NJIT Research Newsletter

Issue: ORD-GOA-2015-18

Recent Awards **Events and Announcements** **Grant Opportunities**

General Announcement: ***NJIT Research Newsletter*** replaces the weekly ***Grant Opportunity Alerts*** *Memorandums* to provide additional information about recent awards announcements of research related activities including distinguished seminars, webinars and special events. They are also 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! These awards were received in May 2015.

PI: Sergio Adamovich
Department: Biomedical Engineering
Grant/Contract Project Title: Planning and Updating in Frontoparietal Networks for Grasping
Funding Agency: NIH
Duration: 04/01/14-03/31/19

PI: Tara Alvarez
Department: Biomedical Engineering
Grant/Contract Project Title: Functional Mechanism of Neural Control in Convergence Insufficiency
Funding Agency: NIH-NEI
Duration: 02/01/14-12/31/17

PI: Kevin Belfield
Department: Dean, 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: 11/24/14-06/20/17

PI: Michel Boufadel
Department: Civil and Environmental Engineering, Center for Natural Resources Development and Protection
Grant/Contract Project Title: Dispersion Research on Oil: Physics and Plankton Studies (DROPPS II)
Funding Agency: Consortium for Ocean Leadership
Duration: 01/01/15-12/31/17

PI: Suzanne Berliner-Heyman and John Carpinelli
Department: Center for Pre-College Programs
Grant/Contract Project Title: Unite 2015 Summer Program
Funding Agency: USArmy/Unite Foundation
Duration: 05/01/15-10/31/15

PI: Levelle Burr-Alexander
Department: Center for Pre-College Programs
Grant/Contract Project Title: Victoria Foundation Grant Summer 2015
Funding Agency: USArmy/Unite Foundation
Duration: 05/01/15-05/01/16

PI: Edward Dreizen
Department: Department of Chemical, Biological and Pharmaceutical Engineering
Grant/Contract Project Title: Characterization of Reactivity of Magnesium Powders with Different Particle Shapes and Coatings
Funding Agency: Advanced Powder Solutions
Duration: 06/01/15-05/31/17

PI: Simon Garnier
Department: Biological Sciences
Grant/Contract Project Title: Dynamic communication networks in the negotiation of collective behaviors in vertebrates
Funding Agency: JSMFoundation
Duration: 06/01/15-05/31/17

PI: Dale Gary
Department: Physics
Grant/Contract Project Title: On-Site Technical Support of Global Oscillation Network Group (GONG)
Funding Agency: NSF
Duration: 07/01/15-06/30/16

Events and Announcements

Event: Frontiers in Applied and Computational Mathematics (FACM) Conference
When: June 5-6, 2015
Where: Jim Wise Theater, Kupfrian Hall, NJIT
Brief Description: On June 5 - 6, 2015, the 12th Annual Conference on Frontiers in Applied and Computational Mathematics (FACM '15) will be held at the New Jersey Institute of Technology (NJIT) in Newark, New Jersey. This conference is the twelfth in a series of annual conferences that have been organized by the Department of Mathematical Sciences and the Center for Applied Mathematics and Statistics at NJIT. The conference will focus on mathematics applied to problems in fluid dynamics, including complex fluids, bio-fluid dynamics, waves in fluids, and numerical methods. There will also be minisymposia in the areas of applied and bio-statistics.

For registration and detailed program information, please see the website http://m.njit.edu/Events/FACM15/program.html.

Event: NSF Webinar: Reachability and Learning for Hybrid Systems
When: CISE Distinguished Lecture Series - Claire Tomlin - June 3 - 2:30pm
Speaker: Charles A. Desoer Chair in the College of Engineering, Professor, Electrical Engineering and Computer Sciences
Website:
http://www.nsf.gov/events/event_summ.jsp?cntn_id=135274&WT.mc_id=USNSF_13&WT.mc_ev=click
Brief Description: Hybrid systems are a modeling tool allowing for the composition of continuous and discrete state dynamics. They can be represented as continuous systems with modes of operation modeled by discrete dynamics, with the two kinds of dynamics influencing each other. Hybrid systems have been essential in modeling a variety of important problems, such as aircraft flight management, air and ground transportation systems, robotic vehicles and human-automation systems. These systems use discrete logic in control because discrete abstractions make it easier to manage complexity and discrete representations more naturally accommodate linguistic and qualitative information in controller design.
A great deal of research in recent years has focused on the synthesis of controllers for hybrid systems. For safety specifications on the hybrid system, namely to design a controller that steers the system away from unsafe states, we will present a synthesis and computational technique based on optimal control and game theory. In the first part of the talk, we will review these methods and their application to collision avoidance and avionics design in air traffic management systems, and networks of manned and unmanned aerial vehicles. It is frequently of interest to synthesize controllers with more detailed performance specifications on the closed loop trajectories. For such requirements, we will present a toolbox of methods combining reachability with data-driven techniques inspired by machine learning, to enable performance improvement while maintaining safety. We will illustrate these "safe learning" methods on a quadrotor UAV experimental platform which we have at Berkeley.
To Join the Webinar: Please register at:
https://nsf.webex.com/nsf/j.php?RGID=r8e681d910095bc7cccca340dfd8f1c87 by 11:59pm EST on Tuesday, June 2, 2015.

