NJIT Research Newsletter

Issue: ORN-2016-021

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: Edward Dreizin (PI)
Department: Chemical, Biological and Pharmaceutical Engineering
Grant/Contract Project Title: Reactive Nanocomposite Materials For Advanced Weapons Systems
Funding Agency: DTRA
Duration: 08/24/11-05/31/17

PI: Louis Lanzerotti (PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: Radiation Belt Storm Probes Science Investigations (RBSPICE) Phases B,C, D, and E
Funding Agency: NASA
Duration: 01/15/09-06/30/16

PI: Linda Cummings (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Modeling & Analysis of Nematic Films: Flow-Substrate Interactions
Funding Agency: NSF
Duration: 08/01/12-07/31/16

PI: Simon Garnier (PI)
Department: Biological Sciences
Grant/Contract Project Title: MBI REU Summer Research Fellowship
Funding Agency: Ohio State University/Mathematical Biosciences Institute
Duration: 06/06/16-08/12/17

PI: Kevin Belfield (PI)
Department: College of Science and Liberal Arts
Grant/Contract Project Title: Collaborative Research: Development of Novel Two-Photon Fluorescence Polymer Probes for High Resolution Deep Tissue Intravital Imaging
Funding Agency: NSF
Duration: 11/24/14-06/30/17

PI: Cyrill Muratov (PI)
Department: Mathematical Sciences
Grant/Contract Project Title: Magnetization Dynamics at Nanoscale
Funding Agency: NSF
Duration: 07/01/16-06/30/19

PI: Rualdo Soto-Chavez (PI)
Department: Center for Solar Terrestrial Research
Grant/Contract Project Title: GEM: The Generation of Falling-Tone Chorus and Scattering of Particles by Chirped Waves
Funding Agency: NSF
Duration: 06/01/16-05/31/19

PI: Marek Rusinkiewicz (PI)
Department: College of Computing Sciences
Grant/Contract Project Title: IPA
Funding Agency: DARPA
Duration: 09/02/14-09/01/18

NJII

PI: Judith Sheft (PI) and Michael Ehrlich (Co-PI)
Department: NJII
Grant/Contract Project Title: Health IT Connections Program
Funding Agency: JPMorgan Chase Fdn.
Duration: 05/01/16-04/30/17

In the News…

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

NSF: The NSF Math and Physical Sciences Directorate is soliciting proposals for the Centers for Chemical Innovation (CCI) program. CCIs are intended to address major long-term research challenges that cannot be effectively done by individual investigators or small teams. A major

component of the review and award process is synergy among members, which may include multiple universities, industrial laboratories, and government laboratories, is a major part of the review and award process. The CCI program structure includes Phase I proposals, submitted by invitation only, and Phase II renewal awards. Phase I awards will be up to $1.8 million over three years, and must develop the science, the management structure, and broader impacts over that time frame. Pending satisfactory progress, Phase II awards will be up to $4 million per year for five years. Up to three Phase I awards are expected in FY17.
Read More: Centers for Chemical Innovation Program.

NOAA: The *Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies (RESTORE) of the Gulf States Act* was passed in 2012 in the wake of Hurricane Katrina and the Deepwater Horizon oil spill to carry out scientific activities in the Gulf that could lead to a greater understanding of this complex ecosystem, support sustainability, and provide the basis future decision-making. NOAA has released solicitation NOAA-NOS-NCCOS-2017-2004875 announcing a funding opportunity for FY17. Grants are from one to three years and can address basic research topics and applied science leading to decision support tools. Research priorities are defined as: movement of living coastal and marine resources between and among habitats, use of habitat by living coastal and marine resources, recruitment of juvenile fish to fisheries, food web structure and dynamics including predator-prey relationships, impact of multiple stressors on food web structure, and connections between restored habitat and surrounding habitats and wildlife that use those habitats. Decision support proposals can address: data integration platforms, models for identifying and predicting the impacts of stressors, and approaches for making decisions and evaluating alternatives.
Read More: NOAA Damage Assessment

DoD: The National Network for Manufacturing Innovation Institutes are public-private partnerships of which six are now led by DoD and two by DoE, with NIST planning for one or more. The institutes are intended to bridge the gap between basic research and product development by establishing regional hubs providing shared assets and access to cutting-edge equipment. They foster innovation ecosystems and a more effective manufacturing infrastructure. The US Army Contracting Command has now announced the establishment of a seventh DOD led institute, the *Advanced Tissue Biofabrication Manufacturing Innovation Institute (ATB-MII).* The focus of this institute is to enhance the coordination between the materials, biological, and engineering communities to increase the throughput and reproducibility of engineered tissues. Industries which are based on cell therapies, engineered replacement tissues, and biopharmaceutical products will benefit from standards and quality control advances that keep pace with FDA regulations.
DoD envisions that the award will be for up to seven years and be funded at $75 million with private matching funds. A solicitation is expected before the end of June with proposers days scheduled for June 17 and June 23.

