NJIT Research Newsletter

Issue: ORN-2016-028

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/

Recent Research Grant and Contract Awards

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

PI: Boris Khusid (PI)
Department: Chemical, Biological and Pharmaceutical Engineering
Grant/Contract Project Title: Kinetics of electric field-driven phase transitions in polarized colloids
Funding Agency: NASA
Duration: 08/23/13-08/22/18

PI: Gregory Fleishman (PI) and Dale Gary (Co-PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Impulsive Ion Escape at the Sun
Funding Agency: NASA
Duration: 06/20/16-06/19/19

PI: Iulian Neamtiu
Department: Computer Science
Grant/Contract Project Title: CAREER: Differential Types and Declarative Hypothesis Testing for Software Evolution
Funding Agency: NSF
Duration: 09/01/15-03/31/17

PI: Antje Ihlefeld (PI)
Department: Biomedical Engineering
Grant/Contract Project Title: The Role of Sound Depravation of Central Processing of Masking
Funding Agency: NIH
Duration: 09/03/15-08/31/17

PI: Colette Santasieri (PI)
Department: R&D
Grant/Contract Project Title: Planning and Coordination Services for 2016 Northeast Sustainable Communities Workshop
Funding Agency: Brownfield Coalition of the Northeast (BCONE)
Duration: 10/01/15-05/30/16

PI: Gale Spak (PI)
Department: CPE
Grant/Contract Project Title: Technology Talent Network
Funding Agency: NJDOL
Duration: 01/01/16-12/31/16

PI: Shidong Jiang (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Collaborative Research: Efficient high-order parallel algorithms for large-scale photonics simulation
Funding Agency: NSF
Duration: 08/15/14-07/31/17

PI: Micahel Siegal (PI), David Hornthop (Co-PI), Ji Loh (Co-PI), Catalin Turc (Co-PI), Eliza Michalopolou (Co-PI), Richard Moore (Co-PI), Shidong Jiang (Co-PI), Peter Petropoulous (Co-PI), and Marvin Nakayama (Co-PI)
Department: Mathematical Sciences and Computer Science
Grant/Contract Project Title: EXTREEMS-QED: Research in computational and data-enabled science and engineering for undergraduates in the mathematical sciences at NJIT
Funding Agency: NSF
Duration: 08/15/14-07/31/17

PI: Roy Goodman (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Mathematics and Optics
Funding Agency: NSF
Duration: 08/15/14-07/31/17

PI: Dale Gary (PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Developing 10.7 cm Wavelength Microwave Imaging to Assess the Sun's Impact on Geospace
Funding Agency: AFOSR
Duration: 08/15/14-07/31/17

In the News…

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

White House: The White House this week reaffirmed its commitment to drone technology, announcing a host of new federal programs designed to increase government use.
Coinciding with an Office of Science and Technology workshop Tuesday on unmanned aerial systems, organizations including the Interior Department and the U.S. Postal Service both pledged to examine the role of drones in internal operations, such as in search and rescue missions or package delivery. The Federal Aviation Administration plans to propose a rule in the winter about the operation of drones near crowds for uses such as videography or photography, according to a White House announcement. Earlier this summer, FAA **published** a "small drone" rule that would allow nonrecreational drones weighing less than 55 lbs to be used for "commercial, scientific, public and educational purposes," as long as they comply with operational and safety requirements. The White House also announced a $35 million fund at the National Science Foundation that, over the next five years, would fund research into drone monitoring, agricultural uses and the physical infrastructure required to expand their applications. Last year, President Barack Obama issued a memorandum emphasizing that agencies should think about the potential harm widespread drone use might pose to individual privacy. Before deploying drones, and at least every three years, agencies should revisit their policies on "collection, use, retention and dissemination of information obtained by" the unmanned systems to make sure "privacy, civil rights and civil liberties are protected," that **document** said. Drones should only collect information "consistent with and relevant to an authorized purpose, and "provide notice to the public" about where their drones are operating, according to that memorandum. The announcement also cites initiatives that will be taken by the Department of Interior for search and rescue operations, NASA for developing new detect and avoid and command and control technologies, and NOAA for developing precise gravity measurements and enhancing the observational capabilities for the NOAA fleet. Reference http://m.nextgov.com/emerging-tech/2016/08/white-house-ups-commitments-drones/130438/?oref=nextgov_today_nl

Defense Research: The rapidly evolving field of artificial intelligence has highlighted a critical issue for future autonomous systems that will make decisions and carry out actions on their own. To fully exploit such systems they will need to be able to explain their decisions and actions to human users. Humans will need to be able to understand, trust, and effectively manage this coming generation of AI in order to make practical use of this technology.
The Defense Advanced Research Projects Agency (DARPA) is planning a future solicitation for *Explainable Artificial Intelligence (XAI).* By creating new machine learning methods to produce explainable models, XAI aims to develop appropriately trustable man/machine interfaces.
DARPA is planning a proposers day August 11 to outline the XAI program's technical goals and challenges, as well as provide an opportunity for potential proposers to submit questions to DARPA. Information on Proposer Day is available on https://govtribe.com/project/explainable-artificial-intelligence-xai-proposers-day-august-11-2016

Clean Energy Manufacturing: The Office of Energy Efficiency and Renewable Energy (EERE), within the U.S. Department of Energy (DOE), invests in cutting-edge research, development, and

demonstration activities focused on sustainable transportation, renewable power, and energy efficiency. A core element of EERE's mission is to enhance U.S. global competitiveness in innovation and manufacturing in emerging clean energy industries. To address this core element, EERE launched its Clean Energy Manufacturing Initiative (CEMI) in 2013 with the goal of significantly increasing U.S. manufacturing competitiveness in the production of clean energy products and in domestic manufacturing across the board by increasing industrial energy productivity. EERE's Advanced Manufacturing Office (AMO) plays a key role in executing the mission for CEMI by supporting research and development projects, shared research facilities and technical consortia, and technical assistance programs.

AMO partners with private and public stakeholders to support the research, development, demonstration, and deployment (RDD&D) of innovative technologies that can improve U.S. competitiveness, save energy, and ensure global leadership in manufacturing of clean energy technologies as well as improve energy efficiency and reduce energy consumption in manufacturing. Specifically, AMO invests in cost-shared RD&D activities in support of cross-cutting next generation materials and manufacturing processes that hold high potential to significantly improve energy efficiency and reduce energy-related emissions, industrial waste, and the life-cycle energy consumption of manufactured products.

EERE's AMO establishes Manufacturing Innovation Institutes in the President's National Network for Manufacturing Innovation (NNMI) as shared research, development, and demonstration facilities to overcome cross-cutting challenges related to the manufacturing of clean energy and energy efficiency products, in addition to challenges associated with improving the energy efficiency of the manufacturing sector across the board. This FOA supports the establishment of a Manufacturing Innovation Institute on *Modular Chemical Process Intensification for Clean Energy Manufacturing*. Modular chemical process intensification represents an emerging opportunity for processing industries in the U.S. manufacturing sector to improve energy efficiency, reduce feedstock waste, and improve productivity by merging and integrating separate unit processes (mixing, reactions, separation) into single modular hardware elements of reduced size, with higher efficiency and providing inherent scalability.

