NJIT Research Newsletter

Issue: ORN-2016-07

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: Alexei Khalizov (PI)
Department: Chemistry and Environmental Sciences
Grant/Contract Project Title: CAREER: Molecular Mechanism of Atmospheric Mercury through Speciation-Resolved Experiments
Funding Agency: NSF
Duration: 05/01/16-04/30/21

PI: Yehoshua Perl (PI), James Geller (Co-PI)
Department: Computer Sciences
Grant/Contract Project Title: A family-based framework of quality assurance for biomedical ontologies
Funding Agency: NIH
Duration: 03/30/16-02/28/17

Events and Announcements

UPDATE Event: NJIT President's Forum and 2016 Faculty Research Showcase
When: February 22, 2016: 10.00 AM – 3.00 PM
Where: President's Forum and Keynote Address: Atrium, Campus Center
Faculty Research Presentations and Poster Session: Ballroom A
President's Forum Speaker: Dr. Julian Goldman, Medical Director of Biomedical Engineering at Partners HealthCare and Anesthesiologist at the Massachusetts General Hospital

Title of the Talk: he Medical Internet of Things (MIoT) to Enable Healthcare Transformation

Abstract: Ubiquitous connectivity of consumer and industrial equipment has laid the foundation for the Internet of Things (IoT) with projections of 50 billion devices connected and the addition of $15 trillion to the global GDP within 15 years. Applied to healthcare, the Medical IoT (MIoT) may enable revolutionary improvements in the quality and safety of healthcare, unleash innovation, and reduce the cost of healthcare delivery. To meet this vision, safety, security, and interoperability must be baked into the foundation of the MIoT.

Biographical Sketch of the Speaker: Dr. Julian Goldman is the Medical Director of Biomedical Engineering for Partners HealthCare, an anesthesiologist at the Massachusetts General Hospital, and Director/PI of the Program on Medical Device Interoperability (MD PnP) - a multi-institutional research program founded in 2004 to advance medical device interoperability to improve patient safety and HIT innovation. Dr. Goldman performed his clinical anesthesia and research training at the University of Colorado, and is Board Certified in Anesthesiology and Clinical Informatics. He served as a Visiting Scholar in the FDA Medical Device Fellowship Program as well as an executive of a medical device company. At MGH, Dr. Goldman served as a principal anesthesiologist in the "OR of the Future" - a multi-specialty OR that studies diverse technologies and clinical practices to enable broad adoption.

Dr. Goldman chairs the international standardization committee for the safety and performance of anesthesia and respiratory equipment (ISO TC 121), and serves in leadership positions of AAMI, UL, and IEC standardization committees. He Co-Chaired the HHS HIT Policy Committee FDASIA Regulations Subcommittee and the FCC mHealth Task Force, and co-chairs the healthcare task group of the Industrial Internet Consortium. He was recently appointed as a Distinguished Lecturer for the IEEE EMBS.

Dr. Goldman's awards include the AAMI Technology in Health Care Clinical Application Award, the International Council on Systems Engineering Pioneer Award, the American College of Clinical Engineering award for Professional Achievement in Technology, and American Society of Anesthesiologists awards for advanced technology applications to improve patient safety.

Event Description: The 2016 NJIT Faculty Research Showcase will start with the President's Forum with the Keynote Address by Dr. Michael Doyle. The showcase will introduce new NJIT faculty who have joined us in academic year 2015-16 with brief presentations on their research work. New faculty presentations will be followed by the electronic posters and networking session featuring research projects with recipients of the 2015 NJIT Faculty Seed Grants. Faculty, staff and students are welcome to join us at this interdisciplinary networking event to learn about exciting ongoing research projects, and explore future collaborative opportunities.

Grant Opportunity Alerts

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

NSF: NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM); Innovation Corps - National Innovation Network Nodes Program (I-Corps Nodes); Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring

NIH: Institutional Research and Academic Career Development Awards (IRACDA) (K12); Cancer Tissue Engineering Collaborative: Enabling Biomimetic Tissue-Engineered Technologies for

Cancer Research (U01); NLM Institutional Training Grants for Research Training in Biomedical Informatics and Data Science (T15)
Department of Defense/US Army/DARPA/ONR: Army Research Institute for the Behavioral and Social Sciences- Research Fellowship Program; Signal Processing at RF (SPAR); Biological Control; Young Faculty Awards
Foundations: Alternatives Research and Development Foundation Awards; Damon Runyon-Rachleff Cancer Innovation Award; Bill & Melinda Gate Foundation Grand Challenges

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Grant Opportunities

National Science Foundation

Grant Program: NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM)
Agency: National Science Foundation NSF 16-540
RFP Website: http://www.nsf.gov/pubs/2016/nsf16540/nsf16540.htm
Brief Description: A well-educated science, technology, engineering, and mathematics (STEM) workforce is a significant contributor to maintaining the competitiveness of the U.S. in the global economy. The National Science Foundation (NSF) Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program addresses the need for a high quality STEM workforce in STEM disciplines supported by the program and for the increased success of low-income academically talented students with demonstrated financial need who are pursuing associate, baccalaureate, or graduate degrees in science, technology, engineering, and mathematics (STEM).

Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to Institutions of Higher Education (IHEs) to fund scholarships and to advance the adaptation, implementation, and study of effective evidence-based curricular and co-curricular activities that support recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM. The S-STEM program encourages collaborations among different types of partners: Partnerships among different types of institutions; collaborations of STEM faculty and institutional, educational, and social science researchers; and partnerships among institutions of higher education and local business and industry, if appropriate.

The program seeks: 1) to increase the number of low-income academically talented students with demonstrated financial need obtaining degrees in STEM and entering the workforce or graduate programs in STEM; 2) to improve the education of future scientists, engineers, and technicians, with a focus on academically talented low-income students; and 3) to generate knowledge to advance understanding of how factors or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation in STEM of low-income students.

The STEM disciplines supported by the S-STEM program include:

- Biological sciences (except medicine and other clinical fields);
- Physical sciences (including physics, chemistry, astronomy, and materials science);
- Mathematical sciences;
- Computer and information sciences;
- Geosciences;
- Engineering; and

Technology areas associated with the preceding disciplines (for example, biotechnology, chemical technology, engineering technology, information technology, etc.).
Awards: $70,000,000 to $95,000,000 annually, for new and continuing awards, subject to availability of funds. The program supports three types of projects. Awards for Strand 1 - Institutional Capacity Building projects may not exceed $650,000. Awards for Strand 2 - Design and Development Type 1 Single Institution projects may not exceed $1.0 million. Awards for Strand 2 - Design and Development Type 2 Multi-Institutional Consortia projects may not exceed $5.0 million. In all cases, the totals are inclusive of direct and indirect costs.
Limited Submission: An Institution may submit one proposal (either as a single institution or as subawardee or a member of a Collaborative Research project) from each constituent school or college that awards degrees in an eligible field. See Additional Eligibility Information below for more details.
Institutional Internal Competition Submission: Interested faculty must submit an Internal Letter of Intent (up to three pages) to Atam Dhawan, Vice Provost of Research through their College/School dean no later than March 1, 2016. The Letter of Intent should have the following sections:

1. Executive Summary and Goals of the Project
2. Intellectual Merit
3. Broader Impact
4. Collaborators
5. Available Resources
6. Overall Proposal Budget Estimate

Letter of Intent to NSF: Not Required
Full Proposal Deadlines: May 16, 2016
Contacts:

- Connie K. Della-Piana, telephone: (703) 292-5309, email: cdellapi@nsf.gov
- Paul Tymann, telephone: (703) 292-2260, email: ptymann@nsf.gov
- John Krupczak, telephone: (703) 292-4647, email: jkrupcza@nsf.gov
- Yvette P. Weatherton, telephone: (703) 292-5323, email: yweather@nsf.gov
- Kevin Lee, telephone: (703) 292-4639, email: kelee@nsf.gov

Grant Program: Innovation Corps - National Innovation Network Nodes Program (I-Corps Nodes)
Agency: National Science Foundation NSF 16-539
RFP Website: http://www.nsf.gov/pubs/2016/nsf16539/nsf16539.htm
Brief Description: The National Science Foundation (NSF) seeks to further develop and nurture a national innovation ecosystem that builds upon fundamental research to guide the output of scientific discoveries closer to the development of technologies, products, processes and services that benefit society. The goal of the program is to dramatically reduce the period of time necessary to bring a promising idea from its inception to widespread implementation.
Through this solicitation, NSF plans to build upon the established National Innovation Network (consisting of I-Corps Nodes and Sites) to further support the needs for innovation research, education and training. NSF is seeking to expand and sustain the network of I-Corps Nodes that work cooperatively to support the development of innovations that will benefit society. The interconnected nodes of the network are expected to be diverse in research areas, resources, tools, programs, capabilities, and geographic locations - providing the network with the flexibility to grow or reconfigure as needs arise.

