NJIT Research Newsletter

Issue: ORN-2016-014

NJIT Research Newsletter includes ***Grant Opportunity Alerts,*** recent awards, and announcements of research related seminars, webinars and special events. 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: Timothy Franklin (PI), William Marshall (Co-PI) and Donald Sebastian (Co-PI)
Department: NJIT
Grant/Contract Project Title: NJ Market-Shift Supplement
Funding Agency: DoD
Duration: 07/01/14-06/31/16

PI: Farzan Nadim (PI)
Department: Biological Sciences
Grant/Contract Project Title: Regulation of Neuronal Oscillations by Synaptic Dynamics
Funding Agency: NIH
Duration: 12/01/99-11/30/16

PI: Moshe Kam (PI)
Department: Newark College of Engineering
Grant/Contract Project Title: HAMS II Data Fusion
Funding Agency: DoD/ONR
Duration: 06/01/14-05/31/17

PI: Kamalesh Sirkar (PI)
Department: Chemical, Biological and Pharmaceutical Engineering
Grant/Contract Project Title: Novel Membrane-based Fabrics and Materials for Chemical and Biological Protection
Funding Agency: Defense Threat Reduction Agency (DTRA)
Duration: 04/07/16-04/06/19

PI: William Marshall (PI)
Department: NJIT
Grant/Contract Project Title: Life Cycle Assessment of Technologies and Systems for Armament Recapitalization (Ultra Radio Systems) (PATRIOT)
Funding Agency: US Army
Duration: 09/16/14-09/16/17

PI: Raul Marcado (PI)
Department: NJIT
Grant/Contract Project Title: Procurement Technical Assistance Center (PTAC)
Funding Agency: United States Distance Learning Association
Duration: 08/01/16-07/31/17

Events and Announcements

Event: Webinar: Make Realistic Prototypes in Less Time with Multi-Material 3D Printing
When: April 14, 2016: 2.00 PM – 3.00 PM
Where:
https://event.on24.com/eventRegistration/EventLobbyServlet?target=reg20.jsp&referrer=&eventid=1156062&sessionid=1&key=EEF981CEC18C4B2B14291EB89E4F8871&partnerref=eblast&sourcepage=register
Abstract: Creating prototypes that look and feel like their production counterparts greatly reduces the product development cycle and makes communication of design ideas much more effective. Most prototypes, however, are made from multiple parts that need to be assembled, which takes time. PolyJet multi-material 3D printing lets you quickly produce realistic prototypes with different material properties and colors, all in a single manufacturing operation. View the webinar to learn how multi-material 3D printing saves time.
PRESENTER: Oleg Yermanok, Senior Application Engineer
Register: Please register at the above URL.

Event: Webinar: 4 Steps to Student Success with Academic Video
When: April 19, 2016 11.00 AM-11.45 AM
Where: http://www.sonicfoundry.com/resource/4-steps-to-student-success-with-academic-video-ihe/
Brief Description: Imagine using academic video to strengthen pre-requisite skills, enhance curriculum content, ease anticipated student struggles, and push students further in their knowledge of the course material. Brooke McCurdy has been teaching math for more than 14 years. When her classes morphed from a traditional in-person method to a flipped-classroom environment, she saw the success of her students soar as they became more engaged. In this webinar, she'll uncover the best practices for using video to teach math to grades 9-20, including:

- How to use academic video to reinforce learning, breakdown complex concepts and successfully implement classroom projects
- What benefits Brooke and her students realize by using Mediasite to personalize the learning experience
- Where she chose to break up lectures into shorter modules, and how it better complemented her overall course design

- Plus words of wisdom for other faculty just getting started teaching online.

About the Speakers: Brooke McCurdy: Brooke McCurdy has taught high school and college mathematics for 14 years. She has a Bachelor of Science in Mathematics, a Master of Science in Curriculum & Instruction, and an M.B.A. She is also a member of the National Council of Teachers of Mathematics. Brooke was selected as the Iredell-Statesville Schools 2015-2016 District Teacher of the Year in North Carolina and was selected as an Innovative Educator/Trainer. She has presented at North Carolina New Schools Summer Institute, Iredell-Statesville Schools Innovation Showcase, and Media & Learning Brussels.
Register at the above URL.