NIH: DUAL CRITERIA FOR GRANTS: The National Institute of Biomedical Imaging and Bioengineering (NIBIB) is starting a **selective funding process** for R21 applications received through the NIH Exploratory/Developmental Research Grant Program (Parent R21) and the Exploratory/Developmental Bioengineering Research Grants (EBRG R21). NIBIB will make funding decisions on these applications "based on both technical merit and alignment of the proposed research with the exploratory, developmental, and high-risk/high-reward goals of the R21 grant mechanism." More Information on http://grants.nih.gov/grants/guide/notice-files/NOT-EB-16-009.html

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Special Announcement on New Funding Strategy for Exploratory/Developmental Grant (R21) Applications at the National Institute of Biomedical Imaging and Bioengineering (NIBIB)

The purpose of this Notice is to alert the scientific community that the National Institute of Biomedical Imaging and Bioengineering (NIBIB) plans to implement a selective funding process and discontinue use of an automatic payline for R21 applications received through the NIH Exploratory/Developmental Research Grant Program (Parent R21) FOA, PA-16-161 (http://grants.nih.gov/grants/guide/pa-files/PA-16-161.html) and the

Exploratory/Developmental Bioengineering Research Grants (EBRG R21) FOA, PA-12-284 (http://grants.nih.gov/grants/guide/pa-files/PA-16-040.html). Beginning with the October 16, 2016 application due date (November 16, 2016 for resubmissions), NIBIB will make funding decisions for NIH Parent R21 and EBRG applications based on both technical merit and *alignment of the proposed research with the exploratory, developmental, and high-risk/high-reward goals of the R21 grant mechanism*(http://grants.nih.gov/grants/funding/r21.htm). Consistent with these goals, NIBIB strongly discourages the submission of applications resembling small R01s to the parent NIH R21 and EBRG R21 FOAs. Projects that use widely accepted approaches and methods within well-established fields and/or are well-supported by preliminary data should be submitted to the Parent R01 FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-160.html) or the Bioengineering Research Grant FOA (http://grants.nih.gov/grants/guide/pa-files/PAR-16-242.html). Such projects with limited cost or scope should be submitted to the Parent R03 FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-162.html). NIBIB strongly encourages applicants who are considering submitting an application to the parent NIH R21 or the EBRG R21 FOA to consult program staff in their area of interest before developing an application. This notice is posted on he website http://grants.nih.gov/grants/guide/notice-files/NOT-EB-16-009.html

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Events and Announcements

Event: Postdoctoral Research Fellowships in Biology Informational Webinar
When: Thursday, August 29, 2016 2.00 PM – 4.00 PM
Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=189442&org=NSF
Brief Description: The webinar will discuss the scope of the activity described below, guidelines for proposals to this activity, and specific requirements. The Directorate for Biological Sciences (BIO) at the National Science Foundation awards Postdoctoral Research Fellowships in Biology (PRFB) to recent recipients of the doctoral degree, in selected areas supported by BIO, and with special goals for human resource development in biology.
Fellowships are offered in three areas:
Area 1: Broadening Participation of Groups Underrepresented in Biology
Area 2: Research Using Biological Collections
Area 3: National Plant Genome Initiative Postdoctoral Research Fellowships
Access the webinar: http://www.tvworldwide.com/events/nsf/160829/.

Event: Coastal Community Resilience Research-Practice Grants Webinar
When: Thursday, August 11, 2016 11:30 am
Website:
https://nasevents.webex.com/mw3100/mywebex/default.do?nomenu=true&siteurl=nasevents&service=6&rnd=0.9198992096387996&main_url=https%3A%2F%2Fnasevents.webex.com%2Fec3100%2Feventcenter%2Fevent%2EventAction.do%3FtheAction%3Ddetail%26confViewID%3D1756894654%26%26EMK%3D4832534b00000002d3095a151a9fc51a93b9522da616a33fcb947612a51152101bc26a20a9d11efd%26%26encryptTicket%3DSDJTSwAAAAIPZpP6Lh-L-rgN2bUxTIZYqcBSG_-qTbpLl_lKsA3B0w2%26%26siteurl%3Dnasevents
Brief Description: Join the webinar for an hour-long presentation and Q&A session to learn more about a new, $10 million funding opportunity from the Gulf Research Program developed and funded in collaboration with the Robert Wood Johnson Foundation. This funding

opportunity is designed to support scientifically-sound research and practice projects that will develop and test information, strategies that can be used by communities to enhance their resilience to the adverse impacts of climate change, severe weather, and major environmental disasters, in ways that also improve well-being. Registration is required to attend the webinar.

Grant Opportunity Alerts

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

Internal Faculty Seed Grant Opportunities: 2016 NJIT Faculty Seed Grants; 2016 Rutgers BHI-RUN-NJIT Pilot Grants Program in Neuroscience
NSF: Graduate Research Fellowship Program (GRFP); NSF/Intel Partnership on Information-Centric Networking in Wireless Edge Networks (ICN-WEN)
NIH: Research on Autism Spectrum Disorders (R01); NIBIB Trailblazer Award for New and Early Stage Investigators (R21); Chemistry Science Track Award for Rapid Transition (C/START)(R03); Chemical Discovery (CHEM) Award (R21/R33)
Department of Defense/US Army/DARPA/ONR: FY2017 Office of Naval Research (ONR) Young Investigator Program (YIP); Peer Reviewed Orthopaedic Applied Research Award
Department of Energy: Request For Information (Rfi) On Novel Power Electronic Systems Enabled By Wide-Bandgap Semiconductors
NASA: ROSES 2016: Heliophysics Grand Challenges Research- Science Centers; ROSES 2016: Discovery Data Analysis Program

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Grant Opportunities

Internal Faculty Seed Grants

NJIT Faculty Seed Grant Awards – 2016-17

Purpose:
NJIT "2020 Vision" strategic plan targets on substantial increase in academic research and external funding with faculty and student professional development. The purpose of the NJIT Faculty Seed Grant (FSG) initiative is to promote academic research in the core and interdisciplinary areas by providing seed funding to obtain preliminary results or establish hypotheses for developing future grant proposals for submission to external funding agencies. The FSG initiative specifically seeks seed funding proposals from faculty to launch new initiatives in core and interdisciplinary emerging areas aligned with NJIT strategic tactics to develop critical research mass.

Eligibility and Type of Awards:
NJIT full-time faculty with specific research initiative to enhance the critical mass in key and emerging areas may apply to FSG program for internal funding with a budget of $7500 per project over the FY17 ending June 30, 2017. Multidisciplinary projects with strong recommendation and justification from College/School Dean will be considered at the funding

level of $10,000 subject to availability of funds. It is expected that 15-20 FSG awards will be made this year. Funding is arranged through the Offices of Research and College/School Deans.

Recipients of FSG as lead faculty are not eligible to receive another FSG award as lead faculty within three years from the last FSG award. Projects funded by FSG are not eligible to receive another FSG as the intent of internal seed funding is to facilitate initial research towards obtaining external funds to pursue research.

Allowable Expenses include Project supplies and small equipment, travel to conferences and/or funding agencies, travel expenses for funding agency people to visit NJIT, student hourly wages. Faculty summer salary, AY release and any stipend are not permitted in the budget.

Deadlines:
CFP Announcement: May 6, 2016
FSG Proposal Due in the Office of College/School Dean: September 1, 2016
College/School Dean Recommendations to Office of Research: September 10, 2016
Announcement of Awards: September 15, 2016
Period of Award: October 1, 2016 – June 30, 2017 (no extension will be available)

Review Process and Criterion:
All Proposals will be reviewed within the College/School to which PI is affiliated. College/School Dean will make the recommendation of top ranked proposals based on the reviews from the College/School review committee, which will be forwarded to the Office of Research for further review and discussion with Deans leading to the announcement of awards.

