

NJIT Research Newsletter

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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: Boris Khusid (PI)

Department: Chemical, Biological and Pharmaceutical Engineering

Grant/Contract Project Title: Kinetics Of Electric Field-Driven Phase Transitions In Polarized Colloids

Funding Agency: NASA

Duration: 08/23/15-08/22/16

Events and Announcements

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: Michael, Doyle, Founding Chairman and CTO, Eolas Technologies; Founder and Chairman, National Museum of Health and Medicine; Founder and Chairman, CodeAbode

Title of the Talk: Treading Water in the Digital Ocean: Diving-In Over the Head Can Sometimes Lead to Surfing the Big Waves

Biographical Sketch of the Speaker: Dr. Michael Doyle is the Chairman and CTO of Eolas Technologies Inc., and is the founder and Chairman of the National Museum of Health and Medicine Chicago. He is an active angel investor and co-founder in several Chicago-area tech startups, and is the founder of CodeAbode, the nation's first code bootcamp focused in the areas of health, medicine and fitness.

Dr. Doyle received his PhD from the Department of Cell & Structural Biology at the University of Illinois at Urbana-Champaign. While a student there, he received his first patent for his invention of the first open-distributed hypermedia browser, an architecture later popularized by the World Wide Web. He went on to serve as Director of the UIC Biomedical

Visualization Laboratory from 1989 to 1993, during which he also served on the oversight board of the Visible Human Project at the National Library of Medicine. While at UIC, Dr. Doyle pioneered the application of fractal analysis to the early diagnosis of osteopenia-related trabecular bone loss from routine dental x-rays.

Prior to founding Eolas in 1994, Dr. Doyle served as Director for the Center for Knowledge Management at the University of California, San Francisco. While at UCSF Medical Center, in 1993, Dr. Doyle led the research team that invented the fundamental web technologies which enabled Web browsers for the first time to act as platforms for fully-interactive remotely-distributed applications, in the process pioneering the revolutionary Web technologies today known as streaming media and cloud computing. Dr. Doyle successfully guided Eolas through the development of several key technologies in use throughout the Internet. Dr. Doyle's seminal research in next-generation Web applications, hypermedia navigation, mobile telecommunications, 3-D biomedical visualization, and morpho-spatial genomic activity mapping has led to advances that have gained worldwide recognition. His invention of the field of transient-key cryptography led to the technology which comprises the x9.95 ANSI National Standard for secure timestamps, and forms the basis for the revolutionary new eCheck system from Deluxe Check Company.

From 2000-2004, Dr. Doyle served as Chief Scientist on the Visible Embryo Project Next Generation Internet Project, a contract from the National Institutes of Health funding development of new kinds of applications that would work with powerful computers over high-speed networks. As part of this project, the University team reconstructed over 30 embryos from the Carnegie Collection and made them available on computers at the San Diego Supercomputer Center at the University of California San Diego, enabling scientists at Johns Hopkins University to compare the reconstructed Carnegie Collection data to 3D ultrasounds to detect birth defects and plan intrauterine surgeries to correct them.

In 2012, Dr. Doyle led the development of the Eolas vScope interactive cloud-based streaming virtual microscope system, and its adaptation to create the first neuroanatomical atlas of Albert Einstein's brain, released in September of that year as the Einstein Brain Atlas app in Apple's iPad app store, an event which received worldwide press coverage, including coverage on the Today Show and Good Morning America.

Dr. Doyle currently serves on the Board of Trustees of Beloit College, and the Advisory Council of the UIC College of Applied Health Sciences. He was the 2013 recipient of the UIC AHS Distinguished Alumni Achievement Award, and is a member of ACM, IEEE, Sigma Xi, Phi Kappa Phi, Mensa, the Triple Nine Society, and the Ultranet. He is an active philanthropist, supporting a variety of charitable causes in the sciences and the arts both personally and through his family foundation, the Buonacorsi Foundation.

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.

Event: NJIT CSLA Distinguished Lecture

Title: How To Control A Zombie Army: The New Science of Neuroparasitology

Speaker: Carl Zimmer

When and Where: Thursday, January 28, 2016; 4.00 PM, Campus Center Atrium

Abstract: Parasites used to be considered nothing more than freeloaders, taking advantage of their hosts. Now scientists are discovering a sinister sophistication to these creatures. Many species can control their hosts and force them to do their bidding. Researchers are only beginning to explore this remarkable mind-control, developing a field that's been called neuroparasitology that could someday help us find better ways to treat disorders in our own brains.

Speaker Biographical Sketch: Carl Zimmer is a prolific science writer and columnist for "Matter" (a weekly series in the NY Times), award-winning blog "The Loom" hosted by National Geographic, author of numerous books (including two widely-acclaimed textbooks on evolution), host of the "Science Happens" video series for STAT (a health and medicine publication), a three-time recipient of the Science Journalism award from the AAAS, and recipient of the Distinguished Service Award from the National Association of Biology Teachers.

Event: NSF Webinar: Energy-Efficient Computing from Devices to Architectures (E2CDA)

Host: NSF

When: January 21, 2016 1:00 PM-2.30 PM

Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=137395&org=NSF

Event Description: This Informational Webinar will provide an overview presentation and an opportunity to ask questions about the National Science Foundation (NSF) - Semiconductor Research Corporation (SRC) joint program solicitation ([NSF 16-526](#)), Energy-Efficient Computing from Devices to Architectures (E2CDA).