Event: IEEE Smart Grid Webinar
When: April 28, 2016 1.00 PM-2.00 PM
Where: http://smartgrid.ieee.org/grid-modernization-and-der-deployment-lessons-learned-and-future-directions
Brief Description: Regulatory initiatives to decarbonize our ecosystem have led to the growth of Distributed Energy Resources (DER), which include Solar-PV, Energy Storage, Demand Response and Electric Vehicles. DER growth has also been led by new innovative technologies. Moreover, recent grid restoration experiences from major storms have shown the potential of DER to provide emergency electricity service. DER is also revolutionizing how consumers value electricity service and reliability. DER provides new opportunities to optimize real-time transmission and distribution grid operations. This webinar will present the challenges and opportunities of DER for real-time grid operations, and will share lessons learned from recent Advanced Distribution Management Solutions (ADMS) and Distributed Energy Resource Management Solutions (DERMS) deployment projects in integrating, scheduling and dispatching of DER.
About the Speakers: Dr. Avnaesh Jayantilal is Director of Advanced Distribution Management Systems (ADMS) in **GE Grid Software Solutions** business assisting electric utilities in enhancing grid operations and reliability, business process optimization and ultimately customer satisfaction. Avnaesh joined GE (then Alstom) in 1999, and prior to his current role, he held positions in Product Marketing, Business Development, Project Engineering and Software Development. Dr. Jayantilal supports and participates in the deployment of Community Microgrids for rural electrification in the developing world with IEEE Smart Village. He is a Senior Member of the IEEE Power and Energy Society (PES), in which he chairs the IEEE PES System Operations and Control Centre Subcommittee.
Register at: http://smartgrid.ieee.org/grid-modernization-and-der-deployment-lessons-learned-and-future-directions

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Interesting News Items

NASA Programs
Small spacecraft represent an emerging class of satellites, less than 180 kilograms, which can take advantage of low cost rideshare launch opportunities, and exploit the advances in technical capabilities in the electronics industries. Smallsats are becoming a major element of NASA's science strategies in all disciplines by offering more flight opportunities. Because the scale of effort is modest, smallsats can also be directly managed by university PIs and can increase the involvement of students. NASA has released an announcement for the Small Spacecraft Technology Program Smallsat Technology Partnerships program which solicits university

involvement in the development of spacecraft or payloads for suborbital, balloon or orbital spacecraft. Specific areas of interest include spacecraft power generation and storage, communications systems, navigation systems for small spacecraft constellations, and instruments and sensors for small spacecraft

American Academy of Arts and Sciences Report on Research Enterprise
The American Academy of Arts and Sciences has released the final report in a series of reviews of excellence and access in public higher education. The report, entitled Public Research Universities: Recommitting to Lincoln's Vision—An Educational Compact for the 21st Century, contains useful data and analyses of the major challenges facing public research universities. The report makes recommendations on addressing the current outdated financial model, creating public-private partnerships, and improving student performance and access to higher education. Among other issues, recommendations are aimed at increasing State funding, reducing federal regulatory burdens and the complexity of student aid, encouraging a greater advocacy role for the private sector, and increasing the efficiency and accountability of public universities themselves. Read More: American Academy Press Release: https://www.amacad.org/content/news/pressReleases.aspx?pr=10256

Grant Opportunity Alerts

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

NSF: Tectonics; US Ignite: Networking Research and Application Prototypes Leading to Smart & Connected Communities
NIH: NCI Clinical and Translational Exploratory/Developmental Studies (R21); Exploratory Grants in Cancer Epidemiology and Genomics Research (R21); Noise-Induced Cochlear Synaptopathy: Basic Studies Informing Potential Therapies (R01); NEI Research Grant for Vision Related Secondary Data Analysis (R21); NIH Director's New Innovator Award Program (DP2)
Department of Defense/US Army/DARPA/ONR: Health Information Technologies and Informatics; Medical Simulation and Information Science
NASA: ROSES 2016: Earth Science Applications: Water Resources
Bill and Melinda Gates Foundation: Grand Challenges Explorations

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Grant Opportunities

National Science Foundation

Grant Program: Tectonics
Agency: National Science Foundation NSF 16-556
RFP Website: http://www.nsf.gov/pubs/2016/nsf16556/nsf16556.htm
Brief Description: The Tectonics Program supports a broad range of field, laboratory, computational, and theoretical investigations aimed at understanding the deformation of the terrestrial continental lithosphere (i.e. above the lithosphere-asthenosphere boundary). The Program focuses on deformation processes and their tectonic drivers that operate at any depth within the continental lithosphere, on time-scales of decades/centuries (e.g. active tectonics) and longer, and at micro- to plate boundary/orogenic belt length-scales. The Program also supports research on the structural expression of deformation processes at the surface or at

depth, the geological record of continental lithosphere deformation, the rheological properties of continental lithosphere materials, and plate movements and continental reconstructions.