Review criterion primarily includes the scientific merit of the proposal, and potential of external funding. Additional criterion includes significance of project goals, fit to the NJIT strategic research clusters and emerging trends towards developing critical mass in key areas, justification of internal funding, expected outcomes, and faculty expertise.

Other Requirements: Faculty receiving FSG awards will submit a full proposal to external funding agencies within six months from the end date of the award. They will also participate in the NJIT Faculty Research Showcase and Panel Discussion events in Spring semester.

Required FSG Proposal Format:
The main proposal (sections 2-7 in the required FSG proposal format below) is limited to 5 pages with single spaced 12 point font size. The page limit does not include the cover sheet, budget and budget justification (maximum one page) and list of references (maximum one page). In addition up to 2 pages of biographical sketch and 1 page of current and pending support are required for PI and each investigator. Please see the proposal format guidelines below.

The main proposal should have the following sections:

1. Cover Sheet:
   Title of the Project
   Principal and Co-Principal Investigators
   Department
   College
   Date Submitted
   PI and Co-PI (if multiple investigators) Signatures
2. Abstract (Maximum 250 words; Non-IP for public dissemination):

(Please summarize briefly on):
   a. Project Goal(s)
   b. Significance
   c. Expected Outcomes
   d. Justification of Internal Funding
3. Specific Objectives
4. Methods and Procedures
5. Evaluation and Deliverables
6. Future Plans
   (Describe how the project funding with the deliverables will help in future proposal submissions, enhancing the research synergy, and obtaining external funds)
7. Justification of Internal Funding
   (Describe what other funds are available and why additional internal funding is needed)
8. Budget and Budget Justification (maximum 1 page)
9. References (maximum 1 page)
10. Appendix (for PI and each Co-PI/Investigator):
    a. PI Biographical Sketch (NSF/NIH or Federal Agency Format; maximum 2 pages per investigator)

Other Grant Support (maximum 1 page per investigator; summarize specific project goal(s) for each grant and any overlap with this proposal)

2016 Rutgers BHI-RUN-NJIT Pilot Grants Program in Neuroscience

We are pleased to announce the 2016 pilot grants program in neuroscience at Rutgers University. There are two main objectives of these pilot awards program: (i) to foster **new** collaborative, interdisciplinary research in the neurosciences not only across Rutgers but also NJIT, Kessler Foundation Research Center, East Orange VA Medical Center, and (ii) support pilot experiments that will lead to sustained funding from an external agency (e.g., NIH). There are two categories of pilot grants available; each award is limited to **$40,000** direct costs and no indirect costs or overhead are allowed. For both type of pilots, collaborative multidisciplinary efforts are encouraged. The deadline for these applications is **5 PM Tuesday, September 6th, 2016**. The two categories of awards are:

(i) Translational neuroscience awards – these must address disease mechanisms, focusing on diagnosis, tools or treatments that involve animal models, clinical studies, or basic neuroscience relevant to a future clinical application. *The clinical relevance must be clearly described in the Research Plan*. These pilots require at least 2 faculty Co-PIs with appointments from different Schools across Rutgers. Formation of teams that integrate basic and clinical themes with a vision of a future translational impact will have preference. **Six** translational pilots are available and are funded by the BHI. Four out of the six BHI-funded pilot awards will only be for applications submitted by faculty co-PIs from RU-New Brunswick and RBHS. The other two can include co-PIs from RUN and NJIT.

(ii) Basic neuroscience awards – These can include a focus on more basic neural mechanisms, or focus on translational neuroscience experiments involving an animal model or clinical studies. These Basic awards must include at least 2 Co-PIs, no more than one of which can be a faculty member at RUN (**Four** awards funded by the RUN Strategic plan fund), or at NJIT (**One** award funded by NJIT).

Format: All applications should be formatted as an R21 NIH style application (**1 page** Specific Aims and **6 pages** for the Research Plan). Also include Literature Cited, Budget, Budget Justification, NIH Biosketches for all Key Personnel/Co-PIs, and Resources and Environment). Within the Research Plan under the Innovation section please describe explicitly how the pilot funding will promote new collaborations and/or new projects. Indicate one or more extramural funding agencies that you plan to target with the current or an expanded version of the proposal (for NIH grants, indicating study

sections that could potentially review your proposal would also be helpful). The application should be single-spaced, use font/size Arial 11 with 0.5 inch page margins. *Funded* applicants from last year seeking a second year of funding must include in addition a **1 page** Introduction that gives a report of progress made in Year 1, grants and papers submitted as well as a clear justification for the need of second year of funding. Applicants will need to submit the Rutgers Endorsement form at submission and be compliant with the University's eFCOI requirements. IRB and IACUC approvals will need to be submitted using the Just-In-Time (JIT) approach. These forms and approvals are not required at the time of initial grant application submission on September 6th; however, awardees will have to submit these items before the funds from the grant award are disbursed. We anticipate that the award announcement will be made in November 2016. It is recommended that the applicants prepare and submit the IACUC/IRB applications associated with the pilot grant project well in advance, to the appropriate institutional committees, in order to get these approvals in a timely-fashion.
Please note-the pilot award funds cannot be used for PI and co-PI salaries. Pilot funds can be budgeted for post-doc, student and research technician stipends and salaries. Purchase of equipment costing more than $5000 needs to be well-justified in the budget. Funds budgeted for purchase of equipment costing more than $5000 have to be encumbered by June 30th, 2017. All applications must include the Cover page (Title, co-PI's, institutions, etc.) accompanying this announcement. The application should be combined into one PDF document with the Cover page in the front. Submit the SINGLE PDF file to bhi@ca.rutgers.edu **5 PM Tuesday, September 6th, 2016**

All grants will undergo a dual stage review process, organized by the Brain Health Institute in collaboration with RUN and NJIT. They will have an initial external review to judge scientific quality and assign a priority score by external reviewers (similar to NIH study section review). They then will be reviewed by an internal committee (similar to an NIH Council Review) to allocate funds consistent with the long-term strategies for developing neuroscience research at Rutgers and NJIT and the source of pilot funds. One main factor in determining funding will be perceived likelihood that the pilot data generated will lead to external funding.

All pilot awardees will be required to submit a final progress report within 2 months of the end of the award. This report will include publications and grant applications submitted, as well as results obtained and significance of those results. One PI also will be required to orally present results of the studies at the Annual BHI symposium. Awards will be announced by end of November 2016. Additional pilot funding may be available next year; successful applicants from this round can apply for a second year of funding at that point but will compete with new applications as well.

Please contact Gary Aston-Jones or Eldo Kuzhikandathil (bhi@ca.rutgers.edu), Nabil Adam (adam@adam.rutgers.edu) or Atam P Dhawan (atam.p.dhawan@njit.edu) with questions.

