, and organizational climate. For example, practices in academic departments

that result in the inequitable allocation of service or teaching assignments may impede research productivity, delay advancement and create a culture of differential treatment and rewards. Policies and procedures that do not mitigate implicit bias in hiring, tenure, and promotion decisions could mean that women and underrepresented minorities are evaluated less favorably, perpetuating their underrepresentation and contributing to a climate that is not inclusive.

The goals of the ADVANCE program are (1) to develop systemic approaches to increase the representation and advancement of women in academic STEM[1] careers; (2) to develop innovative and sustainable ways to promote gender equity that involve both men and women in the STEM academic workforce; and (3) to contribute to the research knowledge base on gender equity and the intersection of gender and other identities in STEM academic careers. The ADVANCE program contributes to the development of a more diverse science and engineering workforce because of the focus on equity for STEM academic faculty who are educating, training, and mentoring undergraduate and graduate students and postdoctoral scholars.

There are three program tracks. All projects are expected to build on prior ADVANCE work and gender equity research and literature to broaden the implementation of organizational and systemic strategies to foster gender equity in STEM academic careers. All ADVANCE proposals are expected to recognize that gender does not exist in isolation from other characteristics, such as race/ethnicity, disability status, sexual orientation, foreign-born and foreign-trained status, faculty appointment type, etc., and should offer strategies to promote gender equity for all faculty:

- The ***Institutional Transformation (IT)*** track supports the development of *innovative* organizational change strategies to produce comprehensive change within one non-profit two-year or four-year academic institution across all STEM disciplines. ***IT*** projects are also expected to contribute new research on gender equity in STEM academics. Projects that do not propose innovative strategies may be more appropriate for the ***Adaptation*** track.
- The ***Adaptation*** track supports the adaptation and implementation of evidence-based organizational change strategies, ideally from among those developed and implemented by ADVANCE projects. ***Adaptation*** awards may support the adaptation and implementation of proven organizational change strategies within a non-profit two-year or four-year academic institution that has not had an ADVANCE ***IT*** award. ***Adaptation*** awards may also be made to a STEM organization to implement systemic change strategies focused across all STEM disciplines, several STEM disciplines, or within one STEM discipline.
- The ***Partnership*** track will support partnerships of two or more non-profit academic institutions and/or STEM organizations to increase gender equity in STEM academics. Projects should have national or regional impact and result in systemic change within one STEM discipline, several STEM disciplines, or all STEM disciplines. Partnering STEM organizations can include any entity eligible for NSF support. Partners may include professional societies, industry, non-profit organizations, publishers, policy and research entities, state systems of higher education, higher education organizations, as well as institutions of higher education. ***Partnership*** proposals must include a final year focused on sustainability and/or scale-up, communication, and evaluation.

Awards: Standard Grants. Anticipated funding amount: \$22,200,000

Letter of Intent: Required: December 14, 2016

Preliminary Proposal Due Date(s) (required): April 12, 2017

Limit on Number of Proposals per Organization: 1

One for *IT-Preliminary*, *Institutional Transformation (IT)*, or *Adaptation*; no limit for *Partnership*, *ADVANCE Resource and Coordination Network*, and *ADVANCE Longitudinal Evaluation*:

- ***IT-Preliminary***: Non-profit academic institutions are allowed to submit one preliminary proposal in the competition.
- ***IT* and *Adaptation***: Non-profit academic institutions are allowed to submit one proposal in the competition to **either** the *IT* (if invited after the preliminary proposal stage) or the *Adaptation* track but not both.
- Non-profit, non-academic organizations are allowed to submit one ***Adaptation*** proposal in the competition and may also be a partner on ***Partnership*** and/or ADVANCE Resource and Coordination Network proposals.

A non-profit academic institution or non-profit, non-academic organization may be a partner on multiple ***Partnership*** proposals in the same competition but lead only one and may also be a partner on an ADVANCE Resource and Coordination Network and/or an ADVANCE Longitudinal Evaluation proposal if appropriate.