Contact for More Information: Sankar Basu, (703) 292-7843, sbasu@nsf.gov

Event: NSF Distinguished Lecture Series in Mathematical and Physical Sciences: *Challenges at the Intersection of Nuclear Physics and Astrophysics*

Host: NSF

When: January 25, 2016 2:00 PM

Website: http://www.nsf.gov/events/event_summ.jsp?cntn_id=136075&org=NSF

Contact for More Information: Andrew J. Lovinger, (703) 292-4933, alovinge@nsf.gov

NSF Announcement
Significant Changes and Clarifications to the
Proposal & Award Policies & Procedures Guide (PAPPG)

Effective January 25, 2016

<http://www.nsf.gov/pubs/policydocs/pappguide/nsf15001/index.jsp>

Significant Changes to the PAPPG Part I: *Grant Proposal Guide (GPG)*

Chapter I.F, When to Submit Proposals, has been updated to remove the ability to use other than 5 p.m. submitter's local time in solicitations. Failure to submit by 5 p.m. submitter's local time will result in the proposal not being accepted.

Chapter I.G.2, How to Submit Proposals, has been revised to reflect that an Authorized Organizational Representative (AOR) must provide the proposal certifications concurrently with submission of the proposal. This change is consistent with the process used in Grants.gov. In addition, proposal file updates and revised budgets (Chapter III.C and D, respectively) must be signed and submitted by an AOR and only an AOR can perform a withdrawal function on behalf of a proposing organization (Chapter IV.A).

Chapter II.C.1.d, Proposal Certifications, has been supplemented with a new certification regarding Dual Use Research of Concern.

Chapter II.C.1.e, Collaborators & Other Affiliations Information, is a new single-copy document that requires each senior project personnel to provide information regarding collaborators and other affiliations. This information used to be provided as part of the Biographical Sketch. The new format no longer requires proposers to identify the total number of collaborators and other affiliations when providing this information.

Chapter II.C.2.f, Biographical Sketch(es), has been supplemented to inform proposers that they may use third-party solutions to develop their biographical sketch, however, the information they submit must be compliant with NSF proposal preparation requirements. In addition, it is no longer allowable for the biographical sketches of all senior personnel to be grouped together in a single PDF file. Biographical sketches must now be uploaded separately for each individual identified on the proposal as senior personnel. Biographical sketches for Other Personnel and for Equipment proposals (Chapter II.C.2.f(ii) and (iii) respectively), however, should be uploaded as a single PDF file in the Other Supplementary Documents section of the proposal.

Chapter II.C.2.h, Current and Pending Support, has been revised to reflect that all current project support should be listed in this section of the proposal, including internal funds allocated toward specific projects. Current and pending support must now be uploaded as a single PDF file or inserted as text for all senior personnel. It is no longer allowable for the current and pending support of all senior personnel to be grouped together in a single PDF file.

Chapter II.D.14, Dual Use Research of Concern (DURC), is an entirely new section and serves, in conjunction with coverage in the *Award & Administration Guide*, as NSF's implementation of the US Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

Clarifications and Other Changes to the GPG

Chapter I.G.4, NSF ID, has been updated to specify that each individual user of NSF systems should not have more than one NSF ID.

Chapter II.B.2, Format of the Proposal, has been revised to show that solicitations will no longer may specify different type size, margin, or spacing requirements. All NSF funding opportunities will follow the formatting instructions contained in this section of the GPG.

Chapter II.C.1, Single-Copy Documents, has been changed to reflect that, since proposers submit the Information about PIs/PDs and co-PIs/co-PDs as part of the PI profile, it has been deleted from the list of single-copy documents. Also, when submitting a list of suggested reviewers, PIs should include the email address and institutional affiliation of persons they believe are well qualified to review the proposal.

Chapter II.C.2.a(4)(h), Cover Sheet, contains guidance on the procedure to follow if the specific location of an international conference is not known at the time of proposal submission. A parallel change has been made to Chapter II.C.2.j.

Chapter II.C.2.b, Project Summary, has been modified to remind proposers that only Project Summaries that use special characters may be uploaded in the Supplementary Documents

section. Such Project Summaries must contain separate headings for Overview, Intellectual Merit and Broader Impacts or the proposal will be returned without review.

Chapter II.C.2.d(ii), Project Description, has been updated to state that URLs must not be used in the Project Description.

Chapter II.C.2.d(iii), Results from Prior NSF Support, has been revised to reflect that the information must be provided for any PI or co-PI that has received NSF funding with a start date in the past five years (including any current funding and no-cost extensions). Information also has been added on which types of NSF awards must be reported on in this section of the proposal.

Chapter II.C.2.g(i)(b), Salaries and Wages, has been updated to parallel the language in 2 CFR § 200.413 on administrative and clerical salaries and wages.

Chapter II.C.2.g(v), Participant Support, has been supplemented with information on the types of costs that may be proposed and under what scenarios they are allowable.

Chapter II.C.2.g(vi)(f), Visa Costs, has been removed now that the Uniform Guidance contains coverage on this topic.

Chapter II.C.2.j, Special Information and Supplementary Documentation, now specifies the format that must be used for letters of collaboration.

Chapter II.D.5.b, Collaborative Proposals, reminds proposers that should a collaborative proposal from multiple organizations be awarded, both the lead and non-lead organizations are required to submit separate annual and final project reports.

