

# NJIT Research Newsletter

Issue: ORN-2016-029

---

**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 Awards:** Page 1

**In the News:** Page 3  
(Related to research funding)

**Webinar Events and Announcements:** Page 5

**Grant Opportunities:** Page 6

---

## Recent Research Grant and Contract Awards

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

**PI:** Treen Arinzeh (PI)

**Department:** Biomedical Engineering

**Grant/Contract Project Title:** Schwann Cell GAG mimetic Combination Strategy for Spinal Cord Repair

**Funding Agency:** NJ Commission of Spinal Cord Research

**Duration:** 07/10/16-06/30/17

**PI:** Roberto Rojas-Cessa (PI) and Haim Grebel (Co-PI)

**Department:** Electrical and Computer Engineering

**Grant/Contract Project Title:** Collaborative Research: EAGER: Fusion of Data and Power for a Controllable Delivery Power Grid

**Funding Agency:** NSF

**Duration:** 08/15/16-07/31/18

**PI:** Abdallah Khreishah (PI)

**Department:** Electrical and Computer Engineering

**Grant/Contract Project Title:** NeTS: Small: Collaborative Research: Coexistence of Directional Communications within 5G Networks: The Case for Visible Light Enhanced Small-Cells

**Funding Agency:** NSF

**Duration:** 10/01/16-09/30/19

**PI:** Rajesh Dave (PI)  
**Department:** Chemical, Biological and Pharmaceutical Engineering  
**Grant/Contract Project Title:** Dry Coating of Micronized Salt onto Nutritional Carrier Particles  
**Funding Agency:** NASA  
**Duration:** 08/08/16-01/07/17

**PI:** Gregory Fleishman (PI) and Dale Gary (Co-PI)  
**Department:** Center for Solar Terrestrial Research  
**Grant/Contract Project Title:** Mondelez Global, LLC  
**Funding Agency:** NASA  
**Duration:** 06/20/16-06/19/19

**PI:** Namas Chandra (PI) and Bryan Pfister (Co-PI)  
**Department:** Biomedical Engineering  
**Grant/Contract Project Title:** Primary Blast Injury Criteria for Animal/Human Models using Field Validated Shock Tubes  
**Funding Agency:** US Army Medical Research  
**Duration:** 08/15/15-08/14/19

**PI:** William Marshall (PI)  
**Department:** NJII  
**Grant/Contract Project Title:** INS/HANS/SSS Phase II  
**Funding Agency:** US Army  
**Duration:** 07/29/16-09/16/17

**PI:** Monique Paden-Hutchinson (PI)  
**Department:** CPCP  
**Grant/Contract Project Title:** Educational Talent Search Program  
**Funding Agency:** US DoEd  
**Duration:** 09/01/16-08/31/21

**PI:** Laurence Howell (PI)  
**Department:** EOP  
**Grant/Contract Project Title:** Greater Philadelphia Region Louis Stokes Alliance for Minority Participation (Philadelphia AMP) Initiative (Senior-Level Alliance)  
**Funding Agency:** NSF  
**Duration:** 08/01/14-07/13/19

---

### **In the News...**

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

**National Science Foundation:** The *Brain Research through Advancing Innovative Neurotechnologies* (BRAIN) Initiative is a major research focus for both the [NSF](#) and for the [NIH](#). The NSF has now issued a [Dear Colleague Letter](#) calling attention to the large and complex data sets being generated by the initiative and the emerging need to focus more attention on

managing, integrating and analyzing these diverse data types. The letter encourages experts in informatics, software and cyberinfrastructure to partner with brain researchers. The letter recommends that researchers contact program managers in their respective program areas including [Advances in Biological Informatics](#), [Software Infrastructure for Sustained Innovation](#), and [Data Infrastructure Building Blocks](#).