Department of Labor: Fair Labor Standards Act: On May 17, the Administration released a final rule updating the salary level salary threshold under which most salaried workers are entitled to overtime compensation. The salary threshold would increase from $23,660 to $47,476. For institutions of higher education, the rule would affect many classes of employees, such as post docs, who have not been eligible for overtime pay in the past.
Funding agencies will be obligated to increase allowable stipends. During rulemaking, comments from the higher education community have expressed concerns about the capacity of research intuitions to absorb these costs and the possibility that these will cut into overall

research grant funding and increase tuition costs. The final rule will become effective December 1.Read More: Inside Higher Ed, American Council on Education

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Events and Announcements

Event: Webinar: Enhancing High-Voltage Transmission Line Performance with Numerical Simulation
When: June 9, 2016 2.00 PM-3.00 PM
Where: http://spectrum.ieee.org/webinar/enhancing-highvoltage-transmission-line-performance-with-numerical-simulation
Brief Description: Designing high-voltage transmission lines requires proper grading of electric fields for reliability and environmental performance. Simulation specialists at POWER Engineers, Inc. use mathematical modeling in COMSOL Multiphysics® software to analyze electric field effects, optimize hardware designs, and minimize the environmental impacts of the energized equipment. This webinar will present methods for using finite element analysis to optimize transmission line hardware. The presentation will include a live demo in the software and a Q&A session.
Biographical Sketch of the Speaker: Jon Leman, Senior Project Engineer, Power Delivery SAS, POWER Engineers. Jon Leman has been with POWER Engineers since 2005. He is a member of POWER's SCADA and Analytical Services group, where he is primarily involved in electrical analysis of high-voltage AC and DC power delivery systems. Jon's technical interests are in finite element analysis, power system electromagnetics, transient simulation, and HVDC systems. Prior to working for POWER Engineers, he served in the U.S. Navy as an instructor of electrical engineering. Jon holds an M.S. in electrical engineering from the University of Idaho, where he researched real-time simulation of DC voltage source converter technology. In his spare time Jon enjoys backpacking, fishing, and ham radio.
Jennifer Segui, Sr. Technical Marketing Engineer, COMSOL. As a Sr. Technical Marketing Engineer at COMSOL, Jennifer Segui writes and produces demos, presentations, articles, and documentation showcasing the capabilities available across the entire COMSOL® Product Suite. She is also the Program co-Chair for the COMSOL Conference in Boston. Jennifer has degrees in Medical Physics and Computer Engineering
To Join the Webinar: Please register at: http://spectrum.ieee.org/webinar/enhancing-highvoltage-transmission-line-performance-with-numerical-simulation

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Event: Addressing Quantified Health with an Integrated Chip Solution
When: June 16, 2016 2.00 PM-3.00 PM
Where: http://spectrum.ieee.org/webinar/addressing-quantified-health-with-an-integrated-chip-solution
Brief Description: Advancements in semiconductor technology have helped create transformative consumer devices, but so far have had limited impact on the medical world. Medical devices have stringent requirements for safety and effectiveness, and they generally iterate on bulky, power-hungry designs. Samsung's Bio-Processor is a low-power SoC that processes five significant types of biodata – electrocardiogram, photoplethysmogram, bioelectrical impedance, galvanic skin response, skin temperature. It does so by integrating an MCU, DSP, memory, power management, security blocks, and low-power AFEs and ADCs in a small 6x5mm package. Samsung has also developed several algorithms to calculate patient

metrics from heart rate and variability to body fat percentage, plus an SDK for device makers to leverage their own expertise. This Bio-Processor solution highlights the importance of a complete platform in enabling a new generation of discreet monitoring devices that bridges consumer- and medical-grade. In today's cost-focused healthcare landscape, such devices are key to complementing hospital care with accurate, cost-effective patient data.

Presenters: Ryan Chien, Product Manager, System LSI, Samsung Semiconductor, Inc. As product manager for Samsung's Bio-Processor system-on-chip (SoC), Ryan Chien is responsible for promoting the product to customers and partners as well as providing evaluation and technical support. Chien has been a member of Samsung's System LSI team for over two years in various marketing roles, including his current responsibilities for the Bio-Processor. Prior to Samsung, Chien spent four years as an industry analyst with the market research firm, IHS, focusing on the SSD and flash memory markets. As a graduate of UCLA, Chien earned his Bachelors of Science in chemical engineering and is currently working toward an MBA at UC Berkeley.

Matthew C. Wiggins, Ph.D. Senior Algorithm Manager – Simband Program: Matthew Wiggins leads the Simband Algorithm Team at Samsung's Menlo Park, California based Strategy and Innovation Center. He specializes in leading programs involving signal acquisition, processing, and subsequent system inference with a focus on physiological systems and biosignals. Prior to his work at Samsung, he led the Algorithm Software Group for HeartWare's new Ventricular Assist Device controller, an FDA Class III medical device to support patients with late stage heart failure. Matthew has also led a variety of signal processing and sensor system programs at TIAX, funded through various US government small business grants. Dr. Wiggins received his B.S. and M.S. in Electrical Engineering with a minor in Biomedical Engineering from the Georgia Institute of Technology as well as his Ph.D. in Bioengineering, minoring in biochemistry/physiology.