Chapter II.D.7, Proposals Involving Vertebrate Animals, contains updated guidance on the information that must be provided in the Project Description for projects that involve use of vertebrate animals and the procedure to follow if IACUC approval has not been obtained prior to submission. For some types of vertebrate animals (i.e., chimpanzees), additional review may be required.

Chapter II.D.9, Conference Proposals, has been supplemented to show that information on support from other sources should be described in the Facilities, Equipment and Other Resources section of the proposal. Information has been added on the types of costs that may be proposed for conferences and under what scenarios they are allowable.

Exhibit II-1, Proposal Preparation Checklist, has been updated to reflect the changes made to the GPG and NSF's electronic systems and streamlined to emphasize the most relevant items. Proposers are strongly encouraged to conduct an administrative review prior to submission, to ensure that proposals comply with the instructions in the GPG and/or the program solicitation, in the format specified.

Chapter III.E, Funding Recommendation, coverage on award abstracts and titles has been updated for consistency with NSF Important Notice 136 on transparency and accountability.

Chapter III.F, NSF's Risk Management Framework and the Decision to Award or Decline Proposals, has been supplemented with language regarding NSF's implementation of the Federal Awardee Performance and Integrity Information System. The risk-based framework cumulative threshold has increased from \$200,000 to \$225,000 for proposers who have not received NSF funding the last five years.

Significant Changes to the PAPPG Part II, Award and Administration Guide (AAG)

Chapter I, NSF Awards, has been revised to reflect that requests for NSF-approved extensions submitted after the grant end date must include justification for why they were not submitted earlier.

Chapter II.A.2, Grantee Notifications to NSF and Requests for NSF Approval, has been revised to state that, with the exception of significant changes in methods or procedures and significant changes, delays or events of unusual interest, all notifications and requests must be electronically signed and submitted by the AOR via use of NSF's electronic systems.

Chapter II.D, Technical Reporting Requirements, has been revised to state that, in the case of annual project reports, the reports should be submitted no later than 90 days prior to the end of the current budget period. For final project reports and project outcomes reports for the general public, reports should be submitted no later than 120 days following expiration of the grant. Grants will be financially closed out on the first day of each month for all awards with end dates of 120 or more days prior to the financial closeout day. Parallel changes have been made to section II.C.3 with regard to annual and final cost sharing reports.

Chapter III.E, Award Financial Reporting Requirements – Final Disbursement Reporting, Consolidated Listing of Program- and Cost-Related Grantee Notifications to, and Requests for Approval from, the National Science Foundation, has been revised to reflect that grantees must liquidate all obligations incurred under their awards not later than 120 calendar days after the award end date and that NSF will financially close awards 120 days after the award end date.

Chapter VI.B.5, Life Sciences Dual Use Research of Concern (DURC), is an entirely new section and serves, in conjunction with coverage in the GPG, as NSF's implementation of the US Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

Chapter VI.D.2.c, Public Access to Copyrighted Material, is an entirely new section which provides information on NSF's Public Access Policy. This policy also is referenced in Chapter VI.E.1 on publication and distribution of grant materials.

Clarifications and Other Changes to the AAG

Chapter II.B.2.e and 3, Changes in Project Direction or Management, has been updated to reflect that, when a grant is being transferred, if funding is requested to support a postdoctoral researcher, a mentoring plan must be provided and the PI must report on the mentoring activities in their NSF project reports. The same procedures must be followed if a request to subaward, transfer or contract out part of an NSF award includes funding to support a postdoctoral researcher and the original proposal did not include a mentoring plan.

Chapter III.D.3, Interest Earned on Advance Payments, has been updated with guidance that implements the applicable portions of 2 CFR § 200.305 on interest income.

Chapter V.A, Basic Considerations, has been supplemented with language noting that NSF policies which have a post-award requirement are implemented in the grant terms and conditions.

Chapter V.B.2, Administrative and Clerical Salaries & Wages Policy, is a new section that articulates when direct charging of these costs may be appropriate, in accordance with 2 CFR § 200.413.

Chapter V.D, Indirect Costs, has updated the language on predetermined rates in order to conform to the coverage in the Uniform Guidance. In addition, it discusses under what circumstances NSF may elect to set award specific rates.

Chapter V.F.4, Passports and Visas, has been revised to refer to the Uniform Guidance for coverage on visa costs.

Chapter VII.A.2, Suspension and Termination, has been supplemented with language regarding NSF's implementation of the Federal Awardee Performance and Integrity Information System.

Grant Opportunity Alerts

Keywords and Areas Included in Grant Opportunity Alerts:

NSF: Data Infrastructure Building Blocks (DIBBs); Petascale Computing Resource Allocations (PRAC); Ideas Lab: Science of Learning: Collaborative Networks (SL-CN); STEM + Computing Partnerships (STEM+C); Energy-Efficient Computing: from Devices to Architectures (E2CDA); Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)

NIH: Use of 3D Printing for Creation of Implantable Devices (R21/R33); Neuroimaging Informatics Tools and Resources Clearinghouse (U24); Education and Health: New Frontiers (R01); Notice of Information: Parallel Funding Initiative for Collaborative Research Between Investigators in the USA and in the State of São Paulo, Brazil

Grant Opportunities

National Science Foundation

Grant Program: Data Infrastructure Building Blocks (DIBBs)

Agency: National Science Foundation NSF 16-530

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16530/nsf16530.htm>

Brief Description: The NSF vision for a Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21) considers an integrated, scalable, and sustainable cyberinfrastructure to be crucial for innovation in science and engineering (see www.nsf.gov/cif21). The Data Infrastructure Building Blocks (DIBBs) program is an integral part of CIF21. The DIBBs program encourages development of robust and shared data-centric cyberinfrastructure capabilities, to accelerate interdisciplinary and collaborative research in areas of inquiry stimulated by data.