Because understanding continental deformation commonly requires a variety of expertise and methods, the Program supports investigations that engage a wide variety of disciplines. The program encourages the application of new methods from all fields to tectonic problems. Because of its integrative and commonly interdisciplinary nature, the science supported by the Program may bridge programmatic boundaries with other programs in the Earth Sciences Division and Geosciences Directorate, in which case such research projects may be considered for co-review with those other programs. For example, research proposals addressing deeper mantle processes (those operating below the lithosphere-asthenosphere boundary) that affect continental lithosphere deformation may be jointly considered by Tectonics and Geophysics Programs. Projects involving both the terrestrial and marine realms may be jointly considered by the Tectonics and the Marine Geology and Geophysics Programs. As per the NSF Grant Proposal Guide, proposals may be transferred to other programs within EAR or to other Divisions within the National Science Foundation when it is deemed appropriate by Program Officers from the respective programs or divisions. Principal Investigators are encouraged to contact the cognizant program officers regarding proposals that may cross disciplinary boundaries before submission.

The Tectonics Program is committed to supporting the most meritorious research in any relevant area in single- or multi-institution proposals, including interdisciplinary and multidisciplinary research, as well as research involving international collaboration. The Program is especially interested in proposals in emerging fields. Proposals for community workshops that can guide the program on new research topics and grand challenge questions are encouraged. All proposals for the RAPID and EAGER mechanisms, as described in the Grant Proposal Guide, must be discussed with one of the Program Directors before submission.

Awards: Anticipated funding is $9,250,000, annually. The estimated number of awards is 40 to 50 standard or continuing grants per year.

Letter of Intent: Not Required.

Full Proposal Deadlines: June 08, 2016

Contacts:

- David M. Fountain, Program Director, 785 N, telephone: (703) 292-4751, fax: (703) 292-9025, email: dfountai@nsf.gov
- Stephen S. Harlan, Program Director, 785 N, telephone: (703) 292-7707, fax: (703)292-9025, email: sharlan@nsf.gov

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Grant Program: US Ignite: Networking Research and Application Prototypes Leading to Smart & Connected Communities

Agency: National Science Foundation NSF 16-553

RFP Website: http://www.nsf.gov/pubs/2016/nsf16553/nsf16553.htm

Brief Description: US Ignite is an initiative that seeks to promote US leadership in the development and deployment of next-generation gigabit applications with the potential for significant societal impact. The primary goal of US Ignite is to break a fundamental deadlock: there is insufficient investment in gigabit applications that can take advantage of advanced network infrastructure because such end-to-end infrastructure is rare and geographically dispersed. And conversely, there is a lack of broad availability of advanced broadband infrastructure for open experimentation and innovation because there are few advanced applications and services to justify it. US Ignite aims to break this deadlock by providing incentives for imagining, prototyping, and developing gigabit applications that address national

priorities, and by leveraging and extending this network testbed across US college/university campuses and cities.

This solicitation builds on the experience and community infrastructure gained from initial US Ignite activities to further engage the US academic research and non-profit communities along with local cities, municipalities, and regions in exploring the challenges of developing and applying next-generation networking to problems of significant public interest and benefit. In particular, this solicitation has two focus areas: the first encourages the development of application ideas and prototypes addressing national priority areas that explore new uses for high-speed networks and give rise to the Smart & Connected Communities of the future, as well as novel networking and application paradigms; and the second pursues fundamental research advances in networking technology and protocols that will further both the capabilities and our understanding of gigabit networking infrastructure to meet current and future application demands. In 2016, NSF is also working with the U.S. Department of Justice (DOJ) Office for Access to Justice (ATJ) to identify additional application ideas and prototypes and basic research directions that may serve national priority areas of mutual interest.

Awards: Focus Area 1 proposals may request up to $600,000 for up to three years. Focus Area 2 proposals may request up to $1,000,000 for up to three years. Anticipated Funding Amount: $10,000,000

Letter of Intent: Not Required

Full Proposal Submission Due Date: June 14, 2016

Contacts:

- Jack Brassil, Program Director, CISE/CNS, telephone: (703) 292-8041, email: jbrassil@nsf.gov
- Bruce Kramer, Program Director, ENG/CMMI, telephone: (703) 292-5348, email: bkramer@nsf.gov
- Wendy Nilsen, Program Director, CISE/IIS, telephone: (703) 292-2568, email: wnilsen@nsf.gov

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National Institutes of Health

Grant Program: NCI Clinical and Translational Exploratory/Developmental Studies (R21)
Agency: National Institutes of Health PAR-16-176

RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-176.html

Brief Description: All areas of cancer research relevant to the mission of the Division of Cancer Treatment and Diagnosis (DCTD) and Division of Cancer Prevention (DCP), for example, clinical and preclinical studies that focus on the development and testing of anti-cancer, symptom management, and cancer prevention agents (drugs, biologics, or complementary/alternative medicine), including combinations; discovery of new molecular targets; diagnostic and treatment methodologies; and predictive biomarkers are appropriate for projects submitted to this FOA. Testing (in prevention, symptom management, and/or treatment studies) of new animal models that closely parallel the development and progression of human cancers or the development of disease- and treatment-related morbidities are also appropriate for this FOA. Examples of the types of studies appropriate for this FOA include, but are not limited to:

Clinical Studies:

- Exploratory, Phase I, or small, non-randomized Phase II trials of new agents, repurposed agents, or combinations of interventions (including radiation) for treatment of common or rare cancers, based on established mechanisms of action, demonstrable pre-clinical activity in relevant animal models, and pharmacological and toxicological data

- Exploratory, Phase I, or small, non-randomized Phase II trials of new agents or strategies, repurposed agents, or combinations of interventions for the prevention of cancer, based on rational target selection and pharmacological and toxicological data
- Exploratory, Phase I, or small, non-randomized Phase II trials of new agents, repurposed agents, or combinations of interventions (including radiation) for treatment of symptoms/toxicities resulting from the disease or its treatment, based on established mechanisms of action, and pharmacological and toxicological data
- Clinical studies for preliminary evaluation of the safety and efficacy of new imaging tools and techniques (devices, instrumentation, methods, and agents) designed to improve upon current technologies, practices and interventions
- Pilot trials of new radiation modalities and approaches

Correlative Studies/Biomarker Development:

- Discovery and/or early validation of predictive biomarkers, imaging biomarkers, or genetic signatures (that may lead to better cancer diagnosis and patient stratification) using specimens from drug, biologic, radiation, or combination trials where the outcome is known. Studies that focus on biomarkers that elucidate cancer health disparities are also appropriate.
- Studies of particles, macrovesicles, nuclei acids from tumor cells, and/or circulating tumor cells, for the purpose of cancer diagnosis, prognosis, detection of metastases, and cancer recurrence
- Studies that correlate pathology image data with cancer diagnosis and prognosis.
- Studies that use high dimensional data, e.g., proteomic and genomic information, for cancer diagnosis and disease stratification.
- Pharmacogenomic studies aimed at the identification of genomic profiles associated with increased/decreased efficacy or toxicity during clinical interventions.
- Discovery and/or early validation of biomarkers elucidating mechanisms of action of cancer preventive interventions, preferably using specimens from clinical trials where the outcomes are known.
- Discovery and/or early validation of intermediate endpoint biomarkers for cancer prevention clinical trials
- Correlation of the activation of specific signaling pathways with outcomes in immunotherapy clinical trials
- Discovery and/or early validation of biomarkers elucidating mechanisms of action of interventions aimed at preventing or treating symptoms and/or toxicities resulting from disease or its treatment using specimens from clinical trials where the outcomes are known
- Co-development of early detection and predictive biomarkers using specimens where the outcome is known, and may include discovery and/or early validation of biomarkers or genetic signatures to detect early recurrence; discovery and/or early validation of biomarkers or genetic signatures found to be predictive of recurrence; and integration of biomarker measurements with imaging studies for the detection of early stage cancers or to distinguish indolent from aggressive cancers.
- Proton/image-guided radiation therapy (IGRT) dosimetry analysis of patient data
- Dose-effect analysis of image-guided intervention (IGI) methods

Target and Agent Discovery and Development:

- Discovery of new tumor or tumor microenvironment molecular or immunologic targets
- Development of new molecular targeting agents based on specific signaling pathways activated during the process of tumorigenesis or tumor progression (including invasion and metastasis)

Model Development and Analysis:

- Development and early validation of clinically-relevant in vivo or in vitro (including 3D) models of common or rare tumors
- Novel imaging approaches to characterize disease anatomy, physiology (including metabolism), and molecular biology (of the tumor and/or the microenvironment/vasculature) in order to guide the administration of targeted therapies in a clinical trial
- Development of computational, mathematical, and animal models that can be used to assess imaging systems, including systems for IGI, and to improve image processing.