Internal Notification: If planning to submit, *IT-Preliminary*, *Institutional Transformation (IT)*, or *Adaptation*, please send a notice of intent to your respective dean and research office at dhawan@njit.edu

Full Proposal Submission Due Date: January 11, 2017

Contacts:

- Dana Britton, Program Officer, telephone: (703) 292-5178, email: ADVANCE@nsf.gov
 - Jessie DeAro, Program Officer, telephone: (703) 292-5350, email: ADVANCE@nsf.gov
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National Institutes of Health

Grant Program: NIAID Career Transition Award (K22)

Agency: National Institutes of Health PAR-16-434

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-16-434.html>

Brief Description: The NIAID K22 award will provide two years of support to conduct biomedical research as an independent scientist at an extramural sponsoring institution/organization to which the individual has been recruited, been offered and has accepted a tenure-track full-time assistant professor position (or equivalent). This support is to allow the individual to continue to work toward establishing his/her own independent research program and prepare an application for regular research grant support (R01).

The postdoctoral fellow, also referred to as a candidate, submits a K22 application from the institution where s/he currently pursues his/her postdoctoral research training. The application will be peer reviewed and assigned an overall impact score. Successful candidates (i.e., one whose application has received a fundable overall impact score) will receive an approval letter from NIAID that will include the terms and conditions to activate the K22 award. To activate the K22 award, the candidate must secure a tenure-track full-time assistant professor position within a year of the receipt of the approval letter. Once the assistant professor position has been secured, the candidate will submit updated information about the K22 application with the support of the sponsoring institution. The sponsoring institution can be the same as the post-doctoral institution, though it is most likely a different institution from the original submission of the K22 application. The updated information of the transition to an assistant professor position at the sponsoring institution will be evaluated by senior NIAID staff to ensure that all programmatic requirements are met prior to the activation of the K22 award.

Awards: Award budgets are composed of salary and other program-related expenses, as described below.

NIAID will contribute up to \$ 50,000 per year toward the salary of the career award recipient. Further guidance on budgeting for career development salaries is provided in the SF424 (R&R) Application Guide.

The total salary requested must be based on a full-time staff appointment. The salary must be consistent both with the established salary structure at the institution and with salaries actually provided by the institution from its own funds to other staff members of equivalent qualifications, rank, and responsibilities in the department concerned

Letter of Intent: Not required.

Deadline: October 24, 2016 then [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: Antimicrobial Resistance Rapid, Point-of-Care Diagnostic Test Challenge Competition

Agency: National Institutes of Health NOT-OD-16-137

RFP Website: <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-16-137.html>

Brief Description: The U.S. Department of Health and Human Services (HHS) is holding a challenge prize competition in which up to \$20 million will be made available, subject to the availability of funds, for the delivery of one or more novel and innovative in vitro point-of-care diagnostics that would rapidly inform clinical treatment decisions and be of potential significant clinical and public health utility to combat the development and spread of antibiotic resistant bacteria. The National Institutes of Health (NIH) and the Biomedical Advanced Research and Development Authority (BARDA) of the Office of the Assistant Secretary for Preparedness and Response (ASPR) are sponsoring the prize competition for novel, innovative solutions for use in inpatient and/or outpatient settings.

This Challenge, structured in three steps, will incentivize a broad range of scientists, engineers, and innovators to develop in vitro diagnostic tests that would enable health care providers to make more informed decisions on appropriate antibiotic use and infection prevention. This competition may lead to the development of more sensitive, accurate, robust, and cost-effective assay approaches and devices for clinical diagnosis.

In this Challenge competition, the NIH and the BARDA are seeking proposals for the development of new, innovative, accurate, and cost-effective in vitro diagnostic tests that would rapidly inform clinical treatment decisions and be of significant clinical and public health utility to combat the development and spread of antibiotic resistant bacteria.

The prize-winning in vitro diagnostic(s) must meet a set of predefined technical criteria and performance characteristics based on the intended use(s), as described further below. Solutions submitted to this Challenge should have the potential to significantly improve clinical decision making compared to the current standard of care. Solutions also should be novel, innovative, rapid, and appropriate for use at the point-of-need. Ultimately the solution should be an in vitro diagnostic assay(s) that can:

- 1) improve antibiotic decision making by health care providers and be effective in reducing inappropriate use of antibiotics

2) demonstrate a clinically significant advance in diagnostic test performance and address gaps or deficiencies in current capabilities that may include, but are not limited to: ease of use; time to result; significant advances in sensitivity and specificity; and ability to process a broad range of specimen types.

Solutions describing existing, well-established and/or currently supported approaches, especially commonly used strategies are not of interest unless a compelling case is made that potentially clinically significant, quantifiable advances are achievable and/or the methods and measures are used in unique combinations that have not been previously tested together for the detection/diagnosis of drug resistant bacteria.