**NASA:** NASA's [New Frontiers](#) planetary exploration program offers principal investigators the opportunity to pursue specific missions defined by the community as high priority. They are medium-class missions with a cost cap of \$850 million not including a launch vehicle. Present missions include the New Horizons mission to Pluto, the Juno mission to Jupiter and the soon to be launched OSIRIS-Rex mission to the asteroid Bennu. NASA has now [released a draft AO](#) <https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId=%7bCC7546D5-3DBD-E646-19F6-45CE5BFC0738%7d&path=open> and is requesting community comment for the next set of missions. In the past, community comments have led to notable changes and improvements in such NASA solicitations. More information on <http://spaceref.com/news/viewsr.html?pid=49245>

**Homeland Security:** The Department of Homeland Security Science and Technology Directorate (S&T) Office of University Programs (OUP) has issued a pair of solicitations to establish a lead and partners for a Center of Excellence (COE) for Homeland Security Quantitative Analysis (DHS-16-ST-061-HSQA-LEAD and DHS-16-ST-061-HSQA-PARTNER). Valued at up to \$40 million over a ten year period, the centers are intended to be university based and work closely with DHS and others to identify the most critical knowledge and technology gaps on an on-going basis. The Center and its partners would be expected to enhance the application of analytic tools that support real-time decision making to address homeland security-related threats and hazards and develop the next generation of mathematical, computational, and statistical theories to advance quantitative analysis capabilities of the homeland security enterprise. More information on [http://m.nextgov.com/cio-briefing/2016/08/dhs-offers-40m-data-driven-decisions/130646/?oref=nextgov\\_today\\_nl](http://m.nextgov.com/cio-briefing/2016/08/dhs-offers-40m-data-driven-decisions/130646/?oref=nextgov_today_nl)

**White House Commission on Enhancing National Cybersecurity:** A [Request for Information](#) has been issued to obtain community input on current and future challenges, and promising and innovative approaches to address those challenges. Among the areas the Commission seeks to explore are: emerging technology trends and innovations; the effect these technology trends and innovations will have on the digital economy; the effect these technology trends and innovations will have on cybersecurity; and, economic and other incentives for enhancing cybersecurity. More Information on [http://m.nextgov.com/cybersecurity/2016/08/white-house-cyber-commission-wants-hear-you/130628/?oref=govexec\\_today\\_nl](http://m.nextgov.com/cybersecurity/2016/08/white-house-cyber-commission-wants-hear-you/130628/?oref=govexec_today_nl)

---

**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 the website <http://grants.nih.gov/grants/guide/notice-files/NOT-EB-16-009.html>

---

### **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](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: 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](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 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:** National Science Foundation Research Traineeship (NRT) Program; NRT Internal Competition; Process Systems, Reaction Engineering and Molecular Thermodynamics; Particulate and Multiphase Processes; Biophotonics; Biotechnology and Biochemical Engineering; Environmental Sustainability

**NIH:** BD2K Research Education Curriculum Development: Data Science Overview for Biomedical Scientists (R25); BRAIN Initiative: Development and Validation of Novel Tools to Analyze Cell-Specific and Circuit-Specific Processes in the Brain (R01); NIH Big Data to Knowledge (BD2K) Enhancing Diversity in Biomedical Data Science (R25)

**Department of Defense/US Army/DARPA/ONR:** Reconstructive Transplant Research Program Investigator-Initiated Research Award; 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: Planetary Instrument Concepts for the Advancement of Solar System Observations; ROSES 2016: Discovery Data Analysis Program

---

## **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 6<sup>th</sup>, 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 30<sup>th</sup>, 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](mailto:bhi@ca.rutgers.edu) **5 PM Tuesday, September 6<sup>th</sup>, 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](mailto:bhi@ca.rutgers.edu)), Nabil Adam ([adam@adam.rutgers.edu](mailto:adam@adam.rutgers.edu)) or Atam P Dhawan ([atam.p.dhawan@njit.edu](mailto: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

---

## **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**.

The **Traineeship Track** is dedicated to effective training of STEM graduate students in high priority interdisciplinary research areas, through the use of a comprehensive traineeship model that is innovative, evidence-based, and aligned with changing workforce and research needs. For FY2016, there are four priority areas: (1) Data-Enabled Science and Engineering (DESE), (2) Understanding the Brain (UtB), (3) Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS), and (4) any other interdisciplinary research theme of national priority. The priority research areas for the FY2017 competition will be (1) UtB, (2) INFEWS, and (3) any other interdisciplinary research theme of national priority.