Grant Opportunity Alerts

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

NSF: Centers for Chemical Innovation (CCI) Phase I Centers; Developing a National Research Infrastructure for Neuroscience (NeuroNex); Campus Cyberinfrastructure (CC*); Division of Physics: Investigator-Initiated Research Projects (PHY)

NIH: Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research; Methodology and Measurement in the Behavioral and Social Sciences (R21) and (R01)

Department of Defense/US Army/DARPA/ONR: C4ISR, Information Operations and Information Technology System Research; Duchenne Muscular Dystrophy Investigator-Initiated Research Award; Peer Reviewed Medical Research Program

Department of Energy: Solar Energy Evolution and Diffusion Studies Ii – State Energy Strategies (SEEDSII-SES); Renewable Energy to Fuels Through Utilization Of Energy-Dense Liquids (REFUEL)

NASA: ROSES 2016: ROSES 2016: Atmospheric Composition: Upper Atmospheric Composition Observations; ROSES 2016: Modeling, Analysis, and Prediction;

National Endowment for Humanities: Fellowship Programs at Independent Research Institutions

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Grant Opportunities

National Science Foundation

Grant Program: Centers for Chemical Innovation (CCI) Phase I Centers
Agency: National Science Foundation NSF 16-568
RFP Website: http://www.nsf.gov/pubs/2016/nsf16568/nsf16568.htm
Brief Description: The Centers for Chemical Innovation (CCI) Program supports research centers focused on major, long-term fundamental chemical research challenges. CCIs that address these challenges will produce transformative research, lead to innovation, and attract broad scientific and public interest. CCIs are agile structures that can respond rapidly to emerging opportunities and make full use of data infrastructure and other approaches to enhance collaborations. CCIs may partner with researchers from industry, government laboratories and international organizations. CCIs integrate research, innovation, education, broadening participation, and informal science communication. The CCI Program is a two-phase program. Both phases are described in this solicitation. Phase I CCIs receive significant resources to develop the science, management and broader impacts of a major research center before requesting Phase II funding. Satisfactory progress in Phase I is required for Phase II applications; Phase I proposals funded in FY 2017 will seek Phase II funding in FY 2020. The FY 2017 Phase I CCI competition is open to projects in all fields supported by the Division of Chemistry, and must have focus and impact in chemistry. This solicitation also covers the renewal application of the Phase II CCI initiated in FY 2012: the Center for Selective C-H Functionalization (CCHF).
Awards: Standard grants. **Anticipated Funding Amount:** $5,800,000
Letter of Intent: Not Required.
Full Proposal Submission Due Date:

- Preliminary Proposal Due Date(s) *(required)* (due by 5 p.m. submitter's local time):
  September 15, 2016 Phase I Preliminary Proposals
- Full Proposal Deadline(s) (due by 5 p.m. submitter's local time): March 14, 2017
  Phase I Full Proposals, by invitation only

Contacts:

- Katharine J. Covert, telephone: (703) 292-4950, email: kcovert@nsf.gov
- Lin He, telephone: (703) 292-4956, email: lhe@nsf.gov

Grant Program: Developing a National Research Infrastructure for Neuroscience (NeuroNex)
Agency: National Science Foundation NSF 16-569
RFP Website: http://www.nsf.gov/pubs/2016/nsf16569/nsf16569.htm
Brief Description: Understanding the brain is one of the grand scientific challenges at the intersection of experimental, theoretical, and computational investigation in the life, physical, behavioral, and cognitive sciences. Rapid proliferation of advanced measurement instrumentation and techniques has allowed researchers to study the brain and behavior at ever finer physical and temporal scales and in broader social and environmental contexts. At the same time, achieving a comprehensive, transformational understanding of the brain in action and in context will require an increased emphasis on systematic, interdisciplinary collaboration and team science, and the increased use of theoretical frameworks, including evolutionary ones, to explore questions that span organizational levels, scales of analysis, and a wider range of species optimal for experimental exploration of brain function. To catalyze such understanding,

NSF announced its intention to support the development of innovative, accessible, and shared capabilities and resources towards the establishment of a coherent national infrastructure for neuroscience research, as described in the Dear Colleague Letter NSF 16-047.

The goal of this solicitation is to foster the development and dissemination of (1) innovative research resources, instrumentation, and neurotechnologies, and (2) theoretical frameworks for understanding brain function across organizational levels, scales of analysis, and/or a wider range of species, including humans. This interdisciplinary program is one element of NSF's broader effort directed at Understanding the Brain, a multi-year activity that includes NSF's participation in the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (http://www.nsf.gov/brain/) and the phased approach to develop a national research infrastructure for neuroscience as outlined in the Dear Colleague Letter NSF16-047. NSF envisions a connected portfolio of transformative, integrative projects that create synergistic links across investigators and communities, yielding novel ways of tackling the challenges of understanding the brain in action and in context.

This program solicits proposals that will develop and disseminate innovative neurotechnologies and/or theoretical frameworks that will transform our understanding of the linkages between neural activity and cognition and behavior across different systems, environments, and species, while also providing an avenue for widespread dissemination of these technologies and theoretical frameworks as well as broad training opportunities.

Awards: Standard grants. **Anticipated Funding Amount:** $16,000,000 to $30,000,000

Letter of Intent: September 2, 2016.

Full Proposal Submission Due Date: October 21, 2016

Contacts:

- Edda Thiels, BIO/IOS, telephone: (703) 292-8167, email: ETHIELS@nsf.gov
- Sridhar Raghavachari, BIO/IOS, telephone: (703) 292-4845, email: sraghava@nsf.gov
- Reed S. Beaman, BIO/DBI, telephone: (703) 292-7163, email: rsbeaman@nsf.gov
- Krastan B. Blagoev, MPS/PHY, telephone: (703) 292-4666, email: kblagoev@nsf.gov

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Grant Program: Campus Cyberinfrastructure (CC*)

Agency: National Science Foundation NSF 16-567

RFP Website: http://www.nsf.gov/pubs/2016/nsf16567/nsf16567.htm

Brief Description: The Campus Cyberinfrastructure (CC*) program invests in coordinated campus-level cyberinfrastructure (CI) components of data, networking, and computing infrastructure, capabilities, and integrated services leading to higher levels of performance, reliability and predictability for science applications and distributed research projects. Learning and workforce development (LWD) in CI is explicitly addressed in the program. Science-driven requirements are the primary motivation for any proposed activity.