Deadline: To register and submit for this Challenge, Solvers may access the registration and submission platform from any of the following:

- 1) Access the www.challenge.gov website and search for “Antimicrobial Resistance Rapid, Point-of-Need Diagnostic Test.”
- 2) Access the Antimicrobial Resistance Rapid, Point-of-Need Diagnostic Test website; a registration link for the Challenge can be found on the landing page under “Challenge Description.”
- 3) Access the website of the Challenge administered for NIH by Capital Consulting Corporation at <http://www.cccinnovationcenter.com/challenges/antimicrobial-resistance-diagnostic-challenge/>.

Phase One: Initial Concepts Submitted and Semifinalists Selected

From all submitted concepts, up to 20 semifinalists will be chosen, each receiving up to \$50,000 to develop prototypes and analytical data for their diagnostic devices.

Deadline for submissions: January 9, 2017

Semifinalist selected: March 27, 2017

Department of Defense/US Army/DARPA/ONR

Grant Program: DoD Joint Program Committee 1 (JPC-1)/ Medical Simulation and Information Sciences (MSIS) Developing Models for Military and/or Civilian Medical Training from Field Data Collected from Sensors (MATADOR)

**Agency: Department of Defense Dept. of the Army -- USAMRAA
W81XWH-16-DMRDP-MSIS-MAT**

Website: <http://www.grants.gov/web/grants/search-grants.html>

Brief Description: The FY17 JPC-1/MSIS MATADOR Award seeks to support research for the development and preliminary validation of a conceptual predictive model with the ability to rapidly collect, analyze, and weigh sensor and/or biosurveillance data collected directly from the field (not be limited to a particular type of field environment) via a variety of sensors and/or biosurveillance systems. It is critical for research projects to create standards, specifications, format, and storage of the collected data/information as appropriate to the initial stages of the proposed working model.

Awards: Total funding available: \$2,200,000.

Deadline: March 01, 2017.

Contact: CDMRP Help Desk 301-682-5507 help@eBRAP.org

Grant Program: Microsystems Technology Office Office-wide Broad Agency Announcement

Agency: Defense Advanced Research Projects Agency DARPA HR0011-16-S-0001

Website:

https://www.fbo.gov/index?s=opportunity&mode=form&id=7762305a38d0dc2db15930657469ec9a&tab=core&_cview=0

Brief Description: MTO seeks to develop high-risk, high-reward technologies that create and prevent strategic surprise, help secure the Department of Defense's (DoD) technological superiority and address the complex threats facing U.S. national security. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.

As MTO evolves to address future microsystems-related challenges, the office has identified three target thrust areas: (1) data collection and exploitation in resource-constrained environments, (2) effective DoD operations in the electromagnetic spectrum, and (3) embracing and thriving in the internationalized technology base. Each of these overlapping spaces present significant opportunity for exploring new and creative technologies.

Tactical Information Extraction (Processing, Learning, Application) - Extensive, heterogeneous sensor arrays and networked operations will underpin U.S. success in future conflicts. Managing and interpreting the flood of information, however, will pose a major challenge to power-constrained systems and require adaptive, embedded computing hardware for real-time data fusion and exploitation. MTO is therefore developing technologies that will enable future warfighters to extract actionable intelligence from the numerous sensor feeds around them, even in areas where robust network connections and cloud-based analytics are intermittent or unavailable.

Research areas include advanced machine learning techniques that far surpass the state-of-the-art – to understand context, learn continuously, achieve high accuracy on new tasks, and recognize both objects and activities – and enable enhanced autonomy and man-unmanned teaming. Further research includes low-power hardware architectures to provide learning and complex computation in embedded military applications.

Spectrum and Physics Interfaces (RF, Optics, Sensors) - The effectiveness of land, sea, air, space, and cyber-based combat operations depends on controlling and exploiting the electromagnetic (EM) spectrum, which is emerging as a sixth domain of modern warfare. DoD depends on the spectrum to collect information about the physical world, to process it digitally, and to disseminate it to the warfighter. However, as info-centric military and commercial systems demand greater spectrum access, this limited resource will become increasingly contested and congested. To be effective, U.S. systems will need to sense and adapt to surprise events in the spectrum (e.g. unfamiliar jamming and spoofing techniques) and in the physical world. DoD will need tactical sensors with novel sensing modalities, higher performance, lower cost, and "selective attention," meaning that they conserve power by only collecting and transmitting relevant signals. Where spectrum access for capabilities like GPS is limited, DoD will also need positioning, navigation, and timing (PNT) technologies that allow its systems to sense their location and to coordinate with each other.