Event: ADVANCE IT and IT-Catalyst pre-proposal Technical Assistance Webinars
When: May 17, 2015, 1:00 PM to 2:30 PM and May 23, 2015, 3:00 PM to 4:30 PM
Brief Description: The ADVANCE program office will offer two webinars one on the ADVANCE Institutional Transformation track and one on the IT-Catalyst track in the ADVANCE solicitation 14-573. Please review the solicitation before the webinar. There will be time for questions and answers during the webinars.
How to Join: ADVANCE Institutional Transformation (IT)

- June 17, 2015 1pm to 2:30pm EST
- Register at:
  https://nsf.webex.com/nsf/j.php?RGID=r714de34766f098efb8795cefe79a02f4

ADVANCE IT-Catalyst

- June 23, 2015 3:00pm to 4:30pm EST

- Register at: https://nsf.webex.com/nsf/j.php?RGID=rcbe4443fd0379281a2b56695ec898848

Note institutional eligibility limitations for IT-Catalyst in the solicitation: Institutions that qualify for Department of Education Title III and Title V status, non-profit community colleges, designated minority serving institutions, (e.g. Tribal Colleges and Universities, Historically Black Colleges and Universities, Hispanic-Serving Institutions, Native Hawaiian Serving Institutions, and Alaska Native Serving Institutions, Predominantly Black Institutions, Non-Tribal, Native American-Serving Institutions). The webinars will be recorded and posted on the ADVANCE program website about three weeks after these dates so you can review them if you are not available on these dates.

Announcement: New Format for Biographical Sketches for NIH Proposals
Notice Number: NOT-OD-15-032
Date: New Biographical Sketch Format Required for NIH and AHRQ Grant Applications Submitted for Due Dates on or After May 25, 2015
Website for More information: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-032.html
Brief Information: The revised forms and instructions are now available on the SF 424 (R&R) Forms and Applications page and adjustments have been made to improve their usability. Individual fellowships, R36 dissertation grants, and diversity supplements should use the Fellowship Application Biographical Sketch Format Page and related pre-doc and post-doc instructions and samples, while research grant applications, career development, training grant, and all other application types should use the general Biographical Sketch Format Page and instructions and sample.

The new format extends the page limit for the biosketch from four to five pages, and allows researchers to describe up to five of their most significant contributions to science, along with the historical background that framed their research. Investigators can outline the central findings of prior work and the influence of those findings on the investigator's field. Investigators involved in Team Science are provided the opportunity to describe their specific role(s) in the work. Each description can be accompanied by a listing of up to four relevant peer-reviewed publications or other non-publication research products, including audio or video products; patents; data and research materials; databases; educational aids or curricula; instruments or equipment; models; protocols; and software or netware that are relevant to the described contribution. In addition to the descriptions of specific contributions and documentation, researchers will be allowed to include a link to a full list of their published work as found in a publicly available digital database such as MyBibliography or SciENcv.

Tool to Help Build the New Biosketch: The Science Experts Network Curriculum Vitae (SciENcv), which serves as an interagency system designed to create biosketches for multiple federal agencies, will be updated by the end of December to support the new biosketch format and to address some issues found in testing. SciENcv pulls information from available resources making it easy to develop a repository of information that can be readily updated and modified to prepare future biosketches. A YouTube video provides instructions for using SciENcv.

Additional Information: Note that having a different biosketch format than other applications being reviewed in the same panel is not grounds for appeal.

See FAQs for additional information on http://grants.nih.gov/grants/policy/faq_biosketches.htm

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Grant Opportunity Alerts

Keywords and Areas Included in Funding Opportunity Alerts**:**
NSF: IUCRC, Partnerships for Innovation: Accelerating Innovation Research- Technology Translation (PFI: AIR-TT), CISE Research Initiatives
National Institute of Health: SBIR E-learning for HAZMAT and Emergency Response Clinical and Translational Science Award (CTSA) Network Recruitment Innovation Centers (RICs)(U24); **NIMHD Transdisciplinary Collaborative Centers for Health Disparities Research Focused on Precision Medicine (U54)**
US ARMY/DARPA/DoD: Revolutionary Enhancement of Visibility by Exploiting Active Light-fields (REVEAL); Vision Prostheses Piolet Study; DARPA Program on Biological Technologies
NASA: Early Stage Innovations (ESI)
Keck Foundation: Research in Medical, and Science and Engineering
Dreyfus Foundation: Post-Doctoral Fellowships on Innovations in Chemical Sciences and Engineering

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Grant Opportunities

National Science Foundation

Grant Program: Industry/University Cooperative Research Centers Program (I/UCRC)
Agency: National Science Foundation NSF 13-594
RFP Website:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5501&WT.mc_id=USNSF_39&WT.mc_ev=click
Brief Description: The Industry/University Cooperative Research Centers (I/UCRC) program develops long-term partnerships among industry, academe, and government. The centers are catalyzed by a small investment from the National Science Foundation (NSF) and are primarily supported by industry center members, with NSF taking a supporting role in the development and evolution of the center. Each center is established to conduct research that is of interest to both the industry members and the center faculty. An I/UCRC contributes to the nation's research infrastructure base and enhances the intellectual capacity of the engineering and science workforce through the integration of research and education. As appropriate, an I/UCRC uses international collaborations to advance these goals within the global context.
Planning grant proposals are accepted only if the Letter of Intent describing a proposed I/UCRC has been approved by an I/UCRC program director. Planning grants are used to plan the joint industry and university research agenda and to determine the feasibility and viability of

developing a center. A planning grant proposal is submitted as a full proposal. The title for the proposal must be headed as "Planning Grant: I/UCRC for AREA" where area is the research area for which the center is being proposed. DO NOT SUBMIT A PLANNING GRANT AS A PRELIMINARY PROPOSAL OR IT WILL BE RETURNED WITHOUT REVIEW.
Awards: 2 to 8 full center awards and 4 to 6 planning grant awards annually
Letter of Intent: June 26, 2015
Deadlines: September 25, 2015: Planning Grant and Full Center Proposal