DIBBs investments enable new data-focused services, capabilities, and resources to advance scientific discoveries, collaborations, and innovations. The investments are expected to build upon, integrate with, and contribute to existing community cyberinfrastructure, serving as evaluative resources while developments in national-scale access, policy, interoperability and sustainability continue to evolve.

Effective solutions will bring together cyberinfrastructure expertise and domain researchers, to ensure that the resulting cyberinfrastructure address researchers' data needs. The activities should address the data challenges arising in a disciplinary or cross-disciplinary context. (Throughout this solicitation, 'community' refers to a group of researchers interested in solving one or more linked scientific questions, while 'domains' and 'disciplines' refer to areas of expertise or application.) The projects should stimulate data-driven scientific discoveries and innovations, and address broad community needs.

This solicitation includes two classes of science data pilot awards:

- **Early Implementations** are large "at scale" evaluations, building upon cyberinfrastructure capabilities of existing research communities or recognized community data collections, and extending those data-focused cyberinfrastructure capabilities to additional research communities and domains with broad community engagement.

- **Pilot Demonstrations** address advanced cyberinfrastructure challenges across emerging research communities, building upon recognized community data collections and disciplinary research interests, to address specific challenges in science and engineering research.

Prospective PIs should be aware that DIBBs is a multi-directorate activity, and are encouraged to submit proposals that have broad, interdisciplinary interest. PIs are encouraged to refer to NSF core program descriptions, Dear Colleague Letters, and recently posted initiatives on directorate and divisional home pages to gain insight as to the priorities for the relevant area(s) of science and engineering in which their proposal may be responsive. **It is strongly recommended that a prospective PI contact a Cognizant Program Officer in the organization(s) closest to the major disciplinary impact of the proposed work to ascertain whether the scientific focus and budget of the proposed work are appropriate for this solicitation.**

Awards: Standard Grants. The anticipated funding amount is \$23,500,000 total for this solicitation.

- The award size for Early Implementation Awards is anticipated to be up to \$4,000,000 total per award for up to 5 years.
- The award size for Pilot Demonstration Awards is anticipated to be up to \$500,000 total per award for up to 3 years

Letter of Intent: Not Required

Full Proposal Deadlines: April 4, 2016

Contacts:

- Amy Walton, Program Director, CISE/ACI and DIBBs Solicitation Manager, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov
- Robert Chadduck, Program Director, CISE/ACI, telephone: (703) 292-8970, email: DIBBsQueries@nsf.gov

Grant Program: Petascale Computing Resource Allocations (PRAC)

Agency: National Science Foundation NSF 16-529

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16529/nsf16529.htm>

Brief Description: In 2013, a new NSF-funded petascale computing system, Blue Waters, was deployed at the University of Illinois at Urbana-Champaign. The goal of this project and system is to open up new possibilities in science and engineering by providing computational capability that makes it possible for investigators to tackle much larger and more complex research challenges across a wide spectrum of domains. The purpose of this solicitation is to invite research groups to submit requests for allocations of resources on the Blue Waters system. Proposers must show compelling science or engineering challenges that require petascale computing resources. Proposers must also be prepared to demonstrate that they have science or engineering research problems that require and can effectively exploit the petascale computing capabilities offered by Blue Waters. Proposals from or including junior researchers are encouraged, as one of the goals of this solicitation is to build a community capable of using petascale computing.

Awards: Standard Grants

Letter of Intent: Not Required

Full Proposal Deadlines: April 4, 2016

Contacts:

- Edward Walker, Program Director, CISE/ACI, telephone: (703) 292-4863, email: edwalker@nsf.gov

Grant Program: Ideas Lab: Science of Learning: Collaborative Networks (SL-CN)

Agency: National Science Foundation NSF 16-528

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16528/nsf16528.htm>

Brief Description: The goals of the Science of Learning (SL) Program are to: advance fundamental knowledge about learning through integrative research; connect the research to specific scientific, technological, educational, and workforce challenges; and enable research communities to capitalize on new opportunities and discoveries. The program supports projects that emphasize consilience of knowledge, adopting diverse disciplinary approaches to shared research questions. The program seeks to develop robust and integrated accounts of contexts, mechanisms, and effective strategies of learning.

This solicitation invites proposals for the creation of new research networks to address important integrative questions in the science of learning. Each network must identify an integrative research goal involving convergence of evidence from the diverse disciplinary approaches represented by participants in the network. The proposed research must substantially advance understanding of learning in more than a single discipline. Networks may focus on advancing basic research through experiments and theory, as well as translating findings from basic research on learning to applications in order to benefit society and further inform fundamental theories of learning. This solicitation is for proposals that do not fit into existing NSF programs, by virtue of the emphasis on interdisciplinarity in service of knowledge consilience and integration.

Each network is expected to engage in both of the following activities:

- Partnership-building activities among the network participants to optimize scientific exchange for the co-design and execution of network goals; and

Collaborative, integrative research to be conducted by the network participants. Integrative research must address questions of genuine significance across multiple disciplines, or multiples levels of analysis.