DARPA/MTO is developing components to enable these capabilities and to ensure effective U.S. operations in a dynamic, contentious spectrum environment. Research areas include radiofrequency (RF), optical, and other low-footprint sensor hardware that provides assured connectivity at high-bandwidths, emphasizes maximal flexibility, and facilitates fast development cycles for fielding complex EM systems.

Globalization (Speed, Leveraging, Security) - The DoD relies on advanced microelectronics for a range of capabilities including command, control communications, computers, intelligence, surveillance, and reconnaissance (C4ISR). Even as DARPA continues to push the leading edge in microelectronics, the semiconductor industry has globalized and grown more innovative, commercially focused, and international. DARPA/MTO is developing the technology-based solutions required to leverage this global microelectronics supply chain while ensuring the security of U.S. microelectronics. MTO is also addressing the military's ongoing need for custom microelectronics. To keep the United States ahead of potential adversaries, research areas include application specific integrated circuits with "built-in trust" protections, technologies that accelerate DoD circuit development timelines, and techniques that promise surprising performance for military systems

Awards: Various

Deadline: Posting Date: September 14, 2016

Abstract Due Date: Abstracts may be submitted on a rolling basis until 4:00PM (Eastern Time) on August 10, 2018.

Proposal Due Date: Proposals may be submitted on a rolling basis until 4:00PM (Eastern Time) on September 13, 2018

Contact: Dr. William Chappell

Director, Microsystems Technology Office

BAA Coordinator: HR0011-16-S-0001@darpa.mil

Department of Energy

Grant Program: Request For Information On Potential Technical Focus Areas For Advanced Manufacturing - Related Traineeships

Agency: Department of Energy DE-FOA-0001635

Website: <https://eere-exchange.energy.gov/#FoalId701f4169-15f7-46ae-85af-99acb2ab9c0c>

Brief Description: The Department of Energy (DOE) funds university-led traineeship programs that strategically address workforce training needs in key technical focus areas. The following objectives guide DOE's Office of Energy Efficiency and Renewable Energy (EERE) Advanced Manufacturing Office's (AMO) traineeship efforts:

- Advance the DOE mission relative to advanced manufacturing – DOE funded Traineeship Programs are designed and implemented to advance specific Science, Technology, Engineering and Math (STEM) workforce competencies required for the DOE's unique mission to ensure America's security and prosperity by addressing its science, energy, and environmental challenges.
- Address priority STEM workforce needs and identified gaps – DOE funded Traineeship Programs focus on advancing those critical STEM disciplines and competencies specifically relevant to the EERE and AMO missions where other U.S. Government or academic workforce development programs either do not exist or where DOE-relevant applications are not being leveraged to support specific DOE mission responsibilities.

In July 2015, EERE released a Funding Opportunity Announcement (FOA) to address emerging needs in graduate training enabling preparedness for the field of advanced Power Electronics Engineering careers beyond those in academia. As a result, EERE made two competitively-selected awards supporting five-year graduate-level programs in Power Electronics Engineering, leveraging existing DOE assets including the wide band gap National Network for Manufacturing Innovation (NNMI) Institute, PowerAmerica.

The purpose of this Request for Information (RFI) is to gather from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to future EERE-funded and AMO-funded graduate-level Traineeships. This RFI is not a FOA; therefore, DOE is not accepting applications at this time.

Deadline: Responses must be received no later than 5:00pm (ET) on October 14th, 2016.

Contact Information:

- EERE-ExchangeSupport@hq.doe.gov
- EERE Exchange support.
- AMOTraineeship@ee.doe.gov

Responses to this Request for Information

NASA

Grant Program: Research Opportunities for Post-Doctoral Fellowships in Space Biology to Study the Microbiome of the ISS as a Built Environment: Using ISS as a Microbiological Observatory

Agency: NASA NNH16ZTT001N-MOBE

Website:

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId=%7BFE2BC597-6229-8D42-F93C-1977931CEF86%7D&path=open>

Brief Description: This National Aeronautics and Space Administration NRA “Appendix B - Research Opportunities for Post-Doctoral Fellowships in Space Biology to Study the Microbiome of the ISS as a Built Environment: Using the International Space Station (ISS) as a Microbiological Observatory” is an Appendix to the NASA Omnibus Research Announcement ROSBio-2016 (NNH16ZTT001N NRA). NASA is soliciting, through this Appendix, research applications for Postdoctoral Fellowships from early career scientists to design experiments that utilize a NASA collection of ISS microbial isolates collected over a decade or more to help understand better how microbial communities colonize, adapt, and evolve on the ISS. All proposals must propose experiments that utilize these microbial isolates collected from the ISS that have been archived at the Johnson Space Center.