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Grant Program: Partnerships for Innovation: Accelerating Innovation Research-Technology Translation (PFI: AIR-TT)
Agency: NSF 15-570
RFP Website:
http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=504790&ods_key=nsf15570
Brief Description: The NSF Partnerships for Innovation (PFI) program within the Division of Industrial Innovation and Partnerships (IIP) is an umbrella for two complementary subprograms, Accelerating Innovation Research (AIR) and Building Innovation Capacity (BIC). Overall, the PFI program offers opportunities to connect new knowledge to societal benefit through translational research efforts and/or partnerships that encourage, enhance and accelerate innovation and entrepreneurship. The subject of this solicitation is PFI: AIR-Technology Translation (PFI: AIR-TT). The PFI: AIR-TT solicitation serves as an early opportunity to move previously NSF-funded research results with promising commercial potential along the path toward commercialization. Projects are supported to demonstrate proof-of-concept, prototype, or scale-up while engaging faculty and students in entrepreneurial/innovative thinking.
WEBINAR: A webinar will be held within 6 weeks of the release date of this solicitation to answer any questions about this solicitation. Details will be posted on the IIP website (http://www.nsf.gov/eng/iip/pfi/air-tt.jsp) as they become available.
Awards: The budget for the PFI: AIR Technology Translation is up to $200,000 for 18 months per award; approximately 40 - 45 awards will be made.
Letter of Intent: September 8, 2015
Deadlines: October 9, 2015

Grant Program: Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII)
Agency: NSF 15-570
RFP Website:
http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=504790&ods_key=nsf15570
Brief Description: With the goal of encouraging research independence immediately upon obtaining one's first academic position after receipt of the PhD, the Directorate for Computer and Information Science and Engineering (CISE) will award grants to initiate the course of one's independent research. Understanding the critical role of establishing that independence early in one's career, it is expected that funds will be used to support untenured faculty or research scientists (or equivalent) in their first two years in a primary academic position after the PhD, but not more than a total of five years after completion of their PhD. One may not yet have received any other grants or contracts in the Principal Investigator (PI) role from any

department, agency, or institution of the federal government, including from the CAREER program or any other program, post-PhD, regardless of the size of the grant or contract, with certain exceptions noted below. Serving as co-PI, Senior Personnel, Postdoctoral Fellow, or other Fellow does not count against this eligibility rule. Grants, contracts, or gifts from private companies or foundations; state, local, or tribal governments; or universities do not count against this eligibility rule.
It is expected that these funds will allow the new CISE Research Initiation Initiative PI to support one or more graduate students for up to two years. Faculty at undergraduate and two-year institutions may use funds to support undergraduate students, and may use the additional RUI designation (which requires inclusion of a RUI Impact Statement) -- seehttp://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5518 for additional information. In addition, submissions from all institutions may use funds for postdoctoral scholars, travel, and/or research equipment.
Awards: CISE expects to make 35 to 40 awards each year. Each award will be up to $175,000 for up to 24 months.
Letter of Intent: Not Required
Deadlines: September 30, 2015

National Institutes of Health

Grant Program: SBIR E-learning for HAZMAT and Emergency Response (R43/R44)
Agency: National Institutes of Health RFA-ES-15-008
R43/R44 Small Business Innovation Research (SBIR) Grant - Phase I, Phase II, and Fast-Track I
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-15-008.html
Brief Description: NIEHS encourages applicants to this SBIR FOA to review the relevant program documentation, to pursue partnerships and collaboration with awardees of the WTP program (http://www.niehs.nih.gov/careers/hazmat/about_wetp/), and to design new Advanced Technology Training (ATT) (http://www.niehs.nih.gov/careers/hazmat/about_wetp/att/index.cfm) or e-learning products that can extend the existing NIEHS supported curricula and training programs into the digital world. Applications to assist NIEHS with its internal management and operations **are not** encouraged under this SBIR FOA. The following three areas describe the type of products that will be supported under this SBIR FOA. All products must be directly related to the health and safety training of hazardous materials (HAZMAT) workers. skilled support personnel, emergency responders in biosafety response and cleanup, community and citizen preparation and resiliency, and for ATT tools to assist in research into the acute and long-term health effects of environmental disasters. This also includes the training of workers engaged in environmental restoration, waste treatment, and emergency response activities at sites in the U.S. Department of Energy (DOE) nuclear weapons complex. Examples include but are not limited to:
A. Products to support e-teaching in safety and health training:
E-teaching in safety and health training encompasses products that assist trainers/instructors in developing and delivering safety and health training for a number of environments ranging from classroom to remote learning situations. Potential products include, but are not limited to, products aimed at peer-trainers or worker-trainers; trainers needing assistance with language, literacy or cultural differences in the classroom; trainers needing assistance in developing small

group activities and other teaching methodologies and technology applications for broadcasting safety and health classes and resources to remote learners. In addition to the above and to specific DOE safety concerns, potential products aimed at workers at the DOE nuclear weapons complex might also include products to assist training workers on rights and responsibilities under CFR 851 and other DOE policies; on addressing Native American cultural and language concerns; and on the development of safety cultures within the complex.

B. Products to support e-learning in safety and health training:

E-learning in safety and health training involves technology deployment to provide individualized or small group based training in learning centers, in a technology-enabled "smart classroom" or to a learner's desktop, cell phone, laptop, or tablet. This might also utilize social media applications such as 'twitter'. As an ATT option, e-learning is used to enable individualized learning, at the learners' convenience and own pace, prior to, as part of, after, or in place of classroom training. Potential products include but are not limited to the creation of topic oriented products that address clearly identified health and safety issues involving hazardous materials and emergency and disaster response.