The **IGE Track** focuses on test-bed projects aimed at piloting, testing, and validating innovative and potentially transformative approaches to graduate education. IGE projects are intended to generate the knowledge required for their customization, implementation, and broader adoption. While the Traineeship Track promotes building on the current knowledge base to develop comprehensive programs to effectively train STEM graduate students, the IGE Track supports testing of novel models or activities with high potential to enrich and extend the knowledge base on effective graduate education approaches.

The NRT program addresses both workforce development, emphasizing broad participation, and institutional capacity building needs in graduate education. For both tracks, strategic collaborations with the private sector, non-governmental organizations (NGOs), government agencies, national laboratories, field stations, teaching and learning centers, informal science centers, and academic partners are encouraged.

**Awards:** Standard Grants; **Anticipated Funding Amount:** \$51,680,000.

**Letter of Intent:** December 09, 2016

**Full Proposal Submission Due Date:** February 7, 2017

**Limit on Number of Proposals per Organization:** 4

**Limit on Number of Proposals per Organization:** 2 for the Traineeship Track, 2 for the Innovations in Graduate Education Track

An eligible organization may participate in two Traineeship Track proposals and two Innovations in Graduate Education Track proposals per competition. **Participation includes serving as a lead organization on a non-collaborative proposal or as a lead organization, non-lead organization, or subawardee on a collaborative proposal.** Organizations participating solely as evaluators on projects are excluded from this limitation.

**Limit on Number of Proposals per PI or Co-PI:** 1

An individual may serve as Lead Principal Investigator (PI) or Co-PI on only one proposal submitted to the NRT program per annual competition

**Contacts:**

- Claire Hemingway, telephone: (703) 292-7135, email: [nrt@nsf.gov](mailto:nrt@nsf.gov)
- Richard Tankersley, telephone: (703) 292-5199, email: [nrt@nsf.gov](mailto:nrt@nsf.gov)

### **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.**

**Instruction of Preparation of Letters of Intent (required):**

A Letter of Intent (LOI) submitted by the lead institution only is required for proposal submissions planned for either NRT track. Limits on the number of proposals submitted per institution and per PI/coPI also apply to the Letters of Intent. Letters of Intent are not reviewed but are used to gauge review requirements. They are not used as pre-approval mechanisms for the submission of proposals, and no feedback is provided to the submitters.

Submit a one-page LOI through FastLane with the following information:

- The name and departmental affiliation of the Principal Investigator (PI);
- The name(s) and departmental affiliation(s) of the Co-PI(s) and others composing the 10 Core Participants;
- The names(s) of any other participating institutions or organizations;
- Project Title: For Traineeship Track proposals, the title must begin with “NRT-DESE:”, “NRT-UtB:”, “NRT-INFEWS:”, for projects targeting the Data-Enabled Science and Engineering, Understanding the Brain, and Nexus of Food, Energy, and Water Systems research areas, respectively. Titles for projects addressing another interdisciplinary theme must begin with “NRT:”. For Innovations of Graduate Education Track proposals, the title must begin with “NRT-IGE:”.
- Project Synopsis (2500 text-based characters): For Traineeship Track proposals, provide a brief summary of the vision and goals of the proposed training program, including a brief description of the interdisciplinary research theme, the main training elements, the integration of the research and training, and the need for the program; for IGE Track proposals, provide a brief description of the graduate education model(s), approach(es), or activities to be piloted and tested, including a brief description of the disciplinary or interdisciplinary needs and/or challenges addressed.

Keywords: For Traineeship Track proposals, include 4-5 keywords that specify the disciplines and/or themes targeted; for IGE Track proposals, include 4-5 keywords that describe the model, approach, and/or activities to be piloted and tested

---

**Grant Program: Process Systems, Reaction Engineering and Molecular Thermodynamics**

**Agency: National Science Foundation CBET**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505324&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505324&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The goal of the **Process Systems, Reaction Engineering and Molecular Thermodynamics (PRM)** program is to advance fundamental engineering research on the rates and mechanisms of important classes of catalyzed and uncatalyzed chemical reactions as they relate to the design, production, and application of catalysts, chemical processes, biochemical processes, and specialized materials that have important impacts on society. The program seeks to advance electrochemical and photochemical processes of engineering significance or with commercial potential, design and optimization of complex chemical and biochemical processes, thermodynamic modeling and experiments that relate molecular dynamics to macroscopic properties and behavior, dynamic modeling and control of process systems and individual process units, reactive processing of polymers/ceramics/thin films, and interactions between chemical reactions and transport processes in reactive systems, for the integration of this information into the design of complex chemical and biochemical reactors. A substantial focus of the PRM program is to impact the chemical manufacturing enterprise by funding projects aimed at zero emissions and environmentally-friendly, smart manufacturing