I-Corps Nodes will foster understanding on how to: 1) identify, develop and support promising ideas that can generate value, 2) create and implement tools, resources and training activities that enhance our nation's innovation capacity, 3) gather, analyze, evaluate and utilize the data and insight resulting from the experiences of those participating in regional programs and 4) share and leverage effective innovation practices on a national scale - to improve the quality of life for the U.S. citizenry. In addition, Nodes must identify and are expected to implement plans for sustainable scaling of their efforts beyond the duration of NSF support.

Please Note: The solicitation has been modified to now include two tracks:

- **Track 1: *I-Corps Node Development*** - new I-Corps Node applicants, and
- **Track 2**: ***I-Corps Node Renewal*** - previously funded I-Corps Nodes.

Award amounts have changed, and are no longer dependent upon the number of institutions participating in the Node.

Awards: Approximately 4 - 7 awards are anticipated.

Track 1: *I-Corps Node Development* - new I-Corps Node awardees - to be supported at a level of up to:

- $1,200,000 (years 1 and 2)
- $900,000 (year 3)
- $600,000 (year 4)
- $300,000 (year 5)

Track 2: *I-Corps Node Renewal* - previously funded I-Corps Nodes - to be supported at a level of up to:

- $900,000 (years 1 and 2)
- $750,000 (year 3)
- $600,000 (year 4)
- $300,000 (year 5)

Letter of Intent: A Letter of Intent (LOI) MUST be submitted by the Authorized Organizational Representative (AOR) for either a Track 1 or Track 2 proposal in order to be considered for funding. Full proposals that are submitted without a LOI (that had been received by the appropriate deadline) will be returned without review (RWR). Deadline: March 10, 2016

Full Proposal Deadlines: May 10, 2016

Grant Program: Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring

Agency: National Science Foundation NSF 16-534

RFP Website: http://www.nsf.gov/pubs/2016/nsf16534/nsf16534.htm

Brief Description: The Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) is a Presidential award established by the White House in 1995. The PAESMEM program is administered by the National Science Foundation (NSF) on behalf of the White House Office of Science and Technology Policy (OSTP).

Nominations, including self-nominations, are invited for "Individual" and "Organizational" PAESMEM awards. Individuals and organizations in all public and private sectors are eligible including industry, academia, K-12, military and government, non-profit organizations, and foundations. Exceptional STEM or STEM-related mentoring in both formal and/or informal settings is eligible for the PAESMEM award.

Nominations are encouraged from all geographical regions in the U.S. including its territories and particularly jurisdictions designated by Congress under NSF's Experimental Program to Stimulate Competitive Research (EPSCoR). NSF EPSCoR-designated jurisdictions are: Alabama, Alaska, Arkansas, Delaware, Guam, Hawaii, Idaho, Kansas, Kentucky, Louisiana,

Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Vermont, Virgin Islands, West Virginia, and Wyoming. Nominations from the U.S. Territories are particularly encouraged. Each "Individual" or "Organizational" PAESMEM awardee will receive a $10,000 award and a commemorative Presidential certificate. Awardees are also invited to participate in an award recognition ceremony in Washington, DC that includes meetings with STEM educators, researchers and policy leaders. Up to 16 awards may be made from the nominations received on or before June 17, 2016.

Awards: Approximately 16 nominees total from both categories will be recommended to the White House for award recognition from the 2016-2017 competition. These awardees will represent the 2017 cohort of PAESMEM awardees. Anticipated Funding Amount: $160,000.

Letter of Intent: Not Required

Full Proposal Submission Window: January 25, 2016 - June 17, 2016

Contacts:

- Martha L. James, Program Officer, Division of Human Resource Development, 815, telephone: (703) 292-7772, fax: (703) 292-9019, email: mjames@nsf.gov
- Nafeesa Owens, Program Officer, Division of Human Resource Development, 815, telephone: (703) 292-5120, fax: (703) 292-9019, email: nowens@nsf.gov
- Nicole Gass, Program Specialist, Division of Human Resource Development, 815, telephone: 703-292-8378, fax: 703-292-9019, email: ngodwin@nsf.gov

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National Institutes of Health

Grant Program: Institutional Research and Academic Career Development Awards (IRACDA) (K12)

Agency: National Institutes of Health PAR-16-103

RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-103.html

Brief Description: The primary goals of the IRACDA program are to (1) develop a group of highly trained biomedical scientists who have the necessary knowledge and skills to pursue independent research and teaching careers in academia; and (2) enhance science educational offerings at partner institutions, and promote links between RIIs and partner institutions through research and teaching collaborations. The specific objectives of this initiative are to:

- Develop the research, teaching, and other skills that are needed by postdoctoral scholars in order to conduct high-quality research and pursue an independent research and teaching career in an academic environment;
- Foster the development of research-oriented science curricula, using contemporary teaching strategies, at partner institutions; and
- Promote links between RIIs and partner institutions that can lead to further collaborations in faculty research and student training.