Awards: Standard Grants. Anticipated available funding: \$9,750,000

Letter of Intent: Required; Deadline: March 01, 2016

Full Proposal Deadlines: April 04, 2016

Contacts:

- Soo-Siang Lim, SBE/BCS, telephone: (703) 292-7878, email: slim@nsf.gov
- Charles Kalish, SBE/BCS, telephone: (703) 292-7369, email: ckalish@nsf.gov

Grant Program: STEM + Computing Partnerships (STEM+C)

Agency: National Science Foundation NSF 16-527

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16527/nsf16527.htm>

Brief Description: The STEM+Computing Partnerships program seeks to significantly enhance the learning and teaching of science, technology, engineering, mathematics (STEM), and computing by K-12 students and teachers through research on, and development of, courses, curriculum, course materials, pedagogies, instructional strategies, models, or pedagogical environments that innovatively integrate computing into one or more other STEM disciplines, or integrate STEM content into the teaching and learning of computing. In addition, STEM+C seeks to build capacity in K-12 computing education with foundational research and focused teacher preparation. Projects in the STEM+C program should build on research in STEM education and prior research and development efforts that provide theoretical and empirical justification for proposed projects. Pre-service and in-service teachers who participate in STEM+C projects are expected to enhance their understanding and teaching of STEM and computing content, practices, and skills.

STEM+C invites creative and innovative proposals that address emerging challenges in the learning and teaching of STEM and computing. The program offers proposers two tracks: (1) Integration of Computing in STEM Education and (2) Computing Education Knowledge and Capacity Building. The second track is discipline-specific and may be expanded to include additional disciplines in future releases of the solicitation.

Awards: Standard Grants; Total available funding: \$47,000,000

Letter of Intent: Not Required

Full Proposal Deadlines: March 28, 2016

Contacts:

- Arlene M. de Strulle, DRL/EHR, telephone: (703) 292-8620, email: adestrul@nsf.gov
 - Janice Cuny, CNS/CISE, telephone: (703) 292-8900, email: jcuny@nsf.gov
 - Kamau Bobb, CNS/CISE, telephone: (703) 292-4291, email: kbobb@nsf.gov
 - Catherine Eberbach, EHR/DRL, telephone: (703) 292-4960, email: ceberbac@nsf.gov
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Grant Program: Energy-Efficient Computing: from Devices to Architectures (E2CDA)

Agency: National Science Foundation NSF 16-526

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16526/nsf16526.htm>

Brief Description: There is a consensus across the many industries touched by our ubiquitous computing infrastructure that future performance improvements across the board are now severely limited by the amount of energy it takes to manipulate, store, and critically, transport data. While the limits and tradeoffs for this performance-energy crisis vary across the full range of application platforms, they have all reached a point at which evolutionary approaches to addressing this challenge are no longer adequate.

Truly disruptive breakthroughs are now required, and not just from any one segment of the technology stack. Rather, due to the complexity of the challenges, revolutionary new approaches are needed at each level in the hierarchy. Furthermore, simultaneous co-optimization across all levels is essential for the creation of new, sustainable computing platforms.

These simultaneous technical and organizational challenges have never been as complex or as critically important as they are now. The urgency of solving the multi-disciplinary technical challenges will require new methods of collaboration and organization among researchers.

Therefore, a comprehensive and collaborative approach must be undertaken to maximize the potential for successfully identifying and implementing revolutionary solutions to break through the bottleneck of energy-constrained computational performance. Programmers, system architects, circuit designers, chip processing engineers, material scientists, and computational chemists must all explore these new paths together to co-design an optimal solution path.

The National Science Foundation (NSF) and the Semiconductor Research Corporation (SRC) recognize this need, and agree to embark on a new collaborative research program to support compelling research that is of paramount importance to industry, academia and society at large. This partnership will specifically support new research to minimize the energy impacts of processing, storing, and moving data within future computing systems, and will be synergistic with other research activities that address other aspects of this overarching energy-constrained computing performance challenge.

The jointly supported research effort aligns with interagency initiatives and priorities, including the [National Strategic Computing Initiative](#) and the [Nanotechnology-Inspired Grand Challenge for Future Computing](#).

Awards: Standard Grants; Total available funding: \$4,000,000

Letter of Intent: Not Required

Full Proposal Deadlines: March 28, 2016

Contacts:

- Sankar Basu, Program Director, Computing & Communication Foundations Division, NSF, telephone: (703) 292-7843, email: sabasu@nsf.gov
- Dimitris Pavlidis, Program Director, Electrical, Communications & Cyber Systems Division, NSF, telephone: (703) 292-2216, email: dpavli@nsf.gov
- Thomas Theis, Executive Director, Nanoelectronic Research Initiative, Semiconductor Research Corporation, telephone: (914) 945-2244, email: thomas.theis@src.org
- Jonathan Candelaria, Program Director, Semiconductor Research Corporation, telephone: (919) 941-9482, email: jon.candelaria@src.org

Grant Program: Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)