Awards: The combined budget for direct costs for the two-year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.
Letter of Intents: Not Required.
Deadline: July 19, 2016; November 22, 2016; March 22, 2017; July 19, 2017; November 22, 2017; March 22, 2018; July 19, 2018; November 22, 2018; March 22, 2018, by 5:00 PM local time of applicant organization. All types of applications allowed for this funding opportunity announcement are due on these dates.
Applicants are encouraged to apply early to allow adequate time to make any corrections to errors found in the application during the submission process by the due date.

Grant Program: Exploratory Grants in Cancer Epidemiology and Genomics Research (R21)
Agency: National Institutes of Health PA-16-175
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PA-16-175.html
Brief Description: Areas of scientific emphasis for this FOA reflect areas of high priority for the EGRP. There are five broad areas of interest to EGRP, including development and validation of methods and technologies, identification of modifiable risk factors or host susceptibility factors, clinical and translational epidemiology, and risk factor assessment. Specific topics in each of these research areas represent examples of research that EGRP supports, and could be supported through this FOA.
Specific topics of interest may include, but are not limited to, the following:

- Developing or improving methods/technologies for biomarkers (e.g., characterizing unidentified metabolites) to advance knowledge of cancer etiology, prevention and outcomes; assessment and use of the microbiome in cancer epidemiology research; environmental exposure assessment; functional assessment of genetic variants; and examining host immune response and the potential association with cancer risk and outcomes;
- Improving and validating methods to collect risk, comorbidity and treatment data from electronic medical records;
- Developing and evaluating statistical approaches to assess and adjust for measurement error (e.g., between diet and/or physical activity exposures and an outcome); modeling approaches for episodic exposures or changing exposures over time (e.g., changes in diet patterns); multi-dimensional health indices taking into account exposures and health behaviors; new methods for subject recruitment, enrollment and retention of study participants;
- Investigating cancer risk and outcomes in understudied populations (e.g., rural, low socioeconomic status, racial and ethnic groups, sexual and gender minorities, etc.);

- Evaluation of cancer risk associated with exogenous (e.g., nutrition, tobacco, chemical agents, infectious agents, radiation, medication, and drug use) and endogenous (e.g., metabolome, microbiome, adductome) factors, the interaction of these factors, and the effects during windows of susceptibility across the life course;
- Incorporating geographic factors in multilevel analyses of cancer, such as neighborhood and social determinants of cancer risk;
- Applying epigenetic approaches, including microRNA, histone modifications and chromosomal accessibility in cancer epidemiology;
- Investigation of how germline variation interacts with the somatic genome (GxS) to influence cancer related outcomes;
- Secondary data analyses of existing genome-wide data or other large genomic datasets for the purpose of identifying gene-environment interactions or the impact of rare genetic risk variants on outcomes in high-risk families;
- Application of emerging genomic technologies to population-based studies;
- Understanding the ethical, legal and social issues of genomics in cancer research;
- Developing bioinformatics approaches for omics data integration and prioritizing genetic variants for further functional studies; methods to facilitate data sharing while safeguarding privacy;
- Investigating recurrence, progression-free survival, overall survival, persistent or late toxicities, health related quality of life and function among cancer patients; influence of comorbidities on cancer outcomes; factors associated with treatment adherence; and post-diagnosis screening strategies.
- Studies of risk/benefit models to predict treatment outcomes; pharmocoepidemiology studies of common treatment and biologics and cancer risk and progression;
- Investigations of cancer risk among individuals with underlying chronic diseases or conditions;
- Assessment of the predictive validity of a diet quality index for cancer risk and outcomes; methods to assess dynamism of diet, physical activity and anthropometric measures across the life course.
- Obtaining automated residential histories for specific populations with little credit or banking history: low SES populations, children, teens, young adults, foreign born; or older people with care-takers; or for specific geographic areas (e.g., rural vs. urban);
- Developing algorithms for optimizing the reconciliation or consolidation of conflicting residential histories obtained through a single or multiple data sources;
- Determining the impact of geographic misspecification of residential histories in different types of epidemiologic studies; use of residential histories in epidemiologic research (e.g., as opposed to assuming that subjects have always lived at their current address); developing methods for obtaining lifetime residential histories; or refining linkage methodologies necessary to link to automated data sources of residential histories
- In addition, applicants are encouraged to submit applications to study cancer sites that have previously been traditionally understudied; these include cancers of the esophagus, endometrium, liver, pancreas, testes, brain, and multiple myeloma.

Awards: The combined budget for direct costs for the two-year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.