using sustainable materials. Areas that focus on reactors of all types (fuel cells, batteries, microreactors, biochemical reactors, etc.), reactor design in general, and design and control of all systems associated with energy from renewable sources have a high priority for funding.

**Awards:** CAREER, Supplements, **Grants for Rapid Response Research (RAPID)**, **Early-concept Grants for Exploratory Research (EAGER)**

**Letter of Intent:** Not Required

**Full Proposal Submission Due Date:** October 1, 2016 - October 20, 2016

**Contacts:** Triantafillos Mountziaris [tmountzi@nsf.gov](mailto:tmountzi@nsf.gov) (703) 292-8320

---

**Grant Program: Particulate and Multiphase Processes**

**Agency: National Science Foundation PD 16-1415**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505330&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505330&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The goal of the **Particulate and Multiphase Processes (PMP)** program is to support fundamental research on physico-chemical phenomena that govern particulate and multiphase systems, including flow of suspensions, drops and bubbles, granular and granular-fluid flows, behavior of micro- and nanostructured fluids, and self-assembly/directed-assembly processes that involve particulates. The program encourages transformative research to improve our basic understanding of particulate and multiphase processes with emphasis on research that demonstrates how particle-scale phenomena affect the behavior and dynamics of larger-scale systems. Although proposed research should focus on fundamentals, a clear vision is required that anticipates how results could benefit important applications in advanced manufacturing, energy harvesting, transport in biological systems, biotechnology, or environmental sustainability. Collaborative and interdisciplinary proposals are encouraged, especially those that involve a combination of experiment with theory or modeling. Proposals whose main focus is on the synthesis of particles are not encouraged.

**Awards:** CAREER, Supplements, **Grants for Rapid Response Research (RAPID)**, **Early-concept Grants for Exploratory Research (EAGER)**

**Letter of Intent:** Not Required

**Full Proposal Submission Due Date:** October 1, 2016 - October 20, 2016

**Contacts:** William L. Olbricht [wolbrich@nsf.gov](mailto:wolbrich@nsf.gov) (703) 292-2563

---

**Grant Program: Biophotonics**

**Agency: National Science Foundation PD 16-7326**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505337&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505337&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The goal of the **Biophotonics** program is to explore the research frontiers in photonics principles, engineering and technology that are relevant for critical problems in fields of medicine, biology and biotechnology. Fundamental engineering research and innovation in photonics is required to lay the foundations for new technologies beyond those that are mature and ready for application in medical diagnostics and therapies. Advances are needed in nanophotonics, optogenetics, contrast and targeting agents, ultra-thin probes, wide field imaging, and rapid biomarker screening. Low cost and minimally invasive medical diagnostics and therapies are key motivating application goals.

**Awards:** CAREER, Supplements, **Grants for Rapid Response Research (RAPID)**, **EARly-concept Grants for Exploratory Research (EAGER)**

**Letter of Intent:** Not Required

**Full Proposal Submission Due Date:** October 1, 2016 - October 20, 2016

**Contacts:** Leon Esterowitz lesterow@nsf.gov (703) 292-7942

---

**Grant Program: Biotechnology and Biochemical Engineering**

**Agency: National Science Foundation CBET PD 16-1491**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505334&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505334&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The **Biotechnology and Biochemical Engineering (BBE)** program supports fundamental engineering research that advances the understanding of cellular and biomolecular processes in engineering biology and eventually leads to the development of enabling technology for advanced manufacturing and/or applications in support of the biopharmaceutical, biotechnology, and bioenergy industries, or with applications in health or the environment. A quantitative treatment of biological and engineering problems of biological processes is considered vital to successful research projects in the BBE program.