Program Elements

The IRACDA mechanism provides support for the design of a creative and innovative research career development program that combines a traditional mentored research experience at an RII with an opportunity to develop teaching and other academic skills, such as problem solving, communication, time management, and grant writing, as well as opportunities for career development through workshops and mentored assignments at a partner institution. The program promotes effective partnership between an RII and partner institution(s), and encourages innovative solutions to the problems of attracting and training postdoctoral

candidates in both research and academic skills and of increasing educational opportunities for students at partner institutions.

The IRACDA Program recognizes that combining research and teaching in a single career development program offers certain challenges. Designing a program that moves a postdoctoral scholar between partners of a consortium offers other challenges. Therefore, the application must provide strong evidence of a solid working relationship among partners of the consortium and must include plans that anticipate and mitigate the challenges. The application should involve all partners in the planning and execution of the various elements of the career development program. The following should be considered and addressed in planning and design of an IRACDA program:

- Geographic location of the participating institutions;
- The academic environment, including the curricular content and quality, and opportunities for developing new courses, or revising/updating existing courses, in the biomedical sciences at the partner institution(s);
- Student demographics, including the number of underrepresented students at the partner institution(s) that go on to complete the Ph.D. degree in biomedical sciences;
- Faculty demographics, including the number of faculty who have externally funded research programs at the partner institution(s) and the status of their existing collaborations with faculty at RIIs;
- Pool of research mentors and postdoctoral scholars at the RII who may be interested in participating in the combined research and academic career development program; and
- Institutional track record of scholars in the traditional postdoctoral research program at the RII in publishing, grant writing, and obtaining research and teaching positions.

Applicant institutions have wide latitude in the design of the program. However, career development activities, which should last two to four years (see below), must include the following three elements that sum to K12 participants dedicated 100% effort to this appointment:

- A mentored research experience that is typical of other competitive postdoctoral opportunities. The research mentor will sponsor and oversee the proposed research development program and will ensure that the candidate receives the proper guidance and mentoring for a future independent research career. The candidate may conduct collaborative research with other experienced researchers, subject to approval of the mentor. Approximately 9 person-months (75% of full-time professional effort) of the effort must be spent on this activity.
- A mentored teaching experience, the practicum of which will take place at a partner institution.
- Other mentored and/or didactic experiences to improve critical academic skills (e.g., problem-solving, communication, time management, and grant writing) and provide career development opportunities that are deemed important for an individual to prosper in an academic environment. Approximately 3 person-months (25% of full-time professional effort) of the effort must be spent on mentored teaching and other mentored and/or didactic experiences, the timing of which may be flexible over the duration of the award.

The Program must have a strong research base, comprised of established scientists who will provide expertise, resources, and mentoring to the IRACDA scholars. The mentored research experience must fall within the scope of the NIGMS mission (http://www.nigms.nih.gov/About/), which is to support research that increases understanding of life processes and lays the foundation for advances in disease diagnosis, treatment and prevention. NIGMS-funded researchers seek to answer important scientific questions in fields

such as cell biology, biophysics, genetics, developmental biology, pharmacology, physiology, biological chemistry, bioinformatics, computational biology, selected aspects of the behavioral sciences and specific cross-cutting clinical areas that affect multiple organ systems. Further details on the NIGMS-supported major research and research training areas can be found at: http://www.nigms.nih.gov/About/Overview/).

The applicant institutions have flexibility in program design, including the flexibility in scheduling of research and teaching elements. For example, a plan might involve large blocks of time devoted to research separated by a large block of time devoted to teaching. Alternatively, the workshops, didactics and teaching may represent 3 person-months (25% of full-time professional effort) throughout the calendar or academic year. The program provides support to postdoctoral scholars in their research at RIIs and in teaching assignments at partner institutions.

The scholars may be supported full-time on IRACDA funding for up to three years provided their progress toward an independent academic career is on track and satisfactory. Applicants may, and are indeed encouraged to, propose the use of non-IRACDA funds to provide a four-year career development program, with the first or the last three years of support from IRACDA and the remaining one year's support from the mentor or other source(s).

NIGMS anticipates that most programs will have three-four fellows per cohort for an average size of 9-12 active scholars supported by the IRACDA funding at any one time. Applicants must justify the proposed program size based on the research capacity and pool of research mentors and postdoctoral scholars at the RII who may be interested in participating in the combined research and academic career development program, and the pool of teaching mentors available at the partner institution(s). For renewal applications from programs with an exceptionally large pool of scholars and mentors, as well as an outstanding track record of scholar placement post-training, NIGMS will consider requests for larger cohorts but, because of budget constraints, will provide support for only a maximum of 18 fellows in a given year and for three years per fellow.