Gary Aston-Jones, Ph.D., Director, Brain Health Institute, Rutgers University/Rutgers Biomedical and Health Sciences
Nabil Adam, Ph.D., Vice Chancellor for Research & Collaborations and Founding Director for Rutgers Institute for Data Science, Learning, and Applications, Rutgers University-Newark
Atam P Dhawan, Ph.D., Vice Provost for Research and Development, New Jersey Institute of Technology

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National Science Foundation

Grant Program: Graduate Research Fellowship Program (GRFP)
Agency: National Science Foundation NSF 16-588
RFP Website: http://www.nsf.gov/pubs/2016/nsf16588/nsf16588.htm
Brief Description: The purpose of the NSF Graduate Research Fellowship Program (GRFP) is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master's and doctoral degrees in science, technology, engineering, and

mathematics (STEM) or in STEM education. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education. NSF especially encourages women, members of underrepresented minority groups, persons with disabilities, veterans, and undergraduate seniors to apply.
Awards: Each Fellowship consists of three years of support during a five-year fellowship period. Currently, NSF provides a stipend of $34,000 to the Fellow and a cost-of-education allowance of $12,000 to the graduate degree-granting institution for each Fellow who uses the fellowship support in a fellowship year.
Letter of Intent: Not required.
Full Proposal Submission Due Date: Must be received by 5 p.m. local time of applicant's mailing address):

October 24, 2016: Life Sciences, Geosciences
October 25, 2016: Computer and information Science and Engineering, Engineering, Materials Research
October 27, 2016: Psychology, Social Sciences, STEM Education and Learning
October 28, 2016: Chemistry, Mathematical Sciences, Physics and Astronomy

Contacts:

- Joerg Schlatterer, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Susan Brennan, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Erick Jones, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Gisele Muller-Parker, telephone: (866) 673-4737, email: info@nsfgrfp.org
- Applications, contact: GRF Operations Center, telephone: (866) 673-4737, email: info@nsfgrfp.org

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Grant Program: NSF/Intel Partnership on Information-Centric Networking in Wireless Edge Networks (ICN-WEN)
Agency: National Science Foundation NSF 16-586
RFP Website: http://www.nsf.gov/pubs/2016/nsf16586/nsf16586.htm
Brief Description: Next-generation wireless networks, utilizing a wide swath of wireless spectrum and an array of novel technologies in the wired and wireless domains, are on the cusp of unleashing a broadband revolution with promised peak bit rates of tens of gigabits per second and latencies of less than a millisecond. Such innovations will make possible a new set of applications such as autonomous vehicles, industrial robotics, tactile Internet applications, virtual and augmented reality, and dense Internet of Things (IoT) deployments. A key requirement of these applications is fast ***information response time*** that is invariant as a function of the bandwidth demanded, users/devices supported, and data generated, of which low-latency wireless access time is only one component. Intrinsic security, seamless mobility, scalable content caching, and discovery/distribution services are also essential for such applications. This solicitation seeks unique data network architectures featuring an ***information plane*** *using an Information-Centric Networking (ICN) approach* and addressing discovery, movement, delivery, management, and protection of information within a network, along with the abstraction of an underlying ***communication plane*** creating opportunities for new efficiencies and optimizations across communications technologies that could also address latency and scale requirements.
Awards: Standard grants. **Anticipated Funding Amount:** $3,000,000
Letter of Intent: September 19, 2016.
Full Proposal Submission Due Date: November 21, 2016

Contacts:

- Thyagarajan Nandagopal, Program Director, NSF CISE/CNS, telephone: (703) 292-8950, email: tnandago@nsf.gov
- Darleen L. Fisher, Program Director, NSF CISE/CNS, telephone: (703) 292-8950, email: dlfisher@nsf.gov

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National Institutes of Health

Grant Program: Research on Autism Spectrum Disorders (R01)
Agency: National Institutes of Health PAR-16-388
R03: PA-16-387
R21: PA-16-386
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PA-16-388.html
R03: http://grants.nih.gov/grants/guide/pa-files/PA-16-387.html
R21: http://grants.nih.gov/grants/guide/pa-files/PA-16-386.html
Brief Description: Autism Spectrum Disorders share a cluster of impairments in social communication, as well as the presence of stereotyped behavior, interests, or activities. These complex disorders are usually of lifelong duration and affect multiple aspects of development, learning, and adaptation at home and in the community, thus representing a pressing public health need. The etiologies of these disorders are not yet understood, but may include a combination of genetic and environmental influences. Basic research into the pathophysiology of ASD, including research on brain mechanisms and genetics, is of special interest. Also of high priority are clinical and applied investigations that may lead to the development of new treatments and interventions, specifically those that hypothesize and test a mechanism of treatment effect, as well as the development of validated instruments that may be used as stratification tools or as outcome measures in treatment and intervention studies.
Areas of interest include, but are not limited to, the following:

Epidemiology: Studies of the genetic and environmental epidemiology of ASD to determine risk and protective processes in the etiology of the disorder, including environmental exposures during pregnancy and early childhood; longitudinal studies of high-risk populations; epidemiologic research on interactive genetic and environmental factors or processes that increase or decrease risk for ASD; studies of the developmental course of ASD across the life-span; studies that characterize the range of expression within families; and research that characterizes and quantifies risk and protective processes associated with co-occurring features.

Screening, Early Identification, and Diagnosis: Studies of key features of ASD associated with various stages of development, including those focused on adults; development of new screening tools for use in a variety of settings; assessment of comorbid features including epilepsy; and the creation of new measures to be used in longitudinal and/or treatment studies, as well as measures that further differentiate subtypes of ASD.

Genetic Studies: Family-based or population-based genetic analyses that aim to: identify specific susceptibility genes using whole genome/exome approaches; investigate epigenetic mechanisms and long range control of gene expression; systems approaches that incorporate multiple types of -omics data; detect locus heterogeneity; and analyze the interaction of autism susceptibility genes with environmental exposures and/or genes responsive to environmental insult. An area of particular interest is the effect of genetic factors on therapeutic drug response in individuals with ASD (see Pharmacogenomic Studies, below).

Brain Mechanisms: Studies of brain mechanisms underlying the development, regulation, and modulation of behaviors characterizing ASD, particularly those mechanisms involving social communication; studies of brain mechanisms and biological factors underlying atypical onset patterns or the loss of previously acquired skills; studies of brain mechanisms involved in the development of abnormal electroencephalograms and epilepsy, and studies to clarify the subtypes of seizures and seizure disorders in ASD; studies to define the neurobiological basis for the role of neuroimmune/autoimmune factors; studies using model systems to examine brain dysfunction related to ASD; and studies using novel reagents and tools to identify molecular, cellular, or developmental mechanisms relevant to ASD.

Shared Neurobiology of ASD with Fragile X Syndrome, and Other Related Disorders: Studies of developmental and functional processes, pathways, and brain mechanisms that will lead to an understanding of shared etiology or pathophysiology among these disorders; analysis of autism-related neurobiological and behavioral phenotypes in related "single gene" disorders; and analyses that would identify useful and specific clinical endpoints that would register measurable improvements in response to treatment interventions in clinical populations.

Cognitive Science: Developmental studies of relevant behaviors during infancy including attention to social and nonsocial stimuli, affective behavior, gaze, imitation, reciprocity and play, and their emergence in infants with, or at-risk for, ASD; research on social behavior and social cognition across the life-span; studies leading to more sophisticated measures of higher cognitive functioning, especially in social communication; and studies of sensory-motor factors and multisensory integration.

Communication Skills: Longitudinal, developmental studies of behaviors that are precursors to later communication, and their emergence in children with ASD; sensory, motor, and social-cognitive impairments that impact interaction and communication; predictors of atypical onset patterns in expressive language abilities; and interventions designed to remediate communication and related deficits across the life-span.

Pharmacological/Biological Interventions: Studies testing new pharmacological agents or neuromodulatory devices that specifically target the core social deficits of ASD; identification and validation of novel treatment targets or biomarkers that assess effects on key biological, neurodevelopmental and/or behavioral endpoints disrupted in ASD; and development of validated outcome measures.

Pharmacogenomic Studies: Analyses of SNP and DNA sequence data that identify biomarkers to resolve clinical heterogeneity and heterogeneity of therapeutic drug/device response; studies of genetically determined functional changes in nuclear and cell surface receptors to explain the ineffectiveness of therapeutic agents and adverse or paradoxical drug/device responses; and studies of allelic variation occurring in individual transporter genes that are associated with a functional consequence.