CC* awards will be supported in seven areas:

- Data Driven Multi-Campus/Multi-Institution Model Implementations awards will be supported at up to $3,000,000 total for up to 4 years.
- Cyber Team awards will be supported at up to $1,500,000 total for up to 3 years.
- Data Driven Networking Infrastructure for the Campus and Researcher awards will be supported at up to $500,000 total for up to 2 years.
- Network Design and Implementation for Small Institutions awards will be supported at up to $400,000 total for up to 2 years.
- (Network Integration and Applied Innovation awards will be supported at up to $1,000,000 total for up to 2 years.

- Campus Computing awards will be supported at up to $500,000 for up to 3 years.

Innovative Integrated Storage Resources awards will be supported at up to $200,000 for up to 2 years.

Awards: Standard grants. **Anticipated Funding Amount:** $18,000,000

Letter of Intent: Not Required.

Full Proposal Submission Due Date: August 23, 2016

Contacts:

- Kevin Thompson, ACI Program Director, telephone: (703) 292-4220, email: CCDNIQueries@nsf.gov
- Amy Walton, ACI Program Director, telephone: (703) 292-4538, email: CCDNIQueries@nsf.gov
- Jack Brassil, CNS Program Director, telephone: (703) 292-8950, email: CCDNIQueries@nsf.gov
- Edward Walker, ACI Program Director, telephone: (703) 292-4863, email: CCDNIQueries@nsf.gov
- Sushil K. Prasad, ACI Program Director, telephone: (703) 292-5059, email: CCDNIQueries@nsf.gov

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Grant Program: Division of Physics: Investigator-Initiated Research Projects (PHY)

Agency: National Science Foundation NSF 16-566

RFP Website: http://www.nsf.gov/pubs/2016/nsf16566/nsf16566.htm

Brief Description: The Division of Physics (PHY) supports physics research and education in the nation's colleges and universities across a broad range of physics disciplines that span scales of space and time from the largest to the smallest and the oldest to the youngest. The Division is comprised of disciplinary programs covering experimental and theoretical research in the following major subfields of physics: Accelerator Science; Atomic, Molecular and Optical Physics; Computational Physics; Elementary Particle Physics; Gravitational Physics; Integrative Activities in Physics; Nuclear Physics; Particle Astrophysics; Physics of Living Systems; Plasma Physics (supported under a separate solicitation); and Quantum Information Science.

Awards: Standard grants. **Anticipated Funding Amount:** $90,000,000 - Pending availability of funds, approximately $90M will be committed for the total budget of all new awards in each cycle

Letter of Intent: Not Required.

Full Proposal Submission Due Date: October 26, 2016

Contacts:

- Vyacheslav (Slava) Lukin, Accelerator Science; Plasma Physics, telephone: (703) 292-7382, email: vlukin@nsf.gov
- Alex Cronin, Atomic, Molecular and Optical Physics - Experiment, telephone: (703) 292-5302, email: acronin@nsf.gov
- John Gillaspy, Atomic, Molecular and Optical Physics - Experiment, telephone: (703) 292-7173, email: jgillasp@nsf.gov
- Michael J. Cavagnero, Atomic, Molecular and Optical Physics - Theory, telephone: (703) 292-2163, email: mcavagne@nsf.gov

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National Institutes of Health

Grant Program: Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research (Parent F31 - Diversity)
Agency: National Institutes of Health PA-16-308
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PA-16-308.html
Brief Description: The overall goal of the NIH Ruth L. Kirschstein National Research Service Award (NRSA) program is to help ensure that a diverse pool of highly trained scientists is available in appropriate scientific disciplines to address the Nation's biomedical, behavioral, and clinical research needs. NRSA fellowships support the training of pre-and postdoctoral scientists, dual-degree investigators, and senior researchers. More information about NRSA programs may be found at the Ruth L. Kirschstein National Research Service Award (NRSA) website.
The purpose of the Kirschstein-NRSA Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research (F31) is to provide support for mentored research training leading to the PhD or equivalent research degree, the combined MD/PhD degree, or another formally combined health professional degree and research doctoral degree in the biomedical, behavioral, or clinical sciences for individuals from diverse population groups. This fellowship program will enhance the diversity of the biomedical, behavioral, and clinical research workforce in the United States by providing opportunities for academic institutions to identify and recruit students from diverse population groups to seek graduate degrees in health-related research and apply for this fellowship. The goal of this program is to enhance the number of scientists from diverse population groups who are well prepared for research careers in the biomedical, behavioral, and clinical sciences.
This Kirschstein-NRSA predoctoral fellowship award will enable promising predoctoral students to obtain individualized, mentored research training from outstanding faculty sponsors while conducting well-defined research projects in scientific health-related fields relevant to the missions of the participating NIH Institutes and Centers.
Applicants for this Kirschstein-NRSA F31 award are expected to propose a defined research project and training plan within the mission of the participating Institutes and Centers. The training plan should reflect the applicant's research project, which may be his/her dissertation research project, and facilitate and clearly enhance the individual's potential to develop into a productive, independent research scientist. The training plan should document the need for, and the anticipated value of, the proposed mentored research and training in relationship to the individual's research career goals.
It is expected that the mentored research training experience will provide:

- A strong foundation in research design, methods, and analytic techniques appropriate to the proposed dissertation research;
- The enhancement of the applicant's ability to conceptualize and think through research problems with increasing independence;
- Experience conducting research using appropriate, state-of-the-art methods, as well as presenting and publishing the research findings as first author;
- The opportunity to interact with members of the scientific community at appropriate scientific meetings and workshops;
- Skills needed to transition to the next stage of the applicant's research career; and
- The opportunity to enhance the applicant's understanding of the health-related sciences and the relationship of the proposed research to health and disease.