Letter of Intents: 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: Noise-Induced Cochlear Synaptopathy: Basic Studies Informing Potential Therapies (R01)
Agency: National Institutes of Health PAR-16-170
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-170.html
Brief Description: Our understanding of the cellular and subcellular basis of cochlear synaptopathy following a temporary threshold shift is limited. Moreover, little is known about the behavioral consequences of such damage and what might be necessary for synaptic repair and re-innervation. This FOA is specifically geared to stimulate additional research focused on understanding the cellular and subcellular basis of noise-induced cochlear synaptopathy, including studies that provide insight into possible therapies. Examples of research questions that are appropriate for this FOA include, but are not limited to:

- What are the cellular/subcellular mechanisms of noise-induced cochlear synapse damage?
- What are the mechanisms of normal pre- and post-synaptic transmission and what are the effects of noise on these processes?
- What is the phenomenology of primary neural degeneration following noise?
- Do all TTS-inducing noise exposures produce synaptopathy?
- What are the dynamics of noise-induced synapse damage; what is the sequence of structural and ultrastructural changes?
- What are the receptor dynamics and trafficking in the post-synaptic bouton regarding postsynaptic receptors, especially NMDA-type and Ca2+-permeable AMPA type receptors? How is this altered by noise exposure?
- How is calcium homeostasis regulated in the post-synaptic bouton and is that altered by noise?
- What are the roles of inflammatory processes, immune processes and vascular changes in noise-induced synaptopathy?
- What are the contributions of glutamate excitotoxicity, recycling and uptake in noise-induced synaptopathy?
- What is the role of reactive oxygen species and/or osmotic stress in noise-induced synaptopathy?
- Are there protective effects at the inner hair cell synapse of prior noise exposure?
- Do olivocochlear efferent fibers protect inner hair cells from noise-induced synaptopathy?
- Is there inner hair cell synapse reassembly after noise-induced loss? If so, what factor(s) influence reassembly?
- Which neurotrophic factors support synaptogenesis and how are their synthesis and release affected by acoustic trauma?
- What are the in vitro requirements for neurite extension and synapse regeneration following toxic noise exposure?
- What is the therapeutic window (trauma-treatment interval) for in vivo neurotrophin-based synapse regeneration following noise?
- What is the functional status of neurotrophin-rescued synapses?

Applications should focus on cochlear synaptopathy resulting from noise-induced damage following a temporary threshold shift. Projects focused solely on normal cochlear synapse function, noise-induced hair-cell death, or spiral ganglion death/regrowth as a result of

other auditory insults are not appropriate for this announcement. Multi-disciplinary projects employing cutting edge tools or techniques from other systems or disciplines are strongly encouraged. Collaborations are encouraged, including those with industry partners, if appropriate.

Applications focused on translating basic scientific findings pertaining to cochlear synaptopathy into possible therapies are appropriate for this FOA. Applications may use a milestone-based structure rather than a hypothesis-driven design for projects submitted to this FOA, if appropriate. A milestone-driven format allows applicants to delineate a series of project stages, identify criteria for completion of the work stages and provide contingency plans for each work stage.

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project. It is anticipated that projects supported by this FOA will require direct costs of less than $500,000 per year.

Letter of Intents: 30 days prior to the application due date.

Deadline: November 3, 2016 and July 3, 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: NEI Research Grant for Vision Related Secondary Data Analysis (R21)
Agency: National Institutes of Health PAR-16-168

RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-168.html

Brief Description: The goal of this funding opportunity announcement (FOA) is to fund meritorious vision related research projects that involve secondary data analyses using existing database resources. The development of statistical methodology necessary for improving methods to analyze vision health data using existing vision data may also be proposed.

Research Objectives

The NEI supports an extensive portfolio of clinical trials and large-scale epidemiologic research project wherein numerous data collection activities are required to meet each project's specific aims. The resultant wealth of data generated by these studies often provides unique, cost-effective opportunities to pursue new questions.

This FOA may be used to develop new statistical methodologies or to test new hypotheses using existing data. This FOA actively encourages the use of existing database resources to conduct additional analyses secondary to a project's originally-intended primary purpose; it will not support the collection of new data.

This FOA supports secondary data analysis on existing data sets. A typical project is expected to make substantial progress towards having vision related manuscript(s) submitted in peer reviewed journals within the first year.

Data sets are not limited to those collected under NEI support but these data sets are of the highest programmatic interest. Applicants should consider the relevance of their proposed analyses to NEI programs and priorities as described in the National Plan for Eye and Vision Research, which is available at http://www.nei.nih.gov.

Awards: The combined budget for direct costs for the two-year project period may not exceed $275,000. No more than $200,000 may be requested in any single year.