Awardees are expected to attend the annual IRACDA Conference. The conference is organized by the grantee institutions on a rotating basis. To defray the cost of organizing the conference, the grantee institution may use grant funds for allowable costs, and other institutional and non-institutional resources; NIGMS may also consider a request for supplementary funds, provided it is reasonable and well justified. Program Directors, as well as IRACDA scholars are expected to attend this meeting. These meetings feature keynote presentations by invited guests who are leaders in the areas of science, education, and public policy and administration. The IRACDA scholars are encouraged to present their career development award-supported research to their peers. The conference also provides an opportunity for the Program Directors, program staff, and IRACDA scholars to exchange ideas about the effective teaching pedagogies, talk about common problems and suggest solutions, and interact with their peers and NIGMS staff.

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

Letter of Intents: Not Required

Deadline: September 19, 2016; September 19, 2017; September 19, 2018, 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 Cancer Tissue Engineering Collaborative: Enabling Biomimetic Tissue-Engineered Technologies for Cancer Research (U01)
Agency: National Institutes of Health PAR-16-105
RFP Website: http://grants.nih.gov/grants/guide/pa-files/PAR-16-105.html
Brief Description: This FOA will support the development and characterization of state-of-the-art biomimetic tissue-engineered technologies for cancer research. *Critical to this FOA will be characterizing the biological relevance of the tissue-engineered technologies.* Applicants will be expected to take a novel engineering approach to define the critical features and parameters for the proposed system, how they are sufficient to mimic the physiology and pathology of the specific cancer question under study, and what characterization will be needed to validate the biological relevance of the system. Characterization could include the demonstration of relevant tissue structure, tumor biology, pathology, and physiological function that replicates the aspect of tumor biology that will be studied using the proposed system. The long-term goal is that the technologies might begin to have novel applications addressing questions in cancer biology, prevention, early detection of aggressive cancer, diagnosis and therapy.

Possible research areas of emphasis include the development and characterization of tissue-engineered biomimetic technologies, such as the following:

- Engineered native and/or synthetic scaffolds (e.g., hydrogels, nanofibers, 3D printing, decellularized matrix), bioreactors, and microfluidic devices to better understand the role of the structure and spatial organization in cancer initiation, progression, and treatment. The biomimetic systems could incorporate functionalized biomaterials that mimic tumor properties and are designed to probe cellular behaviors such as crowding, coupled interactions and/or cooperativity, and autocrine/paracrine behaviors at the molecular and cellular length scales.
- Cellular, mechanical, and secreted chemical factors of the tumor microenvironment such as stromal cells, exosomes, immune components, gradients of cytokines, growth factors and hormones, oxygen tension, pH, and extracellular matrix structure.
- Perfusion, lymphatics, interstitial pressure, passive flow, or immobile and soluble gradients to study the role of tumor physiology and immune responses on cancer biology, diagnosis, and treatment. Molecular probes could be incorporated to obtain quantitative and dynamic functional measurements.
- Technologies to facilitate measurements of bi-directional signaling, stresses, and dynamics of complex tumor systems, such as responsive materials, molecular probes, or genome editing tools that can be regulated or monitored with minimal invasiveness. Integration of advanced imaging modalities could allow visualization of dynamic cell and tissue processes across space and time.
- Engineered tissues capable of long-term culture to examine cancer initiation and dormancy over several weeks.
- Coupling with computational models to understand the emergence of tumor form, function, and heterogeneity from genetic or spatial information.
- Multi-organ engineered culture systems to probe organ-to-organ interactions during cancer progression and treatment.

Systems to model cancer progression from pre-neoplastic lesions to invasive and metastatic disease; to develop biomimetic systems amenable to imaging for early detection of aggressive cancer, diagnosis and prognosis; and to select preventive and therapeutic agents.

Research Objectives

NIAAA encourages applications that define the targets of low dose (≤10mM) alcohol at the molecular, cellular, and circuit level. Research areas of interest include, but not limited to:

- Determine the dynamic responses of neurochemically defined neuronal activity with high temporal and spatial resolution to low doses of alcohol in real time in vivo.
- Define specific types of neurons and associated neural pathways that are most sensitive to alcohol.
- Investigate how changes in neural pathways and circuits orchestrate the sensitivity to low dose alcohol.
- Identify specific subunit compositions of receptors, channels, or other signaling molecules that mediate the high neuronal sensitivity to alcohol in vivo.
- Understanding the molecular mechanisms underlying the interactions of alcohol with the most sensitive targets.