Psychosocial/Behavioral Interventions: Studies to develop novel interventions for persons with ASD; the development of interventions designed to address deficits in complex social abilities or their developmental precursors; studies that develop and test interventions for infants and toddlers who are at-risk for ASD; use of interventions as "probes" to examine specific theories regarding possible neuropathogenesis; and development of validated outcome measures.

Services Research: Research on the organization, delivery, coordination, and financing of services for persons with ASD and their families, within or across service settings; studies aimed at better identifying and addressing changes in service and rehabilitative needs across the life-span, including during transitions from childhood to adolescence, and adolescence to adulthood; interventions to improve the quality and outcomes of treatment and rehabilitation

services; studies of ways to coordinate or integrate services across settings including specialty mental health, general health, and other settings such as educational, vocational, and housing services, in order to maximize receipt of appropriate services; and research on assessing the value and improving the efficiency of the delivery and sustainability of needed services and treatments.
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: NIBIB Trailblazer Award for New and Early Stage Investigators (R21)
Agency: National Institutes of Health PAR-16-390
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-390.html
Brief Description: The rapid evolution and vitality of the biomedical sciences benefits from the contributions and creativity of investigators in the early stages of their careers, and a continuous infusion of new ideas, techniques, and perspectives from other fields. This Trailblazer Award is an opportunity for New and Early Stage Investigators to pursue research programs of high interest to the NIBIB at the interface of engineering and/or the physical sciences with the life and/or behavioral sciences. This Funding Opportunity Announcement (FOA) employs an R21 Exploratory/Developmental Research Grant mechanism enhanced to provide $400,000 in direct costs over three years, allowing sufficient time and resources to pursue a new or emerging research program. With the goal of increasing the diversity of the NIBIB-supported research community, NIBIB encourages applications from investigators that are underrepresented in the biomedical, behavioral or clinical research workforce (see data at http://www.nsf.gov/statistics/showpub.cfm?TopID=2&SubID=27 and the most recent report on Women, Minorities, and Persons with Disabilities in Science and Engineering). Such individuals include women, those from underrepresented racial and ethnic groups, those with disabilities, and those from disadvantaged backgrounds. All applicants to this FOA must meet the NIH definition of New or Early Stage Investigator (https://grants.nih.gov/policy/new_investigators/index.htm#definition).

The application of principles and techniques from engineering and the quantitative sciences such as physics, mathematics, chemistry and computer sciences is providing innovative technologies and novel methods to accelerate the pace of biomedical research, producing new understanding of disease mechanisms and translating these new discoveries to improve human health. The Trailblazer Award seeks to catalyze the development of transdisciplinary research approaches with the potential to open new areas of biomedical investigation. A Trailblazer project may be exploratory, developmental, proof of concept or have high risk-high impact goals. Importantly, the proposed research for this FOA may be technology design-directed and may or may not be hypothesis-driven. In the context of this FOA, innovation encompasses approaches to address well-defined, unmet biomedical research needs through the development of new methods, ideas, or technologies; early steps along the path toward delivery of a new capability or method; and the integration of existing components in a previously unproven format. High-impact projects will have the potential to transform our understanding or practice by applying an innovative approach to an appropriate biomedical challenge to generate informative and impactful data or craft a solution to a significant problem. For projects

supported by a Trailblazer Award, successful results should provide a solid foundation for further research under other funding mechanisms, such as the R01. All areas of research important to the mission of the NIBIB are appropriate for the Trailblazer FOA (https://www.nibib.nih.gov/research-funding).

Trailblazer approaches are expected to differ substantially from current thinking or practice, therefore, extensive preliminary data demonstrating feasibility is an indication that the project is beyond the scope of this FOA. Reviewers' determinations of merit will rely instead on the conceptual framework, the level of innovation, and the potential to significantly advance our knowledge, understanding or practice. Applicants can provide appropriate justification for the proposed work through literature citations, data from other sources, or analytical and computational models. The proposed research could involve considerable risk that the work may not be successful and applicants should clearly explain the significance of the work to allow the reviewers to determine whether the potential impact justifies these risks.

Not all research endeavors will be suitable for this FOA. Projects from New and Early Stage Investigators that are supported by extensive preliminary data should be submitted to the Parent R01 FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-160.html) or the Bioengineering Research Grant FOA (http://grants.nih.gov/grants/guide/pa-files/PAR-16-242.html). Established investigators proposing exploratory and developmental projects should consider the Parent R21 FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-161.html) and the Exploratory/Developmental Bioengineering Research Grants (EBRG) FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-040.html). Projects of limited cost or scope that use widely accepted approaches and methods within well-established fields should be submitted to the Parent R03 FOA (http://grants.nih.gov/grants/guide/pa-files/PA-16-162.html). Projects that propose incremental improvements in well-established areas of investigation are not appropriate for this FOA.

Awards: Application budgets may not exceed $400,000 direct costs over a maximum three-year funding period. No more than $200,000 may be requested in any single year.

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: Chemistry Science Track Award for Rapid Transition (C/START)(R03)
Agency: National Institutes of Health PAR-16-383

RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-383.html

Brief Description: The purpose of this FOA is to support the development of chemical probes that aid basic research investigations on drug abuse and/or identify new lead chemical scaffolds with the potential for structure activity relationship (SAR) studies. In the long term, it is hoped that these lead chemical scaffolds will provide a greater number of pharmacological tools for basic research and possible drug candidates for medications development. All projects should have an early discovery focus. Discovery involves iterative, medicinal chemistry to improve the potency and efficacy of compounds and identify a lead developmental candidate for subsequent medications development. Work should include the chemical optimization of identified hits and include eventual preliminary pharmacodynamic assessments in vitro and/or in vivo. Applicants responding to this FOA should explain the rationale for their projects within the framework of discovery (e.g., target identification > probe/ligand screening > synthesis of ligands > assay development) as opposed to later stage medications development (e.g., lead optimization,

ADME/Tox, chemical manufacturing and controls [CMC], pre-IND studies, or Phase I clinical trials).

Discovery is not 'unidirectional', but rather each stage of work builds upon and informs the others; it is best accomplished through an integrative, multi-disciplinary approach. As such, this FOA provides investigators a distinctive opportunity to assemble a collaborative research team that "cross-fertilizes" the project from disparate, scientific perspectives. This maximizes the chances for innovative success. Accordingly, applicants are strongly encouraged to:

- strategically gather a team of collaborators and/or consultants with necessary diverse expertise in consideration for project advancement (e.g., medicinal chemistry, assay development, behavioral pharmacology, pharmaceutical development, etc.),
- contact Scientific/Research staff to discuss the proposed studies, and help find possible collaborators or obtain clarification.

There are four general areas of emphasis for this FOA:

- Hit identification. e.g., identification / development of new and innovative chemical ligands for justifiable neurobiological targets associated with a SUD or pain;
- Hit expansion. e.g., proof of chemical identity, purity and in vitro activity;
- Hit-to-lead / ligand development. e.g., in vitro secondary screening for SAR;
- Structural-based chemical design / computational modeling. e.g., biophysical and computational/modeling studies to aid in the design of ligands and/or characterize BBB transport.