Agency: National Science Foundation NSF 16-525

RFP Website: <http://www.nsf.gov/pubs/2016/nsf16525/nsf16525.htm>

Brief Description: The Centers of Research Excellence in Science and Technology (CREST) program provides support to enhance the research capabilities of minority-serving institutions (MSI) through the establishment of centers that effectively integrate education and research. MSIs of higher education denote institutions that have undergraduate enrollments of 50% or more (based on total student enrollment) of members of minority groups underrepresented among those holding advanced degrees in science and engineering fields: African Americans, Alaska Natives, American Indians, Hispanic Americans, Native Hawaiians, and Native Pacific Islanders. CREST promotes the development of new knowledge, enhancements of the research productivity of individual faculty, and an expanded presence of students historically underrepresented in science, technology, engineering, and mathematics (STEM) disciplines. CREST Postdoctoral Research Fellowship (PRF) awards provide research experience and training for early career scientists to work at active CREST Centers to meet the CREST Program goal of building the research capacity of MSIs and advancing the nation's STEM workforce and leadership. HBCU-RISE awards specifically target HBCUs to support the expansion of institutional research capacity as well as the production of doctoral students, especially those from groups underrepresented in STEM, at those institutions.

The CREST program supports the following types of projects:

CREST Center awards provide multi-year support (typically 5-years) for eligible minority-serving institutions that demonstrate a strong research and education base, a compelling vision for research infrastructure improvement, and a comprehensive plan with the necessary elements to achieve and sustain national competitiveness in a clearly defined area of national significance in science or engineering research. Successful Center proposals will demonstrate a clear vision and synergy with the broad goals of the CREST Program and the Human Resource Development Division with respect to development of a diverse STEM workforce. CREST Centers are expected to provide leadership in the involvement of groups traditionally underrepresented in STEM at all levels (faculty, students, and postdoctoral researchers) within the Center. Centers are required to use either proven or innovative mechanisms to address issues such as recruitment, retention and mentorship of participants from underrepresented groups.

CREST Partnership Supplements support the establishment or strengthening of partnerships and collaborations between active CREST Centers and nationally or internationally recognized research centers including NSF-supported research centers, and private sector research laboratories, K-12 entities including museums and science centers or schools, as appropriate to enable the CREST Centers to advance knowledge and education on a research theme of national significance.

CREST Postdoctoral Research Fellowship (PRF) awards recognize beginning CREST Center investigators with significant potential and provide them with research experiences that broaden perspectives, facilitate interdisciplinary interactions and establish them in positions of leadership within the scientific community. Fellows conduct research on topics aligned with the research focus of the host CREST Center. The fellowships are also designed to provide active mentoring to the Fellows by the sponsoring CREST Center scientists who, in turn, will benefit from the incorporation of these talented scientists into their research groups.

HBCU Research Infrastructure for Science and Engineering (RISE) awards support the development of research capability at Historically Black Colleges and Universities that offer doctoral degrees in science and engineering disciplines. Supported projects must have a unifying research focus in one of the research areas supported by NSF, a direct connection to the long-term plans of the host department(s), institutional strategic plan and mission, and plans for expanding institutional research capacity as well as increasing the production of doctoral students, especially those underrepresented in STEM.

SBIR/STTR Phase IIa Diversity Collaboration Supplements provide an opportunity for existing SBIR/STTR Phase II projects to initiate collaborations with minority-serving institutions that have active CREST Center or HBCU-RISE awards. These supplemental proposals are administered by and co-funded with the NSF Directorate for Engineering Division of Industrial Innovation and Partnerships (ENG/IIP).

Awards: Standard Grants; Total available funding: \$17,800,000

Letter of Intent: Required; Deadline: March 04, 2016

Full Proposal Deadlines: June 10, 2016

Contacts:

- Victor A. Santiago, Program Director, telephone: (703) 292-4673, email: vsantiag@nsf.gov
- Andrea Johnson, Program Director, telephone: (703) 292-5164, email: andjohns@nsf.gov

National Institutes of Health

Grant Program: Use of 3D Printing for Creation of Implantable Devices (R21/R33)

Agency: National Institutes of Health RFA-HD-17-002

RFP Website: <http://grants.nih.gov/grants/guide/rfa-files/RFA-HD-17-002.html>

Brief Description: A particularly difficult issue for the care of infants and young children who need implanted devices is that the children grow, but the devices do not. Thus, children receiving devices may need multiple surgeries for revision as they grow. For some problems, e.g. tracheomalacia and bladder atresia, a temporary scaffold can provide structural support and temporary function while the patients' own cells can be recruited to colonize the implant and create the appropriate tissue structures. In principle, these new structures can grow along with the child.

3D printing, a form of additive manufacturing, may potentially provide a solution to meet this need. 3D printing builds up layer-by-layer from a digital model from different materials, incorporating various materials including biocompatible polymers. 3D printing has the potential

to produce complex biomedical devices from computer design using patient-specific anatomical data. This process allows for complex components and devices matched to a patient's anatomy. Most importantly, because 3D printing does not require specialized cutting tools or molds, design changes can be made very rapidly and applied to only a small number of units. Recent investigations have demonstrated that cells can also be laid down with 3-D printers.

The work to be supported by this FOA requires four components:

- Identification of a specific clinical problem in children that will be solved by device implantation where the device needs to adapt to the child's growth.
- Development of 3-D printed implantable devices/biodegradable scaffolds appropriate to the clinical problem.
- Testing of the device/scaffold in animal models for an extended period of time.

Under certain circumstances, patients may have received such devices under Compassionate Use Exemptions. This FOA would also support long-term follow-up of such patients.