Fundamental to many research projects in this area is the understanding of how biomolecules, cells and cell populations interact in their environment, and how those molecular level interactions lead to changes in structure, function, phenotype, and/or behavior. The program encourages highly innovative and potentially transformative engineering research leading to novel bioprocessing and manufacturing approaches, and proposals that address emerging research areas and technologies that effectively integrate knowledge and practices from different disciplines while incorporating ongoing research into educational activities.

**Awards:** CAREER, Supplements, **Grants for Rapid Response Research (RAPID)**, **EARly-concept Grants for Exploratory Research (EAGER)**

**Letter of Intent:** Not Required

**Full Proposal Submission Due Date:** October 1, 2016 - October 20, 2016

**Contacts:** Friedrich Srienc fsrienc@nsf.gov (703) 292-7029

---

**Grant Program: Environmental Sustainability**

**Agency: National Science Foundation CBET PD 16-7643**

**RFP Website:**

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=505338&org=NSF&sel\\_org=NSF&from=fund](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505338&org=NSF&sel_org=NSF&from=fund)

**Brief Description:** The goal of the **Environmental Sustainability** program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions.

**Awards:** CAREER, Supplements, **Grants for Rapid Response Research (RAPID)**, **EARly-concept Grants for Exploratory Research (EAGER)**

**Letter of Intent:** Not Required

**Full Proposal Submission Due Date:** October 1, 2016 - October 20, 2016

**Contacts:** Bruce Hamilton bhamilto@nsf.gov (703) 292-7066

---

## **National Institutes of Health**

### **Grant Program: BD2K Research Education Curriculum Development: Data Science Overview for Biomedical Scientists (R25)**

**Agency:** National Institutes of Health RFA-ES-16-011

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-16-011.html>

**Brief Description:** The NIH Research Education Program (R25) supports research educational activities that complement other formal training programs in the mission areas of the NIH Institutes and Centers. The over-arching goals of the NIH R25 program are to: (1) complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs; (2) enhance the diversity of the biomedical, behavioral and clinical research workforce; (3) help recruit individuals with specific specialty or disciplinary backgrounds to research careers in biomedical, behavioral and clinical sciences; and (4) foster a better understanding of biomedical, behavioral and clinical research and its implications.

The over-arching goal of this NIH Big Data to Knowledge R25 program is to support educational activities that complement and/or enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on:

- ***Curriculum and Methods Development:*** The development of coursework in Big Data Science for the training of predoctoral level students in the biomedical sciences; the integration of data science into biomedical curricula to improve biomedical, behavioral or clinical science education; working in tandem with other awardees to formulate core competencies; and sharing the instructional material and educational tools developed with others who wish to include this instruction in their curriculum. Curricular materials are expected to reflect the FAIR principles.

#### *Training for the BD2K Initiative*

Extracting useful knowledge from biomedical Big Data is a major limiting factor to understanding health and disease. The focus of the Big Data to Knowledge (BD2K) Initiative is to support the research and development of innovative and transformative approaches and tools with the goal of maximizing and accelerating the utility of Big Data and data science in biomedical research. For the purposes of this FOA, biomedical is broadly defined to include biomedical, behavioral, clinical, or social science research focused on health. To address the growing need for skilled researchers to fully utilize the vast amount of heterogeneous biomedical Big Data there must be an increase in the number of individuals: (1) trained in developing tools, methods, and analyses to make Big Data useful, and (2) knowledgeable about how to use the tools, methods, and analyses. Thus, the primary goals of training and education efforts for the BD2K Initiative are 1) to increase the number of expert biomedical data scientists, and 2) to elevate general data science competencies of all biomedical scientists.

Data Science training and education needs in the biomedical workforce vary greatly based on an individual's prior knowledge and their intended use of data. Thus, BD2K programs to support training, education, and career development reflect a variety of needs within the workforce:

- For biomedical scientists to become conversant in data science and learn to utilize existing tools, courses and open educational resources are available.

- To address the growing need for specialists in biomedical data science, predoctoral students and early career scientists are supported.
- To foster the development of new interdisciplinary teams consisting of biomedical scientists and data scientists, BD2K is collaborating with the National Science Foundation.
- To train a diverse workforce, under-resourced institutions serving diverse populations are developing data science curriculum and providing short-term research experiences for students and faculty.