The process of understanding the structure-activity relationship (SAR) for desired drug properties typically requires dozens of rounds of compound synthesis and testing. Initially, medicinal chemistry will focus heavily on optimizing activity and potency of compounds in primary and secondary in vitro assays. Subsequently, SAR will increase emphasis on ADME/Tox (absorption, distribution, metabolism, excretion, toxicity) properties of the compounds, with continued monitoring and optimization of bioactivity. Thus, the long-term goal of the SAR effort sought here is the selection of a lead chemical scaffold that can be: (1) utilized as a research probe, and/or (2) possess sufficient drug-like properties and bioactivity to proceed into medications development.

Medications development work is not directly supported through this FOA. Researchers interested in seeking funding for therapeutic development are referred to other related announcements such as NIDA's "Grand Opportunities in Medications Development" (PAR-13-270), NIDA's Addiction Treatment Discovery Program, or the NIH Neurotherapeutics Grand Challenge.

It is expected that this award will provide support for up to 2 years of medicinal chemistry feasibility work. This work would include, for example, pharmacological studies to clarify the compound molecular mechanism of action (e.g., agonist vs. PAM) or demonstration of target engagement. During the project period, the PD/PI is expected to demonstrate pharmacodynamic activity for at least two lead chemical compounds in vivo.

The following studies are outside the scope of this FOA:

- Discovery and/or development of devices,
- Good Manufacturing Practices (GMP) chemical synthesis,
- IND-enabling studies (e.g., lead compound-directed ADME/Toxicity testing),
- Clinical trials, or
- Clinical research.

Intellectual property rights to chemical compounds discovered during the project will be retained by the awardee.

Awards: Direct costs of up to $50,000 per year may be requested.

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: Chemical Discovery (CHEM) Award (R21/R33)
Agency: National Institutes of Health PAR-16-384
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-384.html
Brief Description: The purpose of this FOA is to support the development of chemical probes that aid basic research investigations on drug abuse and/or identify new lead chemical scaffolds with the potential for structure activity relationship (SAR) studies. In the long term, it is hoped that these lead chemical scaffolds will provide a greater number of pharmacological tools for basic research and possible drug candidates for medications development. All projects should have an early discovery focus. Discovery involves iterative, medicinal chemistry to improve the potency and efficacy of compounds and identify a lead developmental candidate for subsequent medications development. Work should include the chemical optimization of identified hits and include eventual preliminary pharmacodynamic assessments in vitro and/or in vivo.

Discovery is not 'unidirectional', but rather each stage of work builds upon and informs the others; it is best accomplished through an integrative, multi-disciplinary approach. As such, this FOA provides investigators a distinctive opportunity to assemble a collaborative research team that "cross-fertilizes" the project from disparate, scientific perspectives. This maximizes the chances for innovative success. Accordingly, applicants are strongly encouraged to:

- Strategically gather a team of collaborators and/or consultants with necessary diverse expertise in consideration for project advancement (e.g., medicinal chemistry, assay development, behavioral pharmacology, pharmaceutical development, etc.),

Contact Scientific/Research staff to discuss the proposed studies, and help find possible collaborators or obtain clarification.
There are four general areas of emphasis for this FOA:

- Hit identification. e.g., identification / development of new and innovative chemical ligands for justifiable neurobiological targets associated with a SUD or pain;
- Hit expansion. e.g., proof of chemical identity, purity and in vitro activity;
- Hit-to-lead / ligand development. e.g., in vitro secondary screening for SAR;
- Structural-based chemical design / computational modeling. e.g., biophysical and computational/modeling studies to aid in the design of ligands and/or characterize BBB transport.

The process of understanding the SAR for desired drug properties typically requires dozens of rounds of compound synthesis and testing. Initially, medicinal chemistry will focus heavily on optimizing activity and potency of compounds in primary and secondary in vitro assays. Subsequently, SAR will increase emphasis on ADME/Tox (absorption, distribution, metabolism, excretion, toxicity) properties of the compounds, with continued monitoring and optimization of bioactivity. Thus, the long-term goal of the SAR effort sought here is the selection of a lead chemical scaffold that can be: (1) utilized as a research probe, and/or (2) possess sufficient drug-like properties and bioactivity to proceed into medications development.
Medications development work is not directly supported through this FOA. Researchers interested in seeking funding for therapeutic development are referred to other related announcements such as NIDA's "Grand Opportunities in Medications Development" (PAR-13-270), NIDA's Addiction Treatment Discovery Program, or the NIH Neurotherapeutics Grand Challenge.

This opportunity will utilize the R21/R33 mechanism. Applicants applying for only the R21 mechanism or only the R33 mechanism will be considered incomplete to this FOA and the application will not be reviewed. The R21/R33 phased innovation award has two phases:

- The R21 phase is for milestone-driven exploratory / feasibility studies, whereas
- The R33 phase is for expanded discovery and development.

R21 Phase: Preliminary data are not required for the R21 phase. However, appropriate theoretical justification and a sound hypotheses should be provided to engender confidence that the initial R21 project is well thought out and feasible. This would include, for example, pharmacological studies to clarify the compound molecular mechanism of action (e.g., agonist vs. PAM) or demonstration of target engagement.

R33 Phase: During the R33 Phase, the PD/PI is expected to demonstrate pharmacodynamic activity for at least two lead chemical compounds in vivo. NIDA program staff will conduct an administrative review of grants nearing completion of the R21 phase for readiness to transition to the R33 phase. The review will be based, in part, on successful completion of the R21 milestones. It is expected that some of the R21 awardees will not proceed to the R33 phase. Transition to the R33 will depend upon program priorities, the availability of funds, and the ability of the applicant to meet pre-defined milestones. The clarity and completeness of the R21/R33 application with regard to specific goals and feasibility milestones are critical.

The following studies are outside the scope of this FOA:

- The discovery and/or development of devices,
- Good Manufacturing Practices (GMP) chemical synthesis,
- IND-enabling studies (e.g., lead compound-directed ADME/Toxicity testing),
- Clinical trials, or
- Clinical research.

Intellectual property rights to chemical compounds discovered during the project will be retained by the awardee.

Awards: For the R21 phase, direct costs are limited to $275,000 over a two-year project period, with a maximum of $200,000 allowed in any single year.

The R33 phase is limited to $250,000 in direct costs per year.

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.

Department of Defense/US Army/DARPA/ONR

Grant Program: FY2017 Office of Naval Research (ONR) Young Investigator Program (YIP)
Agency: Department of Defense FY2017 Office of Naval Research (ONR) N00014-16-S-FO15
Website: http://www.onr.navy.mil/~/media/Files/Funding-Announcements/BAA/2016/N00014-16-S-FO15.ashx

Brief Description: The Office of Naval Research (ONR) is interested in receiving proposals for its Young Investigator Program (YIP). ONR's Young Investigator Program (YIP) seeks to identify and support academic scientists and engineers who are in their first or second full-time tenure-track or tenure-track-equivalent academic appointment, have begun their first appointment on or after 04 November 2011, and who show exceptional promise for doing creative research. The objectives of this program are to attract outstanding faculty members of Institutions of Higher