Awards: NASA anticipates that up to 2 awards will be made for the research requested in this NRA and that each grant will last 2 years for a total cost of \$140K. Appendix B, which will be released on or about September 15, 2016 can be found by opening the NASA Research Opportunities homepage at <http://nspires.nasaprs.com/> and then linking through the menu listings "Solicitations" to "Open Solicitations."

Deadline: Mandatory notices of Intent (NOIs) are due October 31, 2016 at 5 PM Eastern Time. NOIs are required to facilitate peer review planning. Full proposals are due November 30, 2016 at 5 PM Eastern Time. Announcement of selections will be made on or about March 1, 2017. Proposals and NOIs must be submitted electronically by an authorized official of the proposing organization. Proposers may use either NSPIRES (<http://nspires.nasaprs.com/>) or Grants.gov (<http://www.grants.gov>) for proposal submission. However, NOIs must be submitted using NSPIRES. NASA’s selection of research projects will be guided by recommendations of the National Research Council’s 2011 Decadal Survey Report, “Recapturing a Future for Space Exploration: Life and Physical Sciences Research for a New Era” (<http://www.nap.edu/catalog/13048.html>) Proposals will be accepted from Graduate students in the final year of their PhD or equivalent doctoral degree program, from Postdoctoral fellows (PhD, MD, DDS, DVM or equivalent doctoral degree from an accredited domestic or foreign institution) or from applicants who received a doctoral degree within the past 2 years, but have

not yet had post-doctoral training. The solicitation is open to U.S. citizens, permanent residents, or persons with pre-existing visas obtained through their sponsoring institutions that permit postdoctoral training for the project's duration. Sponsoring institutions must be U.S. Academic, government, or commercial institutions that will provide appropriate postdoctoral mentors. Successful applicants may collaborate with investigators from universities, Federal Government laboratories, the private sector, state and local government laboratories and other countries with the exception of China. Every organization that intends to submit a proposal in response to Appendix B must be registered with NSPIRES, and such registration must identify the authorized organizational representative(s) who will submit electronic proposals. Instructions on how to register in NSPIRES are described in the omnibus NRA (NNH16ZTT001N NRA). Each electronic proposal requires the registration of postdoctoral applicants, their principal investigator mentors, and any other participants. Potential proposers and proposing organizations are urged to access the system(s) well in advance of the proposal due date(s) to familiarize themselves with its structure and enter the requested information. Questions about ROSBio-2016 (NNH16ZTT001N NRA) and this Appendix may be addressed to the contacts referenced in the full solicitation document.

Contact: Dr. David L. Tomko, Program Scientist for Space Biology Life and Physical Sciences Division, NASA Headquarters Phone: 202-358-2211 Email: dtomko@nasa.gov NASA contracting information for this NRA is available from: Benjamin S. Benvenuti, Lead Contract Specialist NASA Shared Services Center Phone: (228) 813-6128. Email: benjamin.s.benvenuti@nasa.gov

Grant Program: NASA Space Technology Research Fellowship (NSTRF) - Fall 2017

Agency: NASA NSTRF17

Website:

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId=%7BA3488581-2E70-6AA1-76F0-E9A5A770A975%7D&path=open>

Brief Description: The National Aeronautics and Space Administration (NASA) Headquarters has released a solicitation, titled NASA Space Technology Research Fellowships (NSTRF) - Fall 2017, on September 8, 2016. 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 "NSTRF17." 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 applicants will perform research at their respective campuses and at NASA Centers. In addition to his or her faculty advisor, each Fellow 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 2017 term as a full-time graduate student must submit a Phase B proposal (as specified in the NSTRF17 solicitation); a complete Phase B proposal submission will result in a training grant award. 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 2017 academic year and are subject to the availability of appropriated funds. This solicitation covers only new fellowship applications; renewal applications are handled separately. All Phase

Deadline: Applications must be submitted electronically through NSPIRES and are due by 6 PM ET on November 3, 2016. Detailed submission instructions for applicants are provided under "Other Documents" on the NSPIRES webpage associated with the NSTRF17 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.

Contact: 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.