The goal of the FOA is to identify molecular targets of low dose alcohol. Applications that propose to study alcohol effects during the developmental stage and aging process are not responsive to this FOA. Validation that tissue alcohol concentration is at 10 mM or less is required, and blood alcohol measures must be included to allow consideration of applications. Applicants are *strongly* encouraged to consult the Scientific/Research Contact listed below to discuss the alignment of their proposed work with the objectives of this FOA.

Awards: Budgets are limited to $400,000 Direct Costs per year. Application budgets should reflect the actual needs of the proposed project.

Letter of Intent: 6 weeks prior to the Application Due Date(s)

Deadline: May 31, 2016; November 30, 2016; May 30, 2017; November 30, 2017; May 30, 2018; November 30, 2018, 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 NLM Institutional Training Grants for Research Training in Biomedical Informatics and Data Science (T15)

Agency: National Institutes of Health RFA-LM-16-001

RFP Website: http://grants.nih.gov/grants/guide/rfa-files/RFA-LM-16-001.html

Brief Description: The purpose of the National Library of Medicine (NLM) Institutional Training Program in Biomedical Informatics and Data Science is to support pre-doctoral and post-doctoral training for research careers in biomedical informatics and data science. Applications may be for the creation of entirely new training programs or for the renewal of active NLM T15 training grants. NLM's training programs help meet the growing need for investigators trained in biomedical computing, data science and related information fields as they directly relate to application domains in health and biomedicine, including health care delivery, basic biomedical research, clinical and translational research, public health and similar areas. Trainees will come to these programs with a range of educational and professional backgrounds and receive the training they need to prepare them for research careers in biomedical informatics and data science. More information about NLM's existing training programs is available at http://www.nlm.nih.gov/ep/GrantTrainInstitute.html. Biomedical informatics and data science training is, by its nature, interdisciplinary.

In addition to full-time training, NLM supports short-term trainee positions (STTP) to develop or enhance interest in research careers in biomedical informatics and data science among pre-doctoral health professions or veterinary students, undergraduate or graduate students who are interested in careers in biomedical informatics and data science, and for postdoctoral fellows interested in a research career in this area. NLM encourages its institutional training programs to use STTPs, in conjunction with their regular recruiting strategies, as a means to enhance

diversity. In particular, this applies to individuals from under-represented racial and ethnic groups; individuals with disabilities, individuals from disadvantaged backgrounds, and women, who are still under-represented in scientific and technical fields such as biomedical informatics and data science. See, Notice of NIH's Interest in Diversity. All applicants are expected to present a rigorous recruitment plan to enhance the diversity of the pool of trainee candidates; if STTP slots are requested, those should be addressed in the overall recruitment plan. Applications requesting STTP slots without an effective recruitment plan will not be considered for STTP funding. The STTP program provides short-term support for a period of at least 8, but no more than 12, weeks in a grant year for full-time training experiences under the supervision of experienced researchers. Trainees are exposed to individuals with active research careers and learn about further research training opportunities and research career options. The STTP program should be of sufficient depth to enable selected trainees, upon completion of the program, to have a thorough exposure to the principles underlying the conduct of research in biomedical informatics and data science.
Short-term training is not intended, and may not be used, to support graduate or undergraduate level coursework. Short-term positions should be requested at the time of application as described in the NIH Grants Policy Statement. Research training programs solely for short-term research training should not apply to this announcement.
Awards: NIH intends to fund an estimate of 14-16 awards, corresponding to a total amount of $14,000,000, for fiscal year 2017. Future year amounts will depend on annual appropriations.
Letter of Intent: March 18, 2016
Deadline: April 18, 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: Army Research Institute for the Behavioral and Social Sciences- Research Fellowship Program
Agency: Department of Defense, US Army W911NF-16-R-0008
RFP Website: https://www.fbo.gov/notices/0838d7dd938375c97b25bddb8690b602
Brief Description: Army Research Institute Research Fellowship Program Announcement The purpose of the Cooperative Agreement to be awarded as a result of this Funding Opportunity is to establish and administer the ARI Research Fellowship Program (RFP) to provide ARI with university students, post-doctoral researchers, and faculty for the conduct of collaborative research. The ARI RFP includes six Fellow designations: Assistant Research Fellow, Associate Research Fellow, Doctoral Research Fellow, Postdoctoral Research Fellow, Senior Research Fellow, and Sabbatical Fellow (as described below). The ARI RFP is expected to contribute significantly to the overall efforts of ARI. This CA will be issued under the authority of 10 USC §2358, Research Projects. The purpose of this United States Army Research Institute (ARI) Research Fellowship Program (RFP) Program Announcement (PA) is to solicit offers from interested Applicants to establish a program with university students, post-doctoral researchers, and faculty for the conduct of research generally supporting ARI's research program as described herein. The Applicant shall provide the necessary management and support for the RFP for research as described herein. Such support should address the following

