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Funding Rates: Actual and Real

By Mike Cronan, co-publisher

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The noted Harvard scientist Stephen Jay Gould's profound essay "*The Median Isn't the Message*" on cancer survival and statistics has a relevance more far reaching than just those trying to make sense of cancer survival statistics. It has relevance to many other areas where we use statistics to inform our decision making process, including research grant writing. In the latter case, to paraphrase Gould, it might be said that in research grant writing "*The Funding Rate Isn't the Message*." The ***actual*** funding rate calculation (*Proposals Funded/ Total Proposals*) always includes "*The Good, The Bad, and The Ugly*" in the denominator when determining funding success. It therefore gives a more pessimistic outlook than does the more optimistic ***real*** funding success rate.

The ***real funding success rate*** is based on an informed and judicious estimation that purges "***the bad and the ugly***" from the funding rate calculation, much as Clint Eastwood did in the movie of the same name. Of course in grant writing, as opposed to the Spaghetti Western, "***the bad and the ugly"*** are not gunslingers competing for a fortune in buried gold but something much worse—poorly planned, poorly developed, and poorly written proposals that violate Louis Pasteur's axiom that "*Fortune favors the prepared mind*." **In other words, the "*funding dice*" are loaded, so to speak, to favor the well-prepared proposal**.

Specifically, the funding (or success) rate of federal agency research proposals for a given time period, typically the agency fiscal year, is calculated by dividing the number of new awards made in a fiscal year by the total number of awards (both funded and declined) reviewed for funding. ***And who has not peered long and deeply into this simple calculation in hopes of discerning some deeper pattern that better foretells the future of a planned proposal***. Here grant writers are somewhat like the Ancient Roman Augurs, religious officials who observed the flight of birds, interpreting the flight patterns as an indication of divine approval or disapproval of a proposed action, such as whether or not to fund a proposal submitted to the *Roman Science Foundation*. Even today, some in the research development community claim some reviewers still employ this ancient practice to make funding decisions, but these claims are mostly anecdotal.

Regardless, the real focus of your attention when considering funding success rates needs to be on the denominator—the sum of both funded and declined proposals. The larger the denominator for a constant numerator the smaller the success rate. For example, if 100 proposals are submitted and 18 are funded, the success rate is 18%. In other words, 82 were not funded for a failure rate of 82%. However, success rate calculations assume, for statistical purposes, an equivalency among all declined proposals, i.e., they lump together "*The Good, The Bad, and The Ugly*." See an example of this below from the NSF Directorate for Biological Sciences showing