Bill and Melinda Gates Foundation

Grant Program: Grand Challenges Explorations Round 18

Agency: Bill and Melinda Gates Foundation

Website: <http://gcgh.grandchallenges.org/announcement/grand-challenges-explorations-round-18-opened>

Brief Description: The Bill & Melinda Gates Foundation and its funding partners in the Grand Challenges family of grant programs are inviting innovators to apply for the following two grant opportunities.

1) Our [Grand Challenges Explorations](#) fosters early-stage discovery research to expand the pipeline of ideas for solving our greatest global health and development challenges. Launched in 2008 with an initial \$100 million commitment from the foundation, Grand Challenges Explorations grants have already been awarded to more than 1200 researchers in more than 65 countries.

We are accepting applications on the following four topics until November 9, 2016:

- [Assess Family Planning Needs, Preferences and Behaviors to Inform Innovations in Contraceptive Technologies](#)
- [Develop Novel Platforms to Accelerate Contraceptive Drug Discovery](#)
- [Design New Solutions to Data Integration for Malaria Elimination](#)
- [Accelerate Development of New Therapies for Childhood *Cryptosporidium* Infection](#)

2) Grand Challenges for Development: The United States Agency for International Development (USAID), Sweden through the Swedish International Development Cooperation Agency (SIDA), the Foreign Ministry of the Kingdom of the Netherlands, and the Government of South Africa have joined together to launch the Securing Water for Food initiative. The goal of this program is to improve water and food security, gender equality and reduce poverty.

Deadline: Application deadline is October 10, 2016. For detailed description of this challenge, please visit: <http://securingwaterforfood.org/apply>.

Contact: Eric Blitz at blitz@njit.edu

Fahs-Beck Fund For Research And Experimentation

Grant Program: Faculty/Post-Doctoral Research Grant Program

Agency: Fahs-Beck Fund For Research And Experimentation

Website:

http://www.fahsbeckfund.org/pdf_files/CURRENT_Post_Doctoral_Guidelines_01.12.15.pdf

Brief Description: Grants of up to \$20,000 are available to help support the research of faculty members or post-doctoral researchers affiliated with non-profit human service organizations in the United States and Canada. Areas of interest to the Fund are: studies to develop, refine, evaluate, or disseminate innovative interventions designed to prevent or ameliorate major social, psychological, behavioral or public health problems affecting children, adults, couples, families, or communities, or studies that have the potential for adding significantly to knowledge about such problems. The research for which funding is requested must focus on the United States and/or Canada or on a comparison between the United States and/or Canada and one or more other countries.

Who May Apply: Faculty members of accredited colleges or universities or individuals affiliated with accredited non-profit human service organizations in the United States or Canada are eligible to apply. The applicant organization must agree to accept administrative responsibility for the project and submit required financial forms and reports to the Fund. The principal investigator (PI) must have an earned doctorate in a relevant discipline and relevant experience. The PI must be in full control of the research and be the principal author of the final report.

Deadline: The Fund observes two funding cycles annually. The deadlines are 5 p.m. Eastern Time April 1 and November 1, unless the deadline falls on a weekend, in which case the deadline will be the following Monday at 5 p.m. Applications must be received (not postmarked) by the deadline.

Contact: Eric Blitz at blitz@njit.edu

McKnight Endowment Fund for Neuroscience

Grant Program: 2017 McKnight Scholar Awards

Agency: McKnight Endowment Fund for Neuroscience

Website: <https://neuroscience.mcknight.org/newsroom/upcoming-deadlines/2017-scholar-awards>

Brief Description: These awards were established to encourage emerging neuroscientists to focus on disorders of learning and memory. Applicants for the McKnight Scholar Awards must demonstrate interest in solving important problems in relevant areas of neuroscience, including the translation of basic research to clinical neuroscience. Awards are given to exceptional young scientists who are in the early stages of establishing an independent laboratory and research career. Traditionally, successful candidates have held faculty positions for at least one year. For the names of previous recipients and their projects, see www.neuroscience.mcknight.org.

Who May Apply: Applicants must have:

- An M.D., Ph.D., or other suitable advanced degree
- A record of meritorious research
- Evidence of a commitment to a career in neuroscience
- An appointment with tenure-track status at a U.S.-based sponsoring institution, to which the award will be paid

- No more than four years of experience in an independent/tenure-track faculty position (exceptions may be made for parental leave)
- Documentation that the sponsoring institution has government approval for the applicant to work in the U.S.

Deadline: Applications for the McKnight Endowment Fund for Neuroscience Scholar Award due January 9, 2017.

Contact: Eric Blitz at blitz@njit.edu