Education (hereafter also called "universities") to the Department of the Navy's research program, to support their research, and to encourage their teaching and research careers. Proposals addressing research areas (as described in the ONR Science and Technology (S&T) Department section of ONR's website at www.onr.navy.mil) which are of interest to ONR program officers will be considered. Contact information for each division (a subgroup of an S&T Department) is also listed within the S&T section of the website. Applicants are STRONGLY ENCOURAGED to contact the appropriate Program Officer who is the point of contact for a specific technical area to discuss their research ideas. A list of Program Officers and their contact information can be found at: http://www.onr.navy.mil/en/Science-Technology/Contacts.aspx Brief informal pre-proposals may be submitted to facilitate these discussions but are not required. Such discussions can clarify the content and breadth of the priority research areas and enhance the match between a subsequent proposal and Department of the Navy research needs. Please allow adequate time for such discussions with the ONR Program Officer. An individual wishing to apply for a Young Investigator award must submit a research proposal and at least one letter of support through the appropriate university officials. Refer to Section V “Evaluation Information” regarding the importance of the letter(s) of support in the overall evaluation criteria and Section IV “Application and Submission Information” regarding its content. The research proposal should follow the format described in FOA Section IV entitled, “Application and Submission Information.” ONR makes awards to institutions, not to individuals. Offerors may request up to $170,000 per year for three (3) years. These funds may be budgeted against any reasonable costs related to conducting the proposed research, for example, salary for the Young Investigator, graduate student support, supplies, and applicable indirect cost. Additional funds (beyond the basic $170,000 yearly amount) for capital equipment which enhances the Young Investigator's proposed research may be requested for the first budget period based on the needs of the research. Requesting funds for capital equipment will not decrease the probability of receiving an award. Additional support for equipment will be decided separately from award selections and will depend upon availability of funds. Offerors awarded grants under the ONR Young Investigator Program have the opportunity to supplement the basic $170,000 per year award through a "matching funds" enhancement available only to those receiving an ONR award. Proposals submitted against this FOA do not require offerors to identify if they will seek “matching funds” or provide additional documentation. As an incentive for becoming involved with other Department of the Navy research activities, the Office of the Director of Research of ONR may match on a 1-for-1 basis, the first $25,000 of additional Department of the Navy funding which a successful applicant obtains each year to support additional, collaborative research with a Navy laboratory during the YIP award. Potential sources of research support eligible for the 1-for-1 match include Navy laboratories and ONR Program Officers. Thus, these "matching funds" can provide research support over and above the basic $170,000 per year award, e.g., to support an additional graduate student or an additional research task. A Young Investigator is not prohibited from receiving more than $25,000 from other Department of the Navy sources; however, the Office of the Director of Research will match on a 1-for-1 basis only the first $25,000 each year, if funds are available. Other Navy support eligible for matching funds can be arranged at any time and generally will not have been identified at the time of the initial award. ONR Program Officers may assist, upon request, Young Investigators in identifying potential collaborators at Navy laboratories or other Navy organizations interested in funding additional research. Upon completion of the three (3) year award period, Young Investigators may apply to ONR for continued support under ONR's Long Range BAA. Decisions about continued funding outside the context of the YIP will be made following a review of the new proposal by the cognizant Program Officer based on the merits of the proposal, ONR's research priorities, and the creativity and productivity exhibited during the

previous Young Investigator research program. The competition for YIP awards continues to be intense. In 2016 more than 260 proposals were received resulting in 47 Young Investigator awards. Past awardees have both submitted outstanding research proposals and possessed outstanding records of prior professional accomplishments. Given that "past performance" is a selection criterion, applicants are advised that the biographical information submitted as part of the proposal (see "Qualifications" under "Proposal Content," below) should list all relevant past and present activities. See Section V, "Evaluation Information" for more details regarding evaluation of submitted proposals. Proposals not selected for the Young Investigator Program may be considered for grant award under the ONR Long Range Broad Agency Announcement. Under the ONR Long Range BAA, grant proposals would be in competition with all other research proposals submitted in response to the ONR Long Range BAA. Historically, only a limited number of proposals initially submitted to the YIP received funding under the ONR Long Range BAA. The YIP is not a "research initiation" opportunity with standards that are less demanding than ONR's other research grant programs; instead, it is intended to confer honor upon awardees beyond the funding being provided. Consideration of any YIP proposal to another ONR research grant program is at the discretion of the cognizant program officer.

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

Deadline: November 4, 2016

Grant Program: Peer Reviewed Orthopaedic Applied Research Award
Agency: Department of the Defense Dept. of the Army – USAMRAA W81XWH-16-PRORP-ARA

RFP Website: http://cdmrp.army.mil/funding/pa/16prorpara_pa.pdf

Brief Description: The FY16 PRORP challenges the scientific community to address the most significant gaps in care for the leading burden of injury and loss of fitness for military duty by funding innovative, high-impact, clinically relevant research to advance optimal treatment and rehabilitation from neuromusculoskeletal injuries (excluding spinal cord injuries) sustained during combat or combat-related activities. It is expected that research findings would also provide benefit to the general population. Applications involving multidisciplinary collaborations among academia, industry, the military Services, the Department of Veterans Affairs (VA), and other Federal agencies are highly encouraged.

All applications must address one and only one of the following FY16 PRORP Focus Areas.

The Focus Area addressed should be one from either the Surgical Care category or the Rehabilitation category. Studies that propose nominal or iterative advancements are not encouraged.

Surgical Care Focus Areas:

· Peripheral Nerve Injuries: Treatment strategies to improve outcomes from segmental peripheral nerve defects of motor and mixed (motor and sensory) peripheral nerve damage from crush or complete injury.

· Prevention of Heterotopic Ossification: Techniques to retard or prevent the development of human post-traumatic heterotopic ossification in the upper extremity.

· Volumetric Muscle Loss: Techniques to regenerate functional, innervated muscle units in treatment of volumetric muscle loss.

· Extremity Fractures: Strategies to optimize patient outcomes after extremity fracture (i.e., time to begin rehabilitation, weight-bearing strategy, etc.)
· Pelvic Ring Injuries: Treatment strategies to improve outcomes of complex pelvic ring injuries.
• Compartment Syndrome: Strategies to improve current diagnoses for compartment syndrome.
• Gaps in Clinical Practice Guidelines: Address gaps in current orthopaedic clinical practice guidelines (CPG) and recommendations (http://www.usaisr.amedd.army.mil/cpgs.html). Applications under this Focus Area must specify which orthopaedically relevant CPG their application is intended to support. Applicants should also highlight the expected impact of their research on orthopaedic clinical practice.
• Surgical Techniques to Optimize Gait: Validate surgical techniques to optimize gait efficiency and outcomes for patients with amputation or limb salvage.
• Soft Tissue Trauma: Strategies to develop and/or identify musculoskeletal extremity soft tissue trauma treatments optimizing return to duty, work, or reintegration.

Awards: Maximum funding of $500,000 for total costs.
Deadline:
Pre-Application (Preproposal): September 7, 2016 5:00 p.m. Eastern time
Full Application: December 7, 2016 11:59 p.m. Eastern time

Department of Energy

Grant Program: Request For Information (Rfi) On Novel Power Electronic Systems Enabled By Wide-Bandgap Semiconductors
Agency: Department of Energy DE-FOA-0001609
Website: https://arpa-e-foa.energy.gov/#FoaId6a667933-0fc5-49ef-9f23-80ce0d96edb0
Brief Description: Power electronics are an integral part of many energy systems, including but not limited to power supplies, LED drivers, data centers, automotive, solar inverters, and electric motor drives. By 2030, an estimated 80% of all U.S. electricity is expected to flow through power electronics[1]. Because of this high potential impact, ARPA-E has invested significantly in programs to develop power electronics technologies[2],[3],[4]. These previous efforts have focused primarily on material and device development where advanced wide-bandgap semiconductor materials, such as silicon carbide and/or gallium nitride, would be substituted for silicon, but mostly without focused consideration and redesign of the circuit topology. Direct replacement of Si devices by wide-bandgap semiconductor devices offers limited improvements in power electronic performance metrics. Thus, there is now an opportunity to build on the successes from earlier programs and aim for both higher performance, as well as increased market penetration of these highly promising technologies.
Given the capabilities of emerging wide-bandgap materials and devices, ARPA-E believes there are new opportunities for innovations in power electronics such as converter circuit topologies and architectures, resonant and soft switching, control techniques, integration and packaging, and system architectures. These innovations can support ARPA-E's mission by leading to higher efficiency power conversion in two different ways: (1) directly, through realization of design that are more efficient and (2) indirectly, by enabling inherently higher efficiency wide-bandgap materials. Recent advances have demonstrated high performance wide-bandgap semiconductor devices, but they have not yet achieved high rates of adoption because power circuits have not been designed that exploit their inherent advantages. Additionally, there are concerns about the

cost and reliability of wide-bandgap semiconductor devices. New circuit topologies could be designed to fully extract the potential of wide-bandgap semiconductor devices while addressing the cost and reliability concerns.