requirements: a) Provide appropriately trained and experienced undergraduate and graduate students, post-doctoral researchers, and faculty for conducting research that is compatible with, and contributes to, ARI research, analysis, and studies; b) Match faculty expertise to research and study needs within ARI; c) Facilitate a mentoring relationship between ARI researchers and undergraduate and graduate students and post-doctoral researchers; d) Provide a structured approach for ARI researchers to collaborate with university faculty and graduate students on research projects; and e) Provide research space (to include laboratory space when applicable) for conducting research to support the ARI program if proposed by faculty.
Awards: See RFP for details.
Deadline: March 25, 2016

Grant Program: Signal Processing at RF (SPAR)
Agency: Department of Defense DARPA DARPA-BAA-16-20
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=61944d1569e0de9844d962d110525f6d&tab=core&_cview=0
Brief Description: DARPA seeks to transform radio frequency (RF) systems by developing RF analog signal processing and nonreciprocal technologies that perform unprecedented levels of in-band interference suppression. The Signal Processing at RF (SPAR) technology must mitigate both self and externally generated interfering signals of known and unknown characteristics. Performers will be expected to demonstrate novel in-band signal interference mitigation technologies using analog signal processing techniques as well as novel chip-scale circulator approaches.
Awards: It is anticipated that $30M of total funding will be awarded across all technical areas approximately partitioned as follows:
o $ 17M for Technical Area 1 (TA1)
o $ 8M for Technical Area 2 (TA2)
o $ 5M for Technical Area 3 (TA3)
Abstract and Proposal Deadline: Abstract Due Date: 11 March 2016, 1:00PM
o FAQ Submission Deadline: 29 April 2016, 1:00PM
o Proposal Due Date: 12 May 2016, 1:00PM

Grant Program: Biological Control
Agency: Department of Defense DARPA DARPA-BAA-16-17
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=9879ddda5f8cbd30e6e8235c468f66ed&tab=core&_cview=0
Brief Description: The objective of the DARPA Biological Control program is to build new capabilities for the control of biological systems across scales—from nanometers to centimeters, seconds to weeks, and biomolecules to populations of organisms—using embedded controllers made of biological parts to program system-level behavior. This program will apply and advance existing control theory to design and implement generalizable biological control strategies analogous to conventional control engineering, for example, for mechanical and electrical systems. The resulting advances in fundamental understanding and capabilities will create new opportunities for engineering biology. Specifically, the Biological Control program will demonstrate tools to rationally design and implement multiscale, closed-loop control of

biological systems, through the development of biological controllers, testbeds to evaluate control of system-level behavior, and theory and models to predict and design effective control strategies. The resulting capabilities will be inherently generalizable to a variety of biological systems. Successful teams will integrate and apply these capabilities to demonstrate a practical proof-of-principle biological solution to a proposer-defined application relevant to the U.S. Department of Defense (DoD).
Awards: Multiple awards are anticipated.
Abstract and Proposal Deadline:
Proposal Abstract Due Date: Friday, March 18, 2016, 4:00 PM
Proposal Due Date: Friday, April 29, 2016, 4:00 PM

Grant Program: Young Faculty Award
Agency: Department of Defense DARPA DARPA-BAA-16-05
RFP Website:
https://www.fbo.gov/index?s=opportunity&mode=form&id=f5ac723bf998cd7153a18f26fda3c1e0&tab=core&_cview=1
Brief Description: The DARPA Young Faculty Award (YFA) program aims to identify and engage rising stars in junior faculty positions in academia and equivalent positions at non-profit research institutions and expose them to Department of Defense (DoD) and National Security challenges and needs. In particular, this YFA will provide high-impact funding to elite researchers early in their careers to develop innovative new research directions in the context of enabling transformative DoD capabilities. The long-term goal of the program is to develop the next generation of scientists and engineers in the research community who will focus a significant portion of their future careers on DoD and National Security issues.

DARPA is soliciting innovative research proposals in the areas of physical sciences, engineering, materials, mathematics, biology, computing, informatics, and manufacturing of interest to DARPA's Biological Technologies Office (BTO), Defense Sciences Office (DSO) and Microsystems Technology Office (MTO). Further detail regarding technical areas of interest can be found in the Technical Areas topics list. Proposals that fail to respond directly to a Technical Area will be considered nonresponsive and may not be reviewed.