C. Products to support the training of community citizens and researchers involved in disaster responses:

Much important environmental health research can only be done during the response to, and recovery from, a major disaster (http://tools.niehs.nih.gov/wetp/index.cfm?id=556). In the aftermath of numerous disasters, there has been an acknowledged and urgent need for public health research, and a number of topical areas and research questions have been identified including those that, if addressed, would impact recovery as well as future preparedness efforts. These topics included community resilience, evacuation and policy decision making, the public health and healthcare system response, mold mitigation and health issues, characterization of the morbidity, disability, and mortality among impacted populations (including behavioral health outcomes, and outcomes for responders), community and worker education and training, communications, and the use of social media. Products that assist in the training of researchers in order for them to participate safely and productively are encouraged.

In addition, numerous disasters have made clear that the term 'responder' often applies to citizens protecting themselves, their property and communities during and recovering from these events. Thus, there is likely a need for short, incident specific awareness training that can be delivered during the disaster recovery period including training on issues such as confined spaces, blood borne pathogens, personal protective equipment, hazard assessment, fire watch, first aid/CPR, site safety, working around heavy equipment, physical threats such as heat stress, fatigue, shift work, fall protection, and psychological stress (http://tools.niehs.nih.gov/wetp/index.cfm?id=2528). Applicants are encouraged to review the descriptions of current and prior NIEHS SBIR awards found at http://www.niehs.nih.gov/careers/hazmat/about_wetp/att/sbir/index.cfm and avoid duplicating the curricula and subject matter content of these awards.

Awards: Standard Grants

Letter of Intent: June 30, 2015

Deadline: July 31, 2015

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: Clinical and Translational Science Award (CTSA) Network Recruitment Innovation Centers (RICs)(U24)
Agency: National Institutes of Health RFA-TR-15-004
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-TR-15-004.html
Brief Description: Translating laboratory and clinical discoveries into interventions that improve human health is a complex process that typically takes years of effort. Multi-site clinical trials are a critical step in the translation pathway that allows preventive, diagnostic, or therapeutic interventions to benefit individual and public health. These trials may require substantial sample sizes to credibly test hypotheses. However, such trials often experience delays or even fail entirely due to challenges in recruiting participants. Such challenges are a multi-faceted problem with scientific, psychological, sociological, economic, political, and ethical dimensions. Addressing these challenges therefore requires a multi-faceted and "out of the box" approach, rather than small changes only to the status quo. Participant recruitment may benefit from innovation in the following areas:

- *Access to data* on the availability of potential participants rather than reliance on clinician estimates.
- *Data that provide sufficient detail* to take into account the specific entry criteria of a given protocol.
- *Recruitment strategies that employ innovative approaches* from other fields such as communications.
- *Sharing of recruitment strategies,* materials, and associated outcomes among participating research sites or between projects for ongoing innovation and improvement so that best practices can be developed and disseminated.
- *Engagement of relevant stakeholders* (e.g. potential participants and referring clinicians) early in the recruitment process.
- *Reducing burden on participants*, and making referrals easy for busy clinicians who may have many priorities competing for their time.
- Reframing proposed solutions to recruitment challenges as testable scientific hypotheses to allow for data-driven process selection.

This FOA is intended to develop and implement innovative informatics-driven approaches as well as the ethics and policy frameworks that will accelerate the design, conduct, and completion of multi-site clinical trials by establishing Clinical and Translational Science Award (CTSA) Recruitment Innovation Centers (RICs).
The goal of this initiative is to improve research participant recruitment in the planning and implementation phase of clinical trials.
In the *planning phase* of a clinical trial, the RICs will rapidly provide investigators and funders with estimates of the availability of candidate participants meeting the study's entry criteria. Such estimates will be based on de-identified, aggregate data derived from the electronic health record (EHR) at individual sites and across the CTSA consortium.
In the *implementation phase* of a clinical trial, the RICs will support investigators through innovative strategies for enrolling research participants in a timely manner.
The Recruitment Innovation Centers that NCATS seeks to fund under this FOA will work together to harmonize approaches to research participant recruitment across the CTSA network. They will develop innovative solutions, demonstrate how these can be successfully applied to accelerate research participant recruitment, and over time establish best practices that can be generalized to a broad range of research studies. This initiative is aligned with NCATS' recently enunciated goal of building CTSA network capacity. The RICs will work under joint governance with each other, with the Trial Innovation Centers (TICs) that NCATS is

planning to establish to improve the implementation of multi-site studies, as well as with the CTSA hubs where liaison personnel will be introduced in parallel.
The main focus of this initiative is to improve recruitment into trials. However, there may be observational studies that could benefit from innovations in recruitment so that the term "multi-site trial" in this FOA is used in a broad sense for interventional and also observational research studies. Single-site or small multi-site studies are not the main focus. However, it is anticipated that the new tools and approaches created will be generalizable to widely benefit trials, and ultimately patients.
Awards: NCATS intends to commit up to $6 million in FY2016 to fund up to 2 awards. Future year amounts will depend upon annual appropriations.
NLM intends to commit up to $250,000 in FY2016 to co-fund awards in response to this FOA
Letter of Intent: June 22, 2015
Deadline: July 22, 2015, 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.
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: NIMHD Transdisciplinary Collaborative Centers for Health Disparities Research Focused on Precision Medicine (U54)
Agency: National Institutes of Health RFA-MD-15-013
RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-MD-15-013.html
Brief Description: Benefits from medical advances are not always distributed equitably, often because structural or systemic factors limit the effectiveness of new diagnostic or therapeutic approaches in disadvantaged populations. Precision medicine (http://www.nih.gov/precisionmedicine/) is an emerging approach for disease prevention, early detection and treatment that takes into account individual variability in genes, environment, and lifestyle. While it holds great promise for improving patient care, its potential for reducing health disparities hinges on (1) better understanding of the dynamic interplay between biological, behavioral, social and environmental health risk and protective factors experienced across the life course, and (2) greater inclusion of health disparity populations in research aimed at developing precision medicine interventions. An integrative, inclusive approach toward the development of precision medicine is vital for improving health risk assessment and using that information to predict optimal interventions that not only benefit individual patients but also extend health benefits equitably within and across patient populations.
TCCs supported through this initiative are expected to focus on at least one priority research area outlined below, each combining expertise in precision medicine, population health disparities, and the science of translation, implementation and dissemination to address one or more documented health disparities. The proposed work must focus on one or more health disparities populations, which include Blacks/African Americans, Hispanics/Latinos, American Indians/Alaska Natives, Asian Americans, Native Hawaiians and other Pacific Islanders, socioeconomically disadvantaged populations and rural populations.
Each center will support 2-3 multidisciplinary research projects examining complementary aspects of precision medicine, focusing on interactions between biological, behavioral, and contextual predictors of disease vulnerability, resilience, and response to therapies in patients from disadvantaged communities. For the purposes of this FOA, biological predictors can include but are not limited to genomic, epigenomic, proteomic, metabolomic, and microbiomic