Awards: The combined budget for direct costs for the two-year R21 project period may not exceed \$275,000 and no more than \$200,000 may be requested in any single year for the R21 phase. For the R33 phase, cumulative direct costs for the entire 3-year project period may not exceed \$750,000 and requested funding per year cannot exceed \$500,000.

Letter of Intent: February 17, 2016

Deadline: March 17, 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.

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: Neuroimaging Informatics Tools and Resources Clearinghouse (U24)

Agency: National Institutes of Health RFA-EB-16-002

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

Brief Description: The Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC) (<http://www.nitrc.org>), originally funded by the NIH Blueprint for Neuroscience Research in 2006, is a dynamic inventory of web-based neuroimaging informatics resources: software, data, and tools accessible via any computer connected to the internet. The purpose of the NITRC project is to promote the enhancement, sharing, adoption, and evolution of neuroimaging informatics tools and resources by providing access, information, and forums for interaction for the user community and the associated developers. The NITRC project was designed to improve scientific research and promote sharing of previously funded research and initiatives and to encourage community interaction and collaboration. NITRC facilitates finding and comparing neuroimaging resources for functional and structural neuroimaging analyses. The goals of NITRC are to catalog and point to standardized information about neuroimaging tools, or resources. In 2011, the scope of NITRC was expanded to provide enhanced services such as virtual computing, and data storage.

The functionality of the Neuroimaging Informatics Tools and Resources Clearinghouse (NITRC) has enabled three distinct components to flourish

- NITRC-R: the NITRC resource for software and tool exchange.
- NITRC-IR: the NITRC image repository of publicly accessible, anonymized, and curated, clinical neuroimaging data.
- NITRC-CE: the NITRC compute environment permitting researchers around the globe the ability to do computations on neuroimaging datasets.

NITRC-R has become the major web-based collaborative environment enabling the distribution, enhancement, and adoption of neuroinformatics resources. It currently hosts more

than 748 tools and resources in areas such as magnetic resonance imaging (MRI), electroencephalography (EEG), magnetoencephalography (MEG), multi-modal, positron emission tomography, single photon emission computed tomography (PET / SPECT), computed tomography (CT), clinical neuroinformatics, imaging genomics, optical imaging, and computation neuroscience.

NITRC-IR currently comprises a curated repository of more than 6,000 human subjects' DICOM and NIfTI-1 images, which are searchable by metadata such as handedness, gender, and grouping. This data is registered on INCF Dataspaces and is a Tier 3 resource on the Neuroscience Information Framework (NIF). NITRC-IR is the data repository for the 1000 Functional Connectomes (resting state), the ABIDE study (resting state), CANDIShare (T1 and manual segmentations), ADHD200 (resting state), INDI NKI/Rockland (resting state), PING (structural, diffusion, and resting state), CoRR (test-retest reliability and reproducibility), as well as international studies such as Beijing Enhanced DTI, Beijing Eyes Open Eyes Closed, Beijing Short TR study, Study Forrest rev003 (structural brain scans, physiological measurements, technical confounds), IXI study (normal, healthy subjects MRI scans).

NITRC-CE is an on-demand, virtual computing platform built upon a NeuroDebian operating system. It is pre-configured with a number of neuroimaging applications (for example, AFNI, FSL, etc.). NITRC-CE can be implemented by researchers within their academic infrastructure, or there are implementations made available through commercial cloud providers (such as Amazon Web Services, and Microsoft VM Depot).

Awards: Application budgets are not limited but need to reflect the actual needs of the proposed project. The maximum project period is 3 years.

Letter of Intent: February 15, 2016

Deadline: March 15, 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.

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: Education and Health: New Frontiers (R01)

Agency: National Institutes of Health PAR-16-080

[PAR-16-078](#), [R21](#) Exploratory/Developmental Grant

[PAR-16-079](#), [R03](#) Small Grant Program

RFP Website: <http://grants.nih.gov/grants/guide/pa-files/PAR-16-080.html>

Brief Description: In June 2014, OBSSR convened a workshop that brought together clinicians and researchers in education and health in order to identify opportunities and gaps in the field as well as to develop strategies to ensure that education and health research remains a national priority. A summary of the meeting can be read here: [https://obssr-archive.od.nih.gov/pdf/OBSSR Education and Health REV 8-22-2014 FINAL RLA.pdf](https://obssr-archive.od.nih.gov/pdf/OBSSR_Education_and_Health_REV_8-22-2014_FINAL_RLA.pdf)

Areas of research that were emphasized included: developing better measures of health outcomes (including cognitive function, subjective well-being, etc.), improving study designs, identifying mechanisms underlying the relationship between education and health, and considering contextual issues. Additionally, it was noted that there must also be attention to longitudinal research to understand long-term implications of early interventions and replication of studies to verify results. Themes evident throughout the meeting included the nature of the causal relationship between education and health, contextual issues, the need for more and better data, and interventions in education and health.

A number of private foundations have current initiatives which examine the links between health and education. The William T. Grant Foundation has recently examined the

infrastructure to improve the use and usefulness of research in education <http://blog.wtgrantfoundation.org/>. The Robert Wood Johnson Foundation is exploring education and health within its series on the social determinants of health <http://www.rwjf.org/en/how-we-work/grants/programs-and-initiatives.html>. Their work examines the interrelated pathways through which educational attainment is linked to health outcomes, including through employment and income, and social and psychological factors. The W. K. Kellogg Foundation is addressing the health and well-being of children and families from interrelated fronts, including nutrition and education <http://www.wkkf.org/grantseekers>. The Open Society Foundation is committed to supporting quality education across the globe, imagining education as a key to civic participation and healthy lives <http://www.opensocietyfoundations.org/>. This PA seeks to supplement the work of these foundations by promoting an examination of the specific mechanisms through which educational experiences and activities are linked to health outcomes, elucidate pathways and inform causal models that can inform more targeted interventions.