Letter of Intents: 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: NIH Director's New Innovator Award Program (DP2)
Agency: National Institutes of Health RFA-RM-16-004
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-16-004.html
Brief Description: The NIH Director's New Innovator Award addresses two important goals: stimulating highly innovative research and supporting promising new investigators. New investigators may have exceptionally innovative research ideas, but not the preliminary data required to fare well in the traditional NIH peer review system. As part of NIH's commitment to increasing opportunities for new scientists, it has created the NIH Director's New Innovator Award to support exceptionally creative new investigators who propose highly innovative research projects that have the potential for unusually high impact. This award complements ongoing efforts by NIH and its Institutes and Centers to fund new investigators through R01 grants and other mechanisms.

The NIH Director's New Innovator Award program is different from traditional NIH grants in several ways. It is designed specifically to support unusually creative investigators with highly innovative research ideas at an early stage of their career when they may lack the preliminary data required for an R01 grant application. The emphasis is on innovation and creativity; preliminary data are not required, but may be included. No detailed, annual budget is requested in the application. The review process emphasizes the individual's creativity, the innovativeness of the research approaches, and the potential of the project, if successful, to have a significant impact on an important biomedical or behavioral research problem.

The research proposed for a NIH Director's New Innovator Award may be in any scientific area relevant to the mission of NIH (biological, behavioral, clinical, social, physical, chemical, computational, engineering, and mathematical sciences). Investigators who were not selected for an award in prior years may submit applications this year as long as they retain their ESI (early stage investigator) eligibility; however, all applications must be submitted as "new" applications regardless of any previous submission to the program.

The NIH Director's New Innovator Award initiative is part of the NIH Common Fund (formerly known as the NIH Roadmap), which supports cross-cutting programs that are expected to have exceptionally high impact. All Common Fund initiatives invite investigators to develop bold, innovative, and often risky approaches to address problems that may seem intractable or to seize new opportunities that offer the potential for rapid progress. The NIH Director's New Innovator Awards initiative is a component of the Common Fund High-Risk High-Reward Research Program that also includes the NIH NIH Director's Pioneer Awards, the NIH Transformative Research Awards, and the NIH Director's Early Independence Awards.
Awards: Awards are multi-year funded, with all funds being disbursed in the first year of the award. Awards will be up to $1,500,000 in direct costs (the equivalent of $300,000 in Direct Costs each year for five years) plus applicable Facilities and Administrative (F&A) costs to be determined at the time of award.
Letter of Intents: Not required.
Deadline: September 9, 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.

Department of Defense/US Army/DARPA/ONR

Grant Program: Health Information Technologies and Informatics
Agency: U.S. Army Medical Research Acquisition Activity W81XWH16RMSI3
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=b2337a48fcf01582a591424e7f8e69db&tab=core&_cview=0
Brief Description: This Funding Opportunity Announcement is a Broad Agency Announcement (BAA) for the Fiscal Years 2016-2017 (FY16-FY17) Joint Program Committee-1 (JPC-1)/Medical Simulation and Information Sciences (MSIS) Research Program, Health Information Technologies and Informatics (HITI) Theater/Operational Medicine Initiative (TOMI). This BAA must be read in conjunction with the submission guidelines in Grants.gov/Apply for Grants (hereinafter called Grants.gov/Apply). It must also be read in conjunction with the document titled "General Submission Instructions" available with this BAA in Grants.gov.

The mission of the JPC-1/MSIS is to explore the implications of models, technology, and informatics for medical education, and for the provision, management, and support of healthcare services in the military. The JPC-1/MSIS Research Program plans, coordinates, and oversees a responsive world-class, tri-service science and technology program focused on two areas of research: (1) medical modeling, simulation and training, and (2) HITI.

The JPC-1/MSIS HITI portfolio facilitates scientific studies and promotes advances in software, information technology, medical informatics, and analytics in both garrison (fixed facilities) and theater (military combat and operational environments) settings. Advances generated will intersect with the Military Health System (MHS) Information Technology strategy at multiple points. The HITI portfolio is responsive to the evolving needs across the MHS enterprise. There are four research domains within the HITI:

(1) Theater/Operational Medicine - Research to enhance the efficiency of healthcare operations in combat and operational environments to ensure the delivery of high-quality healthcare services by improving information accessibility and by providing better decision support for clinicians

(2) Military Health Care Services - Research to promote, improve, conserve, or restore the mental or physical well-being of personnel through improved information management and technologies

(3) Medical Resourcing - Research initiatives to improve the management of human and financial healthcare resources

(4) Information Technology Infrastructure and Data Management - Research to improve the management of IT and communications infrastructure, healthcare data management, and architecture.