variations as well as standard clinical laboratory markers (e.g., blood lipids, inflammatory markers, HbA1c, vitamin D3, etc.), behavioral measures, and other quantitative or qualitative indicators of health status in the study population(s).

Applications are expected to demonstrate substantive community input into the identification of research questions to be addressed by the proposed TCC and relevant contextual predictors to be examined in conjunction with biological predictors. For the purpose of this FOA, 'community' refers to a group or population that may be defined by geography, race, ethnicity, culture, gender, disease or other health condition, or a common health-related interest or concern.

In addition to the required collaborative research projects, each TCC award will support an Administrative Core, a Consortium Core, and an Implementation Core. The Administrative Core will manage and coordinate implementation of proposed TCC activities, including project evaluation; ensure that component plans are implemented according to proposed timelines; coordinate TCC Steering Committee activities and submission of annual progress reports; monitor progress on research sub-projects and ensure that TCC-supported research, including pilot projects, is carried out in compliance with applicable federal regulations and policies.

Priority Research Areas

1. Data Integration

A top priority for this initiative is the development of better tools and analytic methods for integrating different types of data obtained from individuals ("omics" data, clinical data, behavioral survey data, etc.) with structured information about key contextual factors (social stratification, racism and discrimination, community ecological context, cultural factors, environmental factors, health-related policies, etc.) that act at the community or population level to influence the health of individuals. Approaches that leverage public and private-sector investments in health information technology, public health reporting systems, clinical data research networks, and informatics tools to identify patients from diverse populations with specific clinical characteristics for cohort studies are strongly encouraged. Topics of interest include but are not limited to:

- Variations in biomarkers and their interactions with relevant contextual predictors in clinical research cohorts and/or patient registries involving multiple chronic diseases or co-morbid conditions;
- Feasibility of pooling and augmenting diverse datasets from multiple existing clinical research cohorts (observational studies, population studies, clinical trials) to enhance predictive power and enable examination of differences between sub-populations;
- Development and testing of risk prediction models that incorporate cultural practices and other contextual factors that support healthful behavior and resilience and resistance to disease.

2. Population differences in pharmaceutical therapy outcomes

Striking differences in health outcomes related to obesity, infant mortality, cancer, cardiovascular disease, hypertension, asthma, diabetes and HIV infection in disparity populations are well established. Significant differences also exist among various health disparity populations in responses to therapeutic drugs. This initiative will support research examining population differences in pharmaceutical therapy outcomes and correlations with biological and contextual predictors (see examples above) to better understand variability in drug responses and identify effective patient-specific treatments that enhance therapeutic outcomes in patients from health disparity populations. Topics of interest include but are not limited to:

- Differential response to drug treatments;
- Relative efficacy and effective dosage;

- Differential side effects and toxicity, including genetic sequencing of known drug metabolizing enzymes to better understand variability associated with risks for toxicity;
- Differential rate and mechanisms of relapse;
- Novel therapeutics or device strategies that optimize or modulate existing therapies to enhance clinical outcomes in health disparities populations.

3. Translating pharmacogenomic discoveries to health disparity populations

A major limitation of existing pharmacogenomic-based therapies is that most of the data informing clinical guidelines are derived from populations of European descent. This initiative encourages clinical and translational research to study genomic variations that impact the specificity and response of drugs in patients from diverse racial/ethnic populations and evaluate other factors that may contribute to variability of responses across different populations. Topics of interest include but are not limited to:

- Clinical validity and utility of predictive testing based on genomic information, particularly for disease screening, prevention and/or treatment for complex diseases and co-morbid conditions in one or more health disparity populations;
- Foundational studies in pharmacogenomics to incorporate whole and partial genome sequence and other deep resequencing efforts (e.g., selected regions of the genome) towards predicting drug actions and patient responses among various health disparity populations;
- Data-driven approaches utilizing patient-derived specimens to move beyond genome sequence (and sequence variation), integrating and modeling multidimensional datasets (e.g., transcriptome, proteome, epigenome, metabolome, etc.) to better predict drug response and adverse reactions.

4. Implementation research

Research on potential facilitators and barriers to implementation and adoption of precision medicine approaches in health disparity populations is also encouraged. Topics of interest include but are not limited to:

- Acceptability of comprehensive genetic testing and phenotypic profiling in clinical settings, both for patients and healthy individuals;
- Potential individual-level factors that influence patient attitudes toward precision medicine approaches, such as age, gender, family history, severity of adverse health conditions, issues surrounding doctor/patient communication, concerns about privacy and confidentiality, etc.;
- Community-level and/or cultural or societal factors that affect implementation and adoption, including but not limited to risks associated with stigma;
- Acceptability among health service providers and systems that serve health disparity populations, including but not limited to issues surrounding access, cost, and reimbursement for clinical services;
- Development of culturally consistent and acceptable approaches to overcoming barriers and enhancing facilitators.