Recent contemporary work on educational attainment and adult health has demonstrated that the treatment of health is multi-dimensional and the treatment of education is not limited to a simple operationalization. Both health and education need to be examined in complex ways, using novel methodological tools and datasets, as well as situating analyses across diverse global spaces and within specific historical time periods to better understand the macro mechanisms which link educational attainment with health outcomes.

For this FOA, education refers to the comprehensive formal instruction that spans the human experience, from early childhood programs to pre-school, elementary and secondary schooling, college and adult learning programs. It includes the social and behavioral processes that are combined with formal instruction in educational environments. A better scientific understanding of the mechanisms linking education and health could lead to additional and improved prevention and therapeutic intervention strategies for important health problems. NOTE: This FOA is not directed at studies which limit their focus to the impact of specific health education courses or programs on health behaviors; rather, the focus is on the impact of more general education experiences.

In order to better understand these pathways, it will be necessary to explore what components or dimensions of education are important to health. The association or pathway between formal education and important health behaviors or diseases may not be causal. Instead it may reflect the influence of confounding or co-existing determinants or bi-directionality. Appropriate research topics for this FOA may involve pilot studies, new analyses of existing data, longitudinal studies, or a balance of approaches tailored for the study hypotheses. It is strongly encouraged that an application involve new teams of multidisciplinary researchers with expertise in both health and education domains.

Research Perspectives and Themes

To achieve the goal of a more comprehensive understanding of the mechanisms linking education and health outcomes, this FOA encourages the exploration of research perspectives and themes described below. The NIH believes these approaches may move current research efforts to the next level of accomplishment. Applicants are not required to incorporate all of the themes below into their research applications; however, applicants should explicitly address at least one.

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

Letter of Intent: Not Applicable.

Deadline: Standard NIH proposal submission dates.

Grant Program: Notice of Information: Parallel Funding Initiative for Collaborative Research Between Investigators in the USA and in the State of São Paulo, Brazil

Agency: National Institutes of Health NOT-TW-16-001

RFP Website: <http://grants.nih.gov/grants/guide/notice-files/NOT-TW-16-001.html>

Brief Description: The National Institute of Health (NIH) and the São Paulo Research Foundation (FAPESP), Brazil, have signed a memorandum of understanding (MOU) to encourage collaborative international research between investigators in the US and in the State of São Paulo. The two funding agencies intend to jointly support (parallel funding) successful R01 applications to the NIH that fall within research areas of mutual interest, including single disciplinary and cross-disciplinary approaches and topics. The areas of interest include the mission areas of the participating NIH Institutes and Centers (ICs), named above. Descriptions of their areas of interest can be found on the website links provided. Any application falling outside these areas will undergo the standard review process at NIH but will not be eligible for parallel funding. Inquiries about the suitability of proposed projects for each IC can be directed to the Point of Contact at each participating IC, as listed below. Only applications to the NIH parent R01 ([PA-13-302](#) and subsequent reissuances) will be considered for this opportunity at this time.

Instructions to Applicants

1. Applications eligible for parallel funding under this initiative must include at least one Program Director/Principal Investigator (PD/PI) from an institution in the State of São Paulo who is eligible for funding by FAPESP and one PD/PI from the US who is eligible for funding by NIH. The multiple PD/PI (MPI) option should be used. Any MPI may submit the application as the contact PD/PI. If the application is chosen for parallel support, the US PD/PI and their institution will become the contact PD/PI for NIH, and the São Paulo PD/PI will become the contact PD/PI for FAPESP. There may also be other collaborators from anywhere in the world.

2. Applicants should send a summary of the proposed project (such as the abstract for the NIH application) to FAPESP Science Manager Dr. Simone Godoi at chamada_nih@fapesp.br to confirm their eligibility at least four weeks prior to submission of the application to NIH.

3. Applicants should indicate their interest in being considered for this opportunity and acknowledge their understanding that any award from NIH may be split and funded in parallel through a linked FAPESP award by writing "We would like this application to be considered under the NIH-FAPESP Funding Initiative. FAPESP has confirmed that the São Paulo PD/PI is eligible for this initiative." at the end of the Specific Aims.

4. Processing of the application at NIH will follow standard NIH receipt and referral guidelines and review. If the application is referred to one of the participating NIH ICs, it will be considered for parallel support after both levels of NIH peer review and just prior to award. The application will only undergo review at the NIH. Applicants should follow normal guidance for an NIH application, including rules regarding foreign applications or applications with foreign components.

5. The applicant will be asked to forward their NIH summary statement and full application to FAPESP following peer review, within one week of receiving their summary statement, if they wish to be further considered for parallel support. If an award is made, additional documents, reformatting, or re-budgeting may be required by either agency.

6. Applicants will be notified per normal NIH procedure whether they are being considered for an NIH award and the administering NIH IC will indicate whether the award will be funded in parallel by FAPESP.

Award: Standard awards.

Letter of Intent: Not applicable.

Deadline: Standard dates apply.

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.