Although applicants may apply at any time, applications are encouraged once an applicant has identified a specific research project that will be undertaken in the sponsor's laboratory. This often occurs in the second year of a PhD program.
Awards: Award budgets are composed of stipends, tuition and fees, and institutional allowance.
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: Methodology and Measurement in the Behavioral and Social Sciences (R21) and (R01)
Agency: National Institutes of Health PAR-16-261
PAR-16-260, R01 Research Project Grant
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-261.html
Brief Description: The behavioral and social sciences offer significant fundamental insights into the comprehensive understanding of human health, including disease etiology, prevention, treatment, and the promotion of health and well-being. To advance the investigation of behavioral and social factors in health and disease, and enhance the rigor and reproducibility of study results, the participating Institutes and Centers (ICs) invite qualified researchers to submit research grant applications on methodology and measurement in the behavioral and social sciences relevant to the missions of the NIH ICs.
Background
Methodology encompasses research design, measurement, data collection, and data analysis techniques. Research design addresses selection of appropriate study designs, inclusion/exclusion criteria, sampling plan, study subject protections, participant engagement and recruitment, and procedures and measures to accomplish the research goals and ensure internal and external validity. Measurement addresses the quantification and characterization of study variables relevant to the research hypotheses, in a manner that maximizes the validity, reliability, and utility of the data. Data collection techniques are the tools and procedures for acquiring, integrating and curating data from a wide range of sources, such as self-reports, geocoded mobile devices, sensors, biomarker assay platforms, and complex large-scale datasets. Analytic methods address the conceptual and technical aspects of analyzing, interpreting and reporting data to improve hypothesis testing and prediction. Advancement of methodologic research in design, measurement, data collection and data analysis will enhance the quality and power of human and animal data in health-related behavioral and social science.
Research Objectives
The R21 activity code is intended to encourage new exploratory and developmental research projects. For example, such projects could assess the feasibility of unique and innovative use of an existing methodology to explore a new scientific area. These studies may involve considerable risk but may lead to a breakthrough in a particular area, or to development of novel techniques, methodologies, models, or applications that could have a major impact. Applications for R21 awards should describe projects distinct from those supported through the traditional R01 activity code. For example, long-term projects, or projects designed to increase knowledge in a well-established area, will not be considered for R21 awards.
Applicants are encouraged but not required to address methodologic issues related to:

- interdisciplinary, multimethod, and multilevel approaches in behavioral and social science research, including broadly applicable approaches that foster integration with biomedical, physical, or computational science research or engineering.
- Integrating, mining and modeling behavioral and social science data in combination with genetic, epigenetic, biomarker and imaging data.
- research in diverse populations that are distinctive by virtue of demographics, cultural or linguistic characteristics, sexual orientation or gender identity, health system, mental or physical abilities, underrepresentation in research or other factors, where the outcome would have a significant impact on improving health in that population.
- the study of sensitive health-related behaviors in the context of healthcare, the social environment, and local/state/national policies.
- ethics in research, such as informed consent, enrollment of minors including assent, assessment of risk and benefit, selection and retention of participants, privacy and confidentiality.

Awards: Direct costs are limited to $275,000 for the total two-year period, with no more than $200,000 in direct costs allowed in any single year.
Letter of Intent: June 20, 2016
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. The first standard application due date for this FOA is October 16, 2016.
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: C4ISR, Information Operations and Information Technology System Research
Agency: Department of Defense Department of Navy N66001-16-X-3003
Website:
https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=02e9da033063e613ef68f01bf53e4fdf
Brief Description: The Space and Naval Warfare Systems Center, Pacific (SSC Pacific) is soliciting white papers and proposals in accordance with Federal Acquisition Regulation (FAR) 6.102(d) (2), FAR 35.016 and Department of Defense Grant and Agreement Regulations (DoDGARS) 22.315(a) which provides for competitive selection of basic research, applied research and advanced research (hereinafter referred to as research). Submissions in response to this announcement shall be for areas relating to the advancement of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities, enabling technologies for Information Operations and Cyber Operations, and Information Technology systems. Accordingly, proposals selected for award are considered to be the result of full and open competition and fully compliant with PL 98-369, "The Competition in Contracting Act of 1984." This BAA is for procurement contracts (hereinafter referred to as contracts), grants or cooperative agreements. Assistance vehicles and other transactions are not authorized under this announcement. Proposed research should investigate unique and innovative approaches for defining and developing next generation integratable C4ISR capabilities and command suites.
Awards: Pre-solicitation, Up to $5,000,000

Deadline: Open until May 12, 2017
Agency contact: David Roden, Contract Specialist, 619-553-2087; Cindy J Ledesma, Contracting Officer, 619-553-9311