Awards: Application budgets are limited to $1,500,000 in direct costs annually, excluding consortium/contractual costs.

Letter of Intent: August 17, 2015

Deadline: September 17, 2015, 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.

DoD/ DARPA/ US Army Medical Research Acquisition Activity

Grant Program: Revolutionary Enhancement of Visibility by Exploiting Active Light-fields (REVEAL)
Agency: DARPA - Defense Sciences Office DARPA-BAA-15-44
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=770a710f9d1eb3f74609ecb6862328b5&tab=core&_cview=0
Brief Description: The Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is soliciting innovative research proposals in the area of optical imaging and sensing of high dimensional degrees of freedom of light across all photon pathways. Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of practice.
Current imaging and sensing systems modeled on human vision do not fully extract and exploit information encoded in the multiple degrees of freedom of light and the complex pathways that photons take through a scene on the way to being collected and detected. Photons take a myriad of paths through an environment, interacting with every element in the scene in all possible permutations until eventually leaving the scene or being absorbed. For example, consider a single object in a normally lighted room. There are three distinct pathways any photon that is involved in imaging the object can take (termination in this context means detection): • source → object → termination (direct, single bounce photons), • source → wall → object → termination, and • source → object → wall → termination (with potentially many intermediate bounces of the same type for the last two pathways). Photons that traverse a scene taking the latter two path types, which are more complex and encode different and potentially more information about the object and environment, are termed indirect, multi-bounce photons. When a photon terminates (i.e., through collection and detection by a traditional imaging system) only the interaction directly before the termination (detection) is used to extract information. In other words, traditional imagers assume that the photon bounce they see is the only bounce that a photon experienced and disregard information that the photon encoded from its possible prior, multiple bounces. Additionally, the detection process of current imaging systems is typically limited to measuring the 2-dimensional (transverse dimensions – x, y) intensity distribution of a scene, which greatly under-samples the available degrees of freedom of collected light.
The degrees of freedom of light are fully described by the Plenoptic function and for this solicitation include: • spatial (x,y,z), • directional (θ,φ), • temporal (t), • polarization (p), • spectral (λ), and • wave (w) properties (coherence, diffraction, interference). Standard digital imaging sensors integrate over all plenoptic dimensions and as a result most visual information is irreversibly lost during image capture. This program seeks to extract the maximum information from a scene by finding the optimal measurement combinations of the Plenoptic function dimensions in conjunction with the optimal photon pathways, both direct (single-bounce) and indirect (multi-bounce).
Awards: Various levels.
Letter of Intent: Abstract Required. Abstract Due Date: June 12, 2015, 4:00 p.m. FAQ Submission Deadline: July 23, 2015, 4:00 p.m. o
Full Proposal Due Date: July 30, 2015, 4:00 p.m.

Grant Program: DoD FY15 Vision Prosthesis Pilot Study Award (VPPSA)
Agency: US Army Medical Research Acquisition Activity W81XWH-15-CRMRP-VPPSA
RFP Website: http://cdmrp.army.mil/funding/pa/15crmrpvppsa_pa.pdf
Brief Description: The goal of the FY15 VPPSA is to fund projects exploring novel technologies that will contribute to the development of a working visual prosthesis prototype for individuals who have sustained functional or structural enucleation. Examples of enucleation are severe macular degeneration (functional) and traumatic injury (structural). Development of a visual prosthesis addresses the identified CRMRP gap of inadequate vision restoration options for Wounded Warriors, their dependents, and the public. Specifically, the VPPSA supports the exploration of highly innovative, potentially high-gain concepts, theories, paradigms, and/or methods that address an important problem in the development of a visual prosthesis. Results of studies conducted through this award should inform the development pathway for a visual prosthesis prototype. For this award, a visual prosthesis prototype is defined as prototype visual prosthesis that (1) provides the ability to navigate for ambulation, identify faces and objects critical to daily life, and read large print and (2) is economically feasible. Applications to the VPPSA should clearly state how the proposed research provides an innovative solution to a critical problem in the development of a prototype visual prosthesis. The VPPSA seeks applications from investigators from a wide spectrum of disciplines including, but not limited to, basic science, engineering, translational research, and clinical research. In addition, to be considered for funding, applications MUST address at least one of the following VPPSA Focus Areas: • Simulation studies to assess stimulation parameters needed for an effective cortical artificial vision device. • Studies to demonstrate the efficacy of novel cortical stimulation methodologies (stimulation of non-visual cortex is acceptable for demonstration). • Preclinical studies required to obtain a Premarket Approval (PMA) or Investigational New Drug (IND) for components necessary for a cortical interface. • Other: Projects focused on other research areas relevant to the development of a cortical visual prosthesis may be submitted for consideration provided that sufficient justification is included in the application. In keeping with the exploratory nature of the award, preliminary data are allowed but not required. However, proposed projects must be based on logical reasoning and sound scientific rationale.
Awards: The anticipated total costs budgeted for the entire period of performance will not exceed $310,000. Associated indirect costs can be budgeted in accordance with the organization's negotiated rate. No budget will be approved by the Government exceeding $310,000 total costs or using an indirect rate exceeding the organization's negotiated rate.
Letter of Intent: Not Required. Recommended to contact program officer
Pre-Application Deadline: 5:00 p.m. Eastern time (ET), July 8, 2015
Application Submission Deadline: July 22, 2015

Grant Program: DARPA Program on Biological Technologies
Agency: DARPA-BAA-15-35 Biological Technologies
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=805fad2938220bfbb1b60f70bce0580a&tab=core&_cview=0
http://www.darpa.mil/Opportunities/Solicitations/BTO_Solicitations.aspx
Brief Description: The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals of interest to the Biological Technologies Office (BTO). Proposed

research should investigate leading edge approaches that enable revolutionary advances in science, technologies, or systems at the intersection of biology with engineering and the physical and computer sciences. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of the art. BTO seeks unconventional approaches that are outside the mainstream, challenge assumptions, and have the potential to radically change established practice, lead to extraordinary outcomes, and create entirely new fields.