To ensure that BD2K's training and education efforts have maximum impact in generating knowledge, educational resources should be findable, accessible, interoperable, and reusable (FAIR).

**Awards:** Applications that request costs for curriculum development may request up to \$100,000 per year direct costs; Applications proposing to serve as the lead to coordinate the program may request an additional \$50,000, for a total of \$150,000 per year direct costs.

**Letter of Intent:** Not required.

**Deadline:** December 7, 2016; December 1, 2017, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on these dates.

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

### **Grant Program: BRAIN Initiative: Development and Validation of Novel Tools to Analyze Cell-Specific and Circuit-Specific Processes in the Brain (R01)**

**Agency: National Institutes of Health RFA-MH-17-220**

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-MH-17-220.html>

**Brief Description:** This funding opportunity announcement (FOA) is designed to support development and validation of novel tools to facilitate the detailed analysis of cells and circuits and provide insights into the neural circuitry and structure underlying complex behaviors. The human brain consists of an estimated one hundred billion neurons and more than one trillion supporting glial cells that are uniquely organized to confer the extraordinary computational activities of the brain. Cell types are categorized by their anatomical position, neurotransmitter content, dendritic and axonal connections, receptor profile, gene expression profile and distinct electrical properties. Although the human brain has long been the focus of numerous studies with many major achievements along the way, to date we remain largely ignorant about the specific details such as cell types and connections that are responsible for rapid information processing. Defining cellular and circuit-level function is dependent on detailed knowledge about the components and structure of the circuit. Such knowledge, in turn, is fundamental to understanding how these features underlie cognition and behavior, which should aid in the development of targeted cell-type and circuit-specific therapeutics to treat brain disorders. This initiative is focused on developing tools (or vastly improving existing tools) to enable access to individual cells and defined groups of cells within neuronal circuits. The tools sought through this FOA can include novel genetic or non-genetic methods for targeted delivery of genes, proteins, and chemicals to specific cells or tightly defined cell types and circuits.

Development of novel tools that will delineate anatomical connections between cells and expand our knowledge of circuit architecture and function is an area well poised for additional investment. Several efforts are currently underway to study large-scale, long-range connections, such as the NIH Human Connectome Project, as well as large scale rodent connectational studies. Recent development of new technologies (e.g., CLARITY, Lumos) that render the brain

essentially transparent while maintaining the integrity of cellular and subcellular components, allow an unprecedented three-dimensional view into the post-mortem brain. While still at an early stage, these exciting technologies hold promise for mapping short- and long-range connections throughout the brain. Coupled with improved activity monitoring technologies in awake, behaving animals, these new tools promise an understanding of circuitry in action. Further development of these technologies is crucial to push the envelope beyond our current capabilities. To this end, applicants from the biological sciences are encouraged to establish collaborations with nanobiologists, material scientists, engineers and colleagues in other disciplines to develop groundbreaking approaches to study brain activity.

This FOA solicits applications to develop next-generation, innovative technologies to define and target specific cell types in the brain. Of particular interest are first-in-class and/or cross-cutting non-invasive or minimally invasive techniques that permit repeated measurements from cells over time in a non-destructive manner. Tools/technologies relevant for this initiative are expected to be transformative, either through the development of novel tools that may be high-risk or through major advances in current approaches that break through technical barriers and will significantly improve current capabilities. While an emphasis of the BRAIN initiative is the development of novel tools to study the brain, here we highlight the need for innovative approaches to bridge experimental scales. Studies that are able to explore molecular and cellular mechanisms of neural activity permitting improved precision and sensitivity in the analysis of micro-and macro-circuits are strongly encouraged. Progress in understanding how the activity of the brain translates to complex behaviors will be facilitated by non-invasive approaches for both monitoring and manipulating neural activity in awake, behaving organisms.