ARPA-E believes that the timing is right to leverage recent progress in electronic materials and devices to fully realize their benefits. There are numerous precedents for advances in device technology to require new approaches at the circuit and system level for significant proliferation of the technology. For example, recent programs in compound semiconductors have driven progress in envelope tracking circuits for reducing power (which extends lifetime), as well as performance improvements via heterogeneous integration with other device technologies[5]. Basic materials and device developments (e.g., low-k dielectrics, silicon-on-insulator wafers, Cu interconnect) are typically slow to be adopted often due to reliability concerns and can take 5-10 years until circuit and product teams learn how to make use of the new technology reliably in their designs. This is currently happening with recent progress in 3D memory technology, with designers learning to leverage the new capability[6],[7]. Solar inverters provide another example, with circuit designs incorporating distributed inverters throughout solar cells, the overall reliability and performance of the system are improved compared to having one larger inverter farther away from the solar panels. This guidance from the recent history of progress in advanced electronics has generated ARPA-E's interest in a potential effort in novel power electronic systems enabled by wide-bandgap semiconductors to continue to advance the exciting power electronics technologies developed in previous R&D projects.

ARPA-E is thus seeking input from the broad research and development community with regard to developing advanced circuit topologies and systems; in particular, circuits that incorporate advanced wide-bandgap materials that are inherently more efficient, such as SiC or GaN. In addition, we would like to understand all barriers to adoption, whether technical or market-based and any ideas on which might be solved through innovative circuit design. Such insights that leverage the application and adoption of these advanced circuit topologies to well-defined end-use applications are strongly encouraged.

Contact Information:

ARPA-E-RFI@hq.doe.gov

Please submit your comments in PDF format by 5:00 PM Eastern Time on August 29, 2016. ARPA-E will accept responses to this RFI immediately.

NASA

Grant Program: ROSES 2016: Heliophysics Grand Challenges Research- Science Centers
Agency: NASA NNH16ZDA001N-HGCRSC
RFP Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={EA132F7B-8B5B-8E6B-C173-38C0E1B6251A}&path=init

Brief Description: NASA's heliophysics strategic objective is to understand the Sun and its interactions with the Earth and the solar system, including space weather. The Heliophysics Research Program is focused on achieving the goals as defined in the NASA 2014 Science Plan (available at http://nasascience.nasa.gov/about-us/science-strategy) and the 2013 National Research Council Decadal Strategy for Solar and Space Physics report, Solar and Space Physics: A Science for a Technological Society (www.nap.edu/catalog.php?record_id=13060). Heliophysics research addresses these recommendations by implementing a program to achieve three overarching science goals:

• Explore the physical processes in the space environment from the Sun to the Earth and throughout the solar system
• Advance our understanding of the connections that link the Sun, the Earth, planetary space environments, and the outer reaches of our solar system
• Develop the knowledge and capability to detect and predict extreme conditions in space to protect life and society and to safeguard human and robotic explorers beyond Earth

The program supports investigations in all subdisciplines of Heliophysics and also supports investigations that span the subdisciplines and address a systems approach — emphasizing the understanding of fundamental processes and interconnections across the traditional science disciplines. The program seeks to characterize these phenomena on a broad range of spatial and temporal scales, to understand the fundamental processes that drive them, to understand how these processes combine to create space weather events, and to enable a capability for predicting future space weather events. In concert with the other NASA science divisions (Planetary Science, Astrophysics, and Earth Science), the program shares responsibility for learning about the Earth, our solar system, the universe, and their interrelationships.

The program supports investigations of the Sun, including processes taking place throughout the solar interior and atmosphere and the evolution and cyclic activity of the Sun. It supports investigations of the origin and behavior of the solar wind, energetic particles, and magnetic fields in the heliosphere and their interaction with the Earth and other planets, as well as with the interstellar medium. The program supports investigations of the physics of magnetospheres, including fundamental interactions of plasmas and particles with fields and waves, and coupling to the solar wind and ionospheres. It supports the physics of the terrestrial mesosphere, thermosphere, ionosphere, including the coupling of these phenomena to the lower atmosphere and magnetosphere.

Award: Various
Proposal Deadline: April 28, 2017

Grant Program: ROSES 2016: Discovery Data Analysis Program
Agency: NASA NNH16ZDA001N-DDAP
RFP Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={E2458B76-679E-DD13-4075-005651FF0CEE}&path=init
Brief Description:
It is the responsibility of the proposers to DDAP to specifically identify any needed mission data and to ascertain that those data are publically available. Proposals dealing with mission data should provide convincing evidence that the data have sufficient quality and are available in sufficient quantity to achieve the goals set forth in the proposal. The proposer should demonstrate a familiarity with the data and an understanding of the work required to refine the data for the purposes of the analysis. The following is a list of Discovery Missions for which archived data is available:

• NEAR
• Stardust
• Genesis
• Deep Impact
• MESSENGER
• Dawn •
Kepler/K2 [Added March 10, 2016]

The DDAP supports investigations that use only data available in the Planetary Data System (PDS; http://pds.nasa.gov/) or equivalent publicly accessible archive(s), such as Genesis data at http://genesis.lanl.gov/plots/. The data must be archived and publicly available 30 days prior to the Step-2 submission deadline for DDAP proposals. Spacecraft data that have not been placed in such archives are not eligible for use in DDAP investigations. In all cases, it is the responsibility of the DDAP investigator to acquire any necessary data. Investigators are encouraged to contact the PDS archive for assistance in identifying specifics of available datasets. Datasets to be used in the proposed work must be clearly and specifically identified in the proposal. Regardless of the archive(s) used, if the data to be analyzed have known issues that might represent an obstacle to analysis, the proposers must demonstrate clearly and satisfactorily how such potential difficulties will be overcome

A Step-1 proposal must cover the following topics: • The goals and/or objectives to be addressed • The approach and methodology to be used to address the goals and/or objectives • The reasons why the work proposed is within the scope of the Program Element and why this Program Element is the most appropriate for the work proposed Following the submission of a Step-1 proposal, the proposer will be notified through NSPIRES whether the Step-2 proposal is "encouraged" or "discouraged," at which point the proposer will be able to submit a Step-2 proposal. No evaluation of intrinsic merit will be performed on Step-1 proposals. The perceived relevance of the proposed work to the particular Program Element will be the main factor in deciding whether submission of a Step-2 proposal will be encouraged. Please note that the Step-2 proposal relevance evaluation is independent of the Step-1 evaluation.

Award: Available funding: ~ $1,500,000

Proposal Deadline:

DDAP16 Step-1 Proposals Due Sep 08, 2016