The mission of BTO is to foster, demonstrate, and transition breakthrough fundamental research, discoveries, and applications that integrate biology, engineering, computer science, mathematics, and the physical sciences to expand the national security toolkit. BTO's investment portfolio goes far beyond life sciences applications in medicine to include areas of research such as human-machine interfaces, microbes as production platforms, and deep exploration of the impact of evolving ecologies and environments on U.S. readiness and capabilities. BTO's programs operate across a wide range of scales, from individual cells to the warfighter to global ecosystems. BTO responds to the urgent and long-term needs of the Department of Defense (DoD) and addresses national security priorities. The overarching goal is to develop, demonstrate, and transition biological- based technologies as part of the toolkit available to DARPA stakeholders.

BTO is seeking novel approaches that will build technical communities that tap into sources of innovation both inside and outside traditional DoD performer communities. BTO encourages efforts that are creative and agile both in terms of the technologies proposed and in the structure of the approach. See the attached BAA Package for specific areas BTO is interested in receiving submissions for, and the specific abstract and proposal submission requirements.

Eligibility: An independent investigator *at or below* the level of Assistant Professor (or equivalent); *or* An established independent investigator in an area other than NF *at or above* the level of Assistant Professor seeking to transition to a career in NF thereby bringing their expertise to the field.

Must not have received more than $300,000 in total direct costs for previous or concurrent NF research as a PI of one or more federally funded, non-mentored peer reviewed grants;

Awards: Multiple Awards

Letter of Intent: Abstract to be submitted to program officer email: DARPA-BAA-15-35@darpa.mil

Application Deadline: Proposal Abstracts and Full Proposals will be submitted on a rolling basis until April 28, 2016, 4:00pm ET

NASA

Grant Program: Early Stage Innovations (ESI)
Agency: NASA NNH15ZOA001N-15ESI-B2
RFP Website:
http://nspires.nasaprs.com/external/solicitations/summary.do?method=init&solId={14652CAA-A8D3-17A7-59B2-9700223CACA0}&path=open

Brief Description: The National Aeronautics and Space Administration (NASA) Headquarters has released a solicitation, titled Early Stage Innovations (ESI), as an appendix to the Space Technology Mission Directorate (STMD) umbrella NASA Research Announcement (NRA) titled "Space Technology Research, Development, Demonstration, and Infusion 2015 (SpaceTech-REDDI-2015), on May 20, 2015. The solicitation is available by opening the NSPIRES homepage

at http://nspires.nasaprs.com/ , selecting "Solicitations," then selecting "Open Solicitations," and, finally, selecting "Early Stage Innovations (ESI)." This Appendix seeks proposals on specific space technologies that are currently at low Technology Readiness Levels (TRL). Investment in innovative low-TRL research increases knowledge and capabilities in response to new questions and requirements, stimulates innovation, and allows more creative solutions to problems constrained by schedule and budget. Moreover, it is investment in fundamental research activities that has historically benefited the Nation on a broader basis, generating new industries and spin-off applications. Our Nation's universities couple fundamental research with education, encouraging a culture of innovation based on the discovery of knowledge. Universities are, therefore, ideally positioned to both conduct fundamental space technology research and diffuse newly-found knowledge into society at large through graduate students and industrial, government, and other partnerships. STMD investments in space technology research at U.S. universities promote the continued leadership of our universities as an international symbol of the country's scientific innovation, engineering creativity, and technological skill. This ESI Appendix challenges universities to examine the theoretical feasibility of new ideas and approaches that are critical to making science, space travel, and exploration more effective, affordable, and sustainable. The Space Technology Research Grants Program (STRG) Program within STMD is fostering the development of innovative, low-TRL technologies for advanced space systems and space technology. The goal of this low-TRL endeavor is to accelerate the development of groundbreaking, high-risk/high-payoff space technologies, not necessarily directed at a specific mission, to support the future space science and exploration needs of NASA, other government agencies, and the commercial space sector. Such efforts complement the other NASA Mission Directorates' focused technology activities which typically begin at TRL 3 or higher. The starting TRL of the efforts to be funded as a result of this Appendix will be TRL 1 or TRL 2; typical end TRLs will be TRL 2 or TRL 3. This Appendix seeks proposals to develop unique, disruptive, or transformational space technologies that have the potential to lead to dramatic improvements at the system level — performance, weight, cost, reliability, operational simplicity, or other figures of merit associated with space flight hardware or missions. Although progress under an award may be incremental, the projected impact at the system level must be substantial and clearly defined. This Appendix does not seek literature searches, survey activities or incremental enhancements to the current state of the art. This Appendix exclusively seeks proposals that are responsive to one of the seven topics: Payload Technologies for Assistive Free-Flyers, Robotic Mobility Technologies for the Surfaces of Icy Moons, Integrated Photonics for Space Optical Communication, Discrete Cellular Materials Assembly, Repair, and Reconfiguration, Computationally Guided Structural Nanomaterials Design, Atmospheric Entry Modeling Development Using Orion EFT-1 Flight Data, and High Voltage PMAD Electronics for Space Applications. NASA anticipates addressing other topics in future ESI Appendix releases. NASA plans to make approximately 12 awards as a result of this Appendix, subject to the receipt of meritorious proposals. The maximum award duration will be three years, although proposals for less than three years are allowed. Only accredited U.S. universities are eligible to submit proposals to this solicitation. Teaming or collaboration with other accredited U.S. universities, industry, not-for-profit entities, NASA Centers, other government agencies, and Federally Funded Research and Development Centers (FFRDCs) is permitted as specified in the solicitation. Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU) are encouraged to submit proposals. In addition, NASA encourages submission of ESI proposals on behalf of women, members of underrepresented minority groups, persons with disabilities, and faculty members who are early in their career. All proposals must be submitted electronically through NSPIRES or through Grants.gov (www.grants.gov) by an authorized organizational representative.