Grant Program: Duchenne Muscular Dystrophy Investigator-Initiated Research Award
Agency: Department of Defense Congressionally Directed Medical Research Programs
Dept. of the Army – USAMRAA W81XWH-16-DMDRP-IIRA
Website: http://cdmrp.army.mil/funding/pa/15dmdrpiira_pa.pdf
Brief Description: Applications to the Fiscal Year 2015 (FY15) Duchenne Muscular Dystrophy Research Program (DMDRP) are being solicited for the Defense Health Agency, Research, Development, and Acquisition (DHA RDA) Directorate, by the U.S. Army Medical Research Acquisition Activity (USAMRAA). As directed by the Office of the Assistant Secretary of Defense for Health Affairs, the DHA RDA Directorate manages and executes the Defense Health Program (DHP) Research, Development, Test, and Evaluation (RDT&E) appropriation. The executing agent for this Program Announcement/Funding Opportunity is the Congressionally Directed Medical Research Programs (CDMRP). The DMDRP was initiated in 2011 to provide support for research of exceptional scientific merit and to promote the understanding, diagnosis, and treatment of DMD. Appropriations for the DMDRP from FY11 through FY14 totaled
$13.6 million (M). The FY15 appropriation is $3.2M.

The vision of the FY15 DMDRP is to extend and improve the function, quality of life, and lifespan for all individuals diagnosed with DMD. As such, the DMDRP is seeking to better support the development of drugs, devices, and other interventions and promote their effective clinical testing. Additionally, DMDRP supports the efforts of the National Institutes of Health Muscular Dystrophy Coordinating Committee (MDCC) to update the Action Plan for the Muscular Dystrophies, which prioritizes the needs to improve treatments and reduce the disease burden for muscular dystrophy including Duchenne.
Awards: The maximum period of performance is 3 years.
The anticipated direct costs budgeted for the entire period of performance will not exceed **$575,000**. Indirect costs are to be budgeted in accordance with the organization's negotiated rate. No budget will be approved by the Government exceeding **$575,000** direct costs or using an indirect rate exceeding the organization's negotiated rate.
Deadline:

- **Pre-Application Submission Deadline:** 5:00 p.m. Eastern time (ET), July 22, 2016
- **Invitation to Submit an Application:** September 2016
- **Application Submission Deadline:** 11:59 p.m. ET, October 21, 2016

Agency contact: Questions related to Program Announcement/Funding Opportunity content or submission requirements as well as questions related to the submission of the pre-application through eBRAP should be directed to the CDMRP Help Desk, which is available Monday through Friday from 8:00 a.m. to 5:00 p.m. ET. Response times may vary depending upon the volume of inquiries. Phone: 301-682-5507 Email: help@eBRAP.org

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Grant Program: Peer Reviewed Medical Research Program: Investigator-Initiated Research Award
Agency: Department of Defense; Defense Health Program: Congressionally Directed Medical Research Programs W81XWH-16-PRMRP-IIRA
RFP Website: http://cdmrp.army.mil/funding/pa/16prmrpiira_pa.pdf

Brief Description: Applications to the Fiscal Year 2016 (FY16) Peer Reviewed Medical Research Program (PRMRP) are being solicited for the Defense Health Agency, Research, Development, and Acquisition (DHA RDA) Directorate, by the U.S. Army Medical Research Acquisition Activity (USAMRAA). As directed by the Office of the Assistant Secretary of Defense for Health Affairs (OASD[HA]), the DHA RDA Directorate manages the Defense Health Program (DHP) Research, Development, Test, and Evaluation (RDT&E) appropriation. The managing agent for this Program Announcement/Funding Opportunity is the Congressionally Directed Medical Research Programs (CDMRP). The PRMRP was initiated in 1999 to provide support for military health-related research of exceptional scientific merit. Appropriations for the PRMRP from FY99 through FY15 totaled $1.092 billion. The FY16 appropriation is $278.7 million (M).

The vision of the FY16 PRMRP is to improve the health and well-being of all military Service members, Veterans, and beneficiaries. The PRMRP challenges the scientific and clinical communities to address at least one of the FY16 Topic Areas with original ideas that foster new directions along the entire spectrum of research and clinical care. The program seeks applications in laboratory, clinical, behavioral, epidemiologic, and other areas of research to advance knowledge in disease etiology, improve prevention, detection, diagnosis, treatment, and quality of life for those affected by a relevant disease or condition, and to develop and validate clinical care or public health guidelines.

Awards: The anticipated direct costs budgeted for the entire period of performance will not exceed **$1.2M**. Indirect costs are to be budgeted in accordance with the organization's negotiated rate. No budget will be approved by the Government exceeding **$1.2M** direct costs or using an indirect rate exceeding the organization's negotiated rate.