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

**Letter of Intent:** October 2, 2016

**Deadline:** November 2, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this date.

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

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

---

## **Grant Program: NIH Big Data to Knowledge (BD2K) Enhancing Diversity in Biomedical Data Science (R25)**

**Agency: National Institutes of Health RFA-MD-16-002**

**RFP Website:** <http://grants.nih.gov/grants/guide/rfa-files/RFA-MD-16-002.html>

**Brief Description:** The primary purpose of the NIH BD2K Enhancing Diversity in Biomedical Data Science program is to provide resources for eligible institutions “(the applicant institution)” to implement innovative approaches to research education for students from underrepresented backgrounds in Big Data science. Through this program, eligible institutions will establish partnerships with research intensive institutions with prominence in biomedical big data research (hereafter called partnership institutions) to design collaborations to implement novel approaches of data science education that emphasize research experiences and curriculum development at the eligible institution. Partnership institutions should collectively consider all factors that are likely to prepare students and/or faculty at eligible institutions to improve exposure, knowledge, and competency in Big Data science. It is expected that long-term collaborations will be developed to allow faculty and students from eligible

institutions to have substantive and continuous interactions for the duration of the funded project period and beyond.

The eligible institution must partner with one or more institutions to design and implement data science research education approaches for students and/or faculty. The partnership institutions should be institutions that have achieved prominence in biomedical big data research. Evidence of prominence includes holding patents, leading efforts or public-private partnerships, and/or having significant peer-reviewed research. "Significant" is demonstrated by research covering a variety of large and complex data types such as imaging, phenotypic, molecular (including -omics), clinical, behavioral, environmental, and many other types of biological and biomedical data that exceed the abilities of currently-used approaches to manage and analyze them. The partnership institutions must also have demonstrated strength in the foundational sciences, which includes computer science, statistics, data science, and related fields. Partnership institutions must also have the infrastructure in the foundational sciences to support the partnership.

The eligible institution will have responsibility for the conduct and oversight of the award, along with the flexibility to determine the optimal configuration with its partner(s) to have the maximum impact. Partnerships must involve the applicant institution and one or more partnership institutions. The selection of a partnership institution that is based on the rationale of proposed activities, potential sustainability of activities beyond the project period, and shared vision to promote diversity in biomedical research workforce is required. Whereas the eligible institution will have responsibility to develop the program, it is expected that both institutions will work collaboratively to facilitate the goals of the program.

The eligible institution must propose research experiences that are intended for undergraduate students and faculty and address particular challenges that face individuals from underrepresented background. Dual mentors, one from the eligible institution and one from the partnership institution, may be established to ensure students benefit from relevant research experiences and support. Curriculum development must meet the eligible institution's undergraduate research education needs, including hands-on research activities in biomedical contexts. Formats should be justified based on institutions academic requirements for students. The development of creative formats to achieve the proposed objectives is highly encouraged. The development of novel instructional approaches should be integral to the curriculum developed.

Successful projects are expected to yield tangible advances in the areas of student and/or faculty development with a focus on big data science, and curriculum development incorporating big data science. Examples of activities that would contribute to advances in each area may include, but are not limited to:

1) Research Experiences: For undergraduate students, activities may include opportunities to complete advanced biomedical Big Data science research education; including but not limited to: quantitative and bioinformatics coursework; and intensive summer/semester research experiences at partnership institutions. For faculty, activities may include participation in research that extends their skills and knowledge base in Big Data.

2) Curriculum Development: Opportunities for faculty at the eligible institution to incorporate more biomedical Big Data science (i.e., computational and quantitative sciences) into current curricula, and/or develop new course offerings that emphasize biomedical Big Data science.

Collaborative activities with the partnership institutions with international prominence in biomedical big data research may include, but are not limited to: short-term research experiences for students and faculty at the partnership institutions, and hands-on projects;



developing and/or disseminating curriculum materials that will be used at the applicant institution, and/or in a joint-instructional capacity with partnership institution faculty. The intent for developing Big Data research experiences and new curriculum at the applicant institution is to enhance the diversity of the biomedical research workforce in big data science by using strategies that create research experiences for students and faculty, and course offerings that may continue in sustainable ways after the R25 and/or the partnership institutions project period(s) have expired.

Research education programs may complement ongoing research training and education occurring at the applicant institution, but the proposed educational experiences must be distinct from those training and education programs currently receiving Federal support. R25 programs may augment institutional research training programs (e.g., T32, T90) but cannot be used to replace or circumvent Ruth L. Kirschstein National Research Service Award (NRSA) programs.