Notices of Intent (not mandatory) are due by June 12, 2015. Proposals are due on or before July 10, 2015. Detailed submission instructions are provided in the solicitation. Potential proposers and their proposing organizations are urged to familiarize themselves with the submission system(s), ensure they are registered in NSPIRES, and submit the required proposal materials well in advance of the deadline. Technical and programmatic comments and questions may be addressed by e-mail to the Space Technology Research Grants Program Executive, Claudia Meyer, at hq-esi-call@mail.nasa.gov. Procurement questions may be addressed by e-mail to the procurement point of contact on this solicitation, Carl T. Weih, at hq-esi-call@mail.nasa.gov. Responses to inquiries will be answered by e-mail and may also be included in the Frequently Asked Questions (FAQ) documents located on the NSPIRES page associated with the solicitation; anonymity of persons/institutions who submit questions will be preserved.
Awards: Multiple Awards
Letter of Intent: June 12, 2015
Application Deadline: July 10, 2015

Keck Foundation:

Grant Program: Research
Agency: Keck Foundation
RFP Website: http://www.wmkeck.org/grant-programs/research
http://www.wmkeck.org/grant-programs/faq/214-grantprograms/shared/1482-concept-papers
Brief Description: Applicants* are strongly urged to contact Foundation staff during the pre-application counseling period, which takes place between January 1 and February 15 leading up to a May 1 submittal, or between July 1 and August 15 leading up to a November 1 submittal. Potential applicants are encouraged to submit their ideas for grants in the form of single-page concept papers during the pre-application counseling period. Foundation staff may require additional preliminary information. Consultations are scheduled on a first come, first served basis during the pre-application counseling period. For more information about deadlines, please see our Grant Cycle Timeline.
Initial contact from a multi-unit organization (such as a college, university or agency branch location) must be coordinated through the institution's central development office. Most colleges and universities have designated an official liaison to the Foundation. Other personnel contacting the Foundation will be referred to the central liaison. If you are a new institution/applicant applying to the Foundation, please do so through your central development office and make sure to submit all the required tax and audit documentation listed under our Phase I Application instructions as well as the Institutional Fundraising History Form, along with the concepts you wish to discuss.
To schedule a conference call, please send us your concept papers, project descriptions or project titles to help us determine the best staff to schedule the call with. If you are not able to submit your concept papers at the time of your request, you should do so at least three days prior to your call. Counseling requests may be sent to concepts@wmkeck.org.
One-page concept papers apiece for *Medical Research* and *Science and Engineering* should be submitted to start the application process.
The Foundation strives to fund endeavors that are distinctive and novel in their approach. It encourages projects that are high-risk with the potential for transformative impact. "High-risk" comprises a number of factors, including questions that push the edge of the field, present unconventional approaches to intractable problems, or challenge the prevailing paradigm. In all our programs, "transformative" may mean creation of a new field of research, development

of new instrumentation enabling observations not previously possible, or discovery of knowledge that challenges prevailing perspectives. In addition to the above, in the Southern California Program, transformative may also mean positioning an organization for growth and adaptability. Applicants may find it helpful to look over the abstracts of recent grants for understanding funding priorities. Grant abstracts may be found on our website within the particular program of interest.

Keck Research Priorities:

- Focus on important and emerging areas of research
- Have the potential to develop breakthrough technologies, instrumentation or methodologies
- Are innovative, distinctive and interdisciplinary
- Demonstrate a high level of risk due to unconventional approaches, or by challenging the prevailing paradigm
- Have the potential for transformative impact, such as the founding of a new field of research, the enabling of observations not previously possible, or the altered perception of a previously intractable problem
- Does not focus on clinical or translational research, treatment trials or research for the sole purpose of drug development
- Fall outside the mission of public funding agencies
- Demonstrate that private philanthropy generally, and the W. M. Keck Foundation in particular, is essential to the project's success

Awards: Multiple Awards: $500,000 to $5 Million
One Page Concept Papers Due to Office of Research at NJIT: June 21, 2015
Phase -1 Counselling: July 1, 2015 – August 15, 2015
Phase-1 Application Deadline: November 1, 2015

Dreyfus Foundation

Grant Program: Post-Doc Fellowships
Agency: Dreyfus Foundation
RFP Website: http://www.dreyfus.org/awards/postdoctoral_program.shtml
Brief Description: The Dreyfus Foundation has just issued a new RFP for a grant to support a post-doc who will perform "innovative fundamental research in the chemical sciences or engineering related to the environment. Examples include but are not limited to the chemistry associated with: the climate, the atmosphere, aquatic or marine settings, toxicology, soil or groundwater. Also of interest are chemistry-related energy research (renewable sources, sequestration, etc.), and new or green approaches to chemical synthesis and processing, both with a clearly stated relation to the environment."
Awards: The Postdoctoral Program in Environmental Chemistry provides a $120,000 award, payable in two $60,000 installments. Funds are normally expended over a period of two years after the appointment of the Fellow.
Application Deadline: August 3, 2015