Awards: Various
Deadline: August 22, 2016.
Agency contact:
Dr. Douglas Weber, Program Manager
BAA Coordinator: DARPA-BAA-16-24@darpa.mil

Grant Program: Medical Simulation and Information Sciences
Agency: US Army - Department of Defense W81XWH-16-R-MSI1
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=0e850a6b11c2b388d9fb2ef82d58a931&tab=core&_cview=0
Brief Description: Predictive Personality & Emotional State Performance Determinants for Training (PREEMPT) seeks the development of a proof-of-concept task performance assessment tool that incorporates personality and emotional state as determinant components to predict an individual's performance and overall stress level under a wide range of potential combat casualty care scenarios, environments, and other stressful situations relevant to patient care. For this award, it is anticipated that the various components will be integrated for initial testing purposes in a laboratory setting to evaluate how the components work together. The FY16 JPC-1/MSIS PREEMPT is seeking research on two (2) of the several predictors of an individual's performance: personality and emotional state. This knowledge can be used to:• Assess an individual's overall performance and stress levels during combat casualty care scenarios;• Deconstruct overall performance into its personality and emotional state determinants and assess each;• Combine the determinants to predict the person's overall performance on known tasks, especially as it applies to performance under stress.For the purposes of this announcement, personality will be defined as that set of non-physical characteristics which distinguishes one individual from another.For the purposes of this announcement, emotional states are interpretations of complex states that best describe a person's subjective response to a person, thing, or situation. Emotional states indirectly affect behavior. The focus of the research should concentrate on those wishing to become military combat medics, corpsmen, pararescuemen, or special operations combat medics, but could consider other populations that are nearly equivalent. The pilot study should consider an individual's performance compared against currently used standards for military entry within the respective area. If unable to use a standard for military entry, then the applicant should justify the proposed standard that the organization perceives as nearly equivalent, especially if there are data-driven outcomes for individuals who have trained using standards vs. those who have not. The assessment tool(s) could also potentially be used for sustainment of task performance and overall stress level assessment in refresher / sustainment courses. For completeness, task difficulty needs to be described and defined and, if applicable, evaluation criteria provided with a description of the measurement tool. Task difficulty and conditions should be held constant in the proposed project. In summary, an individual's performance on a task in a specific environment at a moment in time can be specified in terms of the individual's personality, emotional state, and task difficulty. This means that the observed task performance is the final common pathway of the complex interplay of the task determinants. The goal of this program is to identify the personality and emotional state determinants of individual performance in order to determine how to better select the right people for specific tasks in certain scenarios, environments, and stressful situations and how to improve individual performance across tasks and environments.
Awards: Up to $1,250,000
Deadline: August 22, 2016.
Agency contact:
Jesse Hoffman
jesse.m.hoffman2.civ@mail.mil
Phone: 3016192765

NASA

Grant Program: ROSES 2016: Earth Science Applications: Water Resources
Agency: NASA NNH16ZDA001N-WATER
RFP Website:
https://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={79420B5C-AA9A-C2A6-AD26-532A4631DBA2}&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

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: May 2, 2016

Bill and Melinda Gates Foundation

Grant Program: Grand Challenges Explorations

Agency: Bill and Melinda Gates Foundation

RFP Website: http://gcgh.grandchallenges.org/grant-opportunities

Brief Description: Grand Challenges Explorations, an initiative to encourage innovative and unconventional global health and development solutions, is accepting grant proposals until **May 11, 2016, 11:30 A.M. US Pacific Day Light Time**. Applicants can be at any experience level; in any discipline; and from any organization, including colleges and universities, government laboratories, research institutions, non-profit organizations, and for-profit companies.

Two-page proposals are being accepted online on the following topics:

- Assess Family Planning Needs, Preferences and Behaviors to Inform Innovations in Contraceptive Technologies and Services
- Develop Novel Platforms to Accelerate Contraceptive Drug Discovery
- Design New Analytics Approaches for Malaria Elimination
- Accelerate Development of New Therapies for Childhood Cryptosporidium Infection
- Novel Approaches to Characterizing and Tracking the Global Burden of Antimicrobial Resistance
- Explore New Solutions in Global Health Priority Areas

Awards: Initial grants will be US $100,000 each, and projects showing promise will have the opportunity to receive additional funding of up to US $1 million. Full descriptions of the new topics and application instructions in Chinese, English, French, Portuguese and Spanish are available here.

Deadline: February 18, 2016

For More Information: Please contact Eric Blitz, Associate Director for Development Corporate and Foundation Relations, eric.blitz@njit.edu

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