Deadline: Pre-Application Submission Deadline: 5:00 p.m. Eastern time (ET), June 23, 2016

- **Invitation to Submit an Application:** August 2016
- **Application Submission Deadline:** 11:59 p.m. ET, October 19, 2016

Department of Energy

Grant Program: Solar Energy Evolution and Diffusion Studies Ii – State Energy Strategies (SEEDSII-SES)
Agency: Department of Energy Advanced Research Projects Agency Energy
DE-FOA-0001496
RFP Website: https://eere-exchange.energy.gov
https://eere-exchange.energy.gov/#FoaId5aa6f510-8e5c-4012-8d3a-f89f90e5d66c

Brief Description: As part of the Department of Energy's Grid Modernization and SunShot Initiatives, this Enabling Extreme Real-Time Grid Integrations of Solar Energy (ENERGISE) Funding Opportunity Announcement (FOA) supports the research and development of highly scalable distribution system planning and real-time operation solutions that enables seamless interconnection and integration of high penetration solar generation onto the electricity grid in a cost-effective, secure, and reliable manner. The envisioned ENERGISE solutions will require the extensive use of sensor, communication, and data analytics technologies to gather up-to-the-minute measurement and forecast data from diverse sources and perform continuous optimization analysis and active control for existing and new PV installations in real time. The solutions need be compatible with the existing grid architecture in the near term and with the advanced grid architecture in the long term. The solutions should also be designed with consideration of the interoperability and cybersecurity requirements. The full Funding Opportunity Announcement (FOA) is posted on the EERE eXCHANGE website at https://eere-

exchange.energy.gov. Applications must be submitted through the EERE eXCHANGE website to be considered for award. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for the EERE eXCHANGE can be found on the EERE website https://eere- exchange.energy.gov/Manuals.aspx after logging in to the system. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE eXCHANGE website.
Awards: Up to $4,000,000. Anticipated Funding: approximately $25 million.
Deadline: August 26, 2016
Agency contact: To apply to this FOA, Applicants must register with and submit application materials through ARPA-E eXCHANGE (https://arpa-e-foa.energy.gov/Registration.aspx). For detailed guidance on using ARPA-E eXCHANGE, see Section IV.H.1 of the FOA

NASA

Grant Program: ROSES 2016: Atmospheric Composition: Upper Atmospheric Composition Observations
Agency: NASA NNH16ZDA001N-UACO
RFP Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={B554F971-2BDF-A8A0-A909-8CF7C07DB175}&path=init
Brief Description: Atmospheric composition changes affect air quality, weather, climate, and critical constituents, such as ozone. Atmosphere-biosphere exchange links terrestrial and oceanic pools within the carbon cycle and other biogeochemical cycles. Solar radiation affects atmospheric chemistry and is thus a critical factor in atmospheric composition. Atmospheric composition is central to Earth system dynamics, since the atmosphere integrates surface emissions globally on time scales from weeks to years and couples several environmental issues. NASA's research for furthering our understanding of atmospheric composition is geared to providing an improved prognostic capability for such issues (e.g., the recovery of stratospheric ozone and its impacts on surface ultraviolet radiation, the evolution of greenhouse gases and their impacts on climate, and the evolution of tropospheric ozone and aerosols and their impacts on climate and air quality). Toward this end, research within the Atmospheric Composition Focus Area addresses the following science questions:

- How is atmospheric composition changing?
- What trends in atmospheric constituents and solar radiation are driving global climate?
- How do atmospheric trace constituents respond to and affect global environmental change?
- What are the effects of global atmospheric chemical and climate changes on regional air quality?
- How will future changes in atmospheric composition affect ozone, climate, and global air quality?

NASA expects to provide the necessary monitoring and evaluation tools to assess the effects of climate change on ozone recovery and future atmospheric composition, improved climate forecasts based on our understanding of the forcings of global environmental change, and air quality forecasts that take into account the feedbacks between regional air quality and global climate change. Achievements in these areas via advances in observations, data assimilation, and modeling enable improved predictive capabilities for describing how future changes in

atmospheric composition affect ozone, climate, and air quality. Drawing on global observations from space, augmented by suborbital and ground-based measurements, NASA is uniquely poised to address these issues. This integrated observational strategy is furthered via studies of atmospheric processes using unique suborbital platform-sensor combinations to investigate, for example: (1) the processes responsible for the emission, uptake, transport, and chemical transformation of ozone and precursor molecules associated with its production in the troposphere and its destruction in the stratosphere and (2) the formation, properties, and transport of aerosols in the Earth's troposphere and stratosphere. NASA's research strategy for atmospheric composition encompasses an end-to-end approach for instrument design, data collection, analysis, interpretation, and prognostic studies.
Award: 15 to 20 awards for a total budget of $6,000,000
Letter of Intent: Not requested.
Proposal Deadline: July 1, 2016.

Grant Program: ROSES 2016: Modeling, Analysis, and Prediction
Agency: NASA NNH16ZDA001N-MAP
RFP Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={833743BB-BD03-297F-58B4-66942F9EC3C9}&path=init
Brief Description: This ROSES NRA (NNH16ZDA001N) solicits basic and applied research in support of NASA's Science Mission Directorate (SMD). This NRA covers all aspects of basic and applied supporting research and technology in space and Earth sciences, including, but not limited to: theory, modeling, and analysis of SMD science data; aircraft, scientific balloon, sounding rocket, International Space Station, CubeSat and suborbital reusable launch vehicle investigations; development of experiment techniques suitable for future SMD space missions; development of concepts for future SMD space missions; development of advanced technologies relevant to SMD missions; development of techniques for and the laboratory analysis of both extraterrestrial samples returned by spacecraft, as well as terrestrial samples that support or otherwise help verify observations from SMD Earth system science missions; determination of atomic and composition parameters needed to analyze space data, as well as returned samples from the Earth or space; Earth surface observations and field campaigns that support SMD science missions; development of integrated Earth system models; development of systems for applying Earth science research data to societal needs; and development of applied information systems applicable to SMD objectives and data. Awards range from under $100K per year for focused, limited efforts (e.g., data analysis) to more than $1M per year for extensive activities (e.g., development of specialized science experimental hardware). The funds available for awards in each program element offered in this NRA range from less than one to several million dollars, which allow selection from a few to as many as several dozen proposals, depending on the program objectives and the submission of proposals of merit. Awards will be made as grants, cooperative agreements, contracts, and inter- or intraagency transfers, depending on the nature of the work proposed, the proposing organization, and/or program requirements. The typical period of performance for an award is three years, but some programs may allow up to five years and others specify shorter periods. Organizations of every type, domestic and foreign, Government and private, for profit and not-for-profit, may submit proposals without restriction on teaming arrangements. Note that it is NASA policy that all investigations involving non-U.S. organizations will be conducted on the basis of no exchange of funds. Electronic submission of proposals is required by the respective due dates for each program element and must be