**Awards:** Applications may request up to \$300,000 in direct costs each year.

**Letter of Intent:** October 14, 2016

**Deadline:** November, 14, 2016, by 5:00 PM local time of applicant organization. All types of non-AIDS applications allowed for this funding opportunity announcement are due on this 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: Reconstructive Transplant Research Program Investigator-Initiated Research Award**

**Agency:** Department of Defense Defense Health Program Congressionally Directed Medical Research Programs W81XWH-16-RTRP-IIRA

**Website:** [http://cdmrp.army.mil/funding/pa/16trtpiira\\_pa.pdf](http://cdmrp.army.mil/funding/pa/16trtpiira_pa.pdf)

**Brief Description:** The RTRP Investigator-Initiated Research Award mechanism is being offered for the first time in FY16. The FY16 RTRP Investigator-Initiated Research Award is intended to support studies that have the potential to make an important contribution to reconstructive transplant research, patient care, and/or quality of life. Multi-institutional collaborations among clinicians and research scientists are encouraged.

Important aspects of this award mechanism include:

- **Study Design and Feasibility:** The proposed study design should be clearly described, rigorous, and support maximal reproducibility and translational feasibility. A statistical plan with appropriate power analysis should be included, if applicable.
- **Impact/Military Relevance:** The short- and long-term impact of the proposed research should be clearly articulated. Projects should address one or more of the FY16 RTRP Investigator-Initiated Research Award Focus Areas. All projects should be responsive to the healthcare needs of military Service members and/or Veterans recovering from traumatic injury, and/or their family members, caregivers or clinicians, as well as the general public. Collaboration with military researchers and clinicians is encouraged.
- **Preliminary Data:** Observations that drive a research idea may be derived from laboratory discovery, population-based studies, a clinician's first-hand knowledge of patients, or anecdotal data. ***Preliminary and/or published data that are relevant to reconstructive transplantation, and that support the rationale for the proposed study, must be included.***

Investigator-Initiated Research Award applications may focus on any phase of research from basic through translational, including preclinical studies in animal models or human

subjects, as well as correlative studies associated with an existing clinical trial. ***Clinical trials are not allowed under this funding opportunity.***

**Deadline: Pre-Application Submission Deadline:** 5:00 p.m. Eastern time (ET), September 21, 2016

- **Invitation to Submit an Application:** October 19, 2016
  - **Application Submission Deadline:** 11:59 p.m. ET, December 14, 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](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](mailto: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: Planetary Instrument Concepts for the Advancement of Solar System Observations**

**Agency: NASA NNH16ZDA001N-PICASSO**

**RFP Website:**

<https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={EE72A3F4-C06B-4EBB-6BE8-3F2F15FCDD48}&path=init>

**Brief Description:** The Planetary Instrument Concepts for the Advancement of Solar System Observations (PICASSO) Program supports the development of spacecraft-based instrument systems that show promise for use in future planetary missions. The goal of the program is to conduct planetary and astrobiology science instrument feasibility studies, concept formation, proof of concept instruments, and advanced component technology development to the point where they may be proposed in response to C.13. Maturation of Instruments for Solar System Exploration (MatISSE) Program Therefore, the proposed instrument system or advanced components must address specific scientific objectives of likely future planetary science missions.

The PICASSO Program seeks proposals for development activities leading to instrument systems in support of the Science Mission Directorate's (SMD's) Planetary Science Division (PSD). The objective of the program is to develop new technologies that significantly improve instrument measurement capabilities for planetary science missions (such as Discovery, New Frontiers, Mars Exploration, and other planetary programs). It is the responsibility of the proposer to demonstrate how their proposed technology addresses significant scientific questions relevant to stated NASA goals and not for NASA to attempt to infer this.

Prospective proposers are encouraged to review the most recent Decadal Survey (*"Visions and Voyages for Planetary Science in the Decade 2013-2022"* <http://solarsystem.nasa.gov/2013decadal/>) and goals of the Planetary Science Division as described in the 2014 Science Mission Directorate Science Plan available at <http://science.nasa.gov/about-us/science-strategy/>. Proposed investigations may target any

Solar System body except the Earth and Sun, in order to advance the objectives outlined in the Science Plan.

**Award:** Various

**Proposal Deadline:** PICASSO16 Step-1 Proposals Due: Sep 14, 2016

---

**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

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

---