Proposed research should focus on innovations that will enable revolutionary advances in the selected topic area. High-risk/high-payoff ideas that could potentially transform a field or technology are strongly encouraged. 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.
Awards: DARPA intends to award grants to eligible university faculty and nonprofit research organizations; each grant will encompass funding for a 24-month base period (a maximum of $500,000) and a 12-month option period (a maximum of $500,000).
Proposal Deadline: April 5, 2016

Foundations

Grant Program: Alternatives Research and Development Foundation Awards
Agency: Alternatives Research and Development Foundation

RFP Website: http://www.ardf-online.org
Brief Description: The Alternatives Research & Development Foundation, a U.S. leader in the funding and promotion of alternatives to the use of laboratory animals in research, testing, and education, is currently soliciting research proposals for its 2016 Alternatives Research Grant Program. For over 20 years, this innovative program has created opportunities for scientists who have interest and expertise in alternatives research.
Preference given to projects that use pathway-based approaches as exemplified by the 2007 National Academy of Sciences report, Toxicity Testing in the Twenty-first Century: A Vision and A Strategy
Guidelines on http://ardf-online.org/2016_grant-guidelines.pdf
Awards: Up to $40,000 in funding available to support individual projects.
Proposal Deadline: May 2, 2016
More Information: Please contact Eric Blitz, Associate Director for Development, Corporate and Foundation Relations, eric.blitz@njit.edu

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Grant Program: Damon Runyon-Rachleff Cancer Innovation Award
Agency: Damon Runyon-Rachleff Cancer Research Foundation
RFP Website: https://www.damonrunyon.org/for-scientists/application-guidelines/innovation
Brief Description: The Damon Runyon-Rachleff Innovation Award is designed to provide support for the next generation of exceptionally creative thinkers with "high-risk/high-reward" ideas that have the potential to significantly impact our understanding of and/or approaches to the prevention, diagnosis or treatment of cancer.
The Innovation Award is specifically designed to provide funding to extraordinary early career researchers who have an innovative new idea but lack sufficient preliminary data to obtain traditional funding. It is not designed to fund incremental advances. The research supported by the award must be novel, exceptionally creative and, if successful, have the strong potential for high impact in the cancer field.
Awards are made to institutions for support of the Damon Runyon-Rachleff Innovation Investigators. All awards are approved by the Board of Directors of the Damon Runyon Cancer Research Foundation acting upon the recommendation of the Innovation Award Committee.
Awards: The initial award will be for two years, $150,000 per year ($300,000 total) with the opportunity for up to two additional years of funding (up to four years total for $600,000). Continued support for years three and four will be granted to those awardees who demonstrate progress on their proposed research during years one and two of the award. Applicants will provide a written update on their research and present their progress in person to the committee shortly before the end of the second year of the award, at which time the committee will make a decision regarding continued funding.
Eligibility for Innovation Award -- tenure-track assistant professor within the first four years of obtaining his/her initial assistant professor position.
Proposal Deadline: July 1, 2016
More Information: Please contact Eric Blitz, Associate Director for Development, Corporate and Foundation Relations, eric.blitz@njit.edu

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Grant Program: Grand Challenges
Agency: Bill & Melinda Gate Foundation
RFP Website: http://gcgh.grandchallenges.org
Brief Description: The Bill & Melinda Gates Foundation and its funding partners in the Grand Challenges family of grant programs are inviting innovators to apply for three grant opportunities:
1) Our Grand Challenges Explorations fosters early-stage discovery research to expand the pipeline of ideas for solving our greatest global health and development challenges. Launched in 2008 with an initial $100 million commitment from the foundation, Grand Challenges Explorations grants have already been awarded to more than 1100 researchers from more than 60 countries.
We are accepting applications on the following six topics until **May 11, 2016**:

- 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

2) Grand Challenges China: New Interventions for Global Health. This challenge focuses on calls for innovative concepts for safe, effective, affordable and widely utilized interventions, such as vaccines and therapeutics, with the potential to protect against the acquisition, progression or transmission of infectious diseases that disproportionately affect the world's poorest. This call is in partnership with the National Natural Science Foundation of China.
Application deadline is **March 15, 2016, 8:00 am Beijing time (March 14, 2016, 5pm Seattle time)**. For a detailed description of this challenge, please visit the Grand Challenges site.
Proposal Deadline: May 11, 2016 for (1) and March 15, 2016 for (2) above.
More Information: Please contact Eric Blitz, Associate Director for Development, Corporate and Foundation Relations, eric.blitz@njit.edu