submitted by an authorized official of the proposing organization. Electronic proposals may be submitted via the NASA proposal data system NSPIRES or via Grants.gov. Every organization that intends to submit a proposal in response to this ROSES NRA must be registered with NSPIRES; organizations that intend to submit proposals via Grants.gov must be registered with Grants.gov, in addition to being registered with NSPIRES. Such registration must identify the authorized organizational representative(s) who will submit the electronic proposal. All principal investigators and other participants (e.g., co-investigators) must be registered in NSPIRES regardless of submission system. Potential proposers and proposing organizations are urged to access the system(s) well in advance of the proposal due date(s) of interest to familiarize themselves with its structure and enter the requested information. Details of the solicited programs are given in the Appendices of this ROSES NRA. Names, due dates, and links for the individual calls are given in Tables 2 and 3 of this ROSES NRA. Interested proposers should monitor http://nspires.nasaprs.com/ or subscribe to the electronic notification system there for additional new programs or amendments to this ROSES NRA through February 2017, at which time release of a subsequent ROSES NRA is planned. A web archive (and RSS feed) for amendments, clarifications, and corrections to this ROSES NRA will be available at: http://nasascience.nasa.gov/researchers/sara/grant-solicitations/roses-2016/ Frequently asked questions about ROSES-2016 will be on the web at http://science.nasa.gov/researchers/sara/faqs/. Further information about specific program elements may be obtained from the individual Program Officers listed in the Summary of Key Information for each program element in the Appendices of this ROSES NRA and at http://science.nasa.gov/researchers/sara/program-officers-list/. Questions concerning general ROSES NRA policies and procedures may be directed to Max Bernstein, Lead for Research, Science Mission Directorate, at sara@nasa.gov

NASA's Science Mission Directorate (SMD) supports a broad portfolio of research in the Earth Science Research Program. Key questions that drive the core research efforts of the Earth Science Division within SMD include:

- How is the Earth system changing?
- What are the sources of change in the Earth system and their magnitudes and trends?
- How will the Earth system change in the future?
- How can Earth system science improve mitigation of and adaptation to global change?

Within Earth Science Research, the Modeling, Analysis, and Prediction (MAP) program seeks to develop an understanding of the Earth as a complete, dynamic system. In order to accomplish this objective, the program funds the development of comprehensive, physically-based models of the Earth system, observation/model syntheses, and supporting research.

Award: $275K - $550K

Letter of Intent: The Program is using a mandatory two-step proposal submission process. The overall description of a two-step process can be found in Section IV. (b) vii of the ROSES-2016 *Summary of Solicitation*. A Step-1 proposal is required and must be submitted electronically by the Authorized Organizational Representative (AOR). The five-page Step-1 proposal must present the proposed concept based on the Scope of Solicitation from Section 2.

After review of submitted Step-1 proposals and decisions by the selecting official, a subset of the proposers will be invited to submit Step-2 proposals. Only those who are invited to submit a Step-2 proposal will be able to do so.

Proposal Deadline:

MAP16 NOIs Due Apr 15, 2016

MAP16 Proposals Due Jun 17, 2016

National Endowment for Humanities

Grant Program: Fellowship Programs at Independent Research Institutions
Agency: National Endowment for Humanities
RFP Website: http://www.neh.gov/grants/research/fellowship-programs-independent-research-institutions
Brief Description: Grants for Fellowship Programs at Independent Research Institutions (FPIRI) support fellowships at institutions devoted to advanced study and research in the humanities. Recognizing that at times scholars need to work away from their homes and institutions, the FPIRI program sponsors fellowships that provide scholars with research time, a stimulating intellectual environment, and access to resources that might otherwise not be available to them. Fellowship programs may be administered by independent centers for advanced study, libraries, and museums in the United States; American overseas research centers; and American organizations that have expertise in promoting research in foreign countries. Individual scholars apply directly to the institutions for fellowships. A list of currently funded institutions is available. In evaluating applications consideration is given to the library holdings, archives, special collections, and other resources—either on site or nearby—that institutions make available to fellows.

FPIRI grants provide funding for humanities fellowships of four to twelve months. The fellowships are held at the U.S. grantee institutions or—in the case of overseas research centers and organizations—abroad.
Awards: FPIRI grants support fellowship stipends at a rate of $4,200 per month and a portion of the costs of selecting the fellows, up to $5,000.
Deadline: August 16, 2016
Contact Information: Contact the staff of NEH's Division of Research Programs at 202-606-8200 and fpiri@neh.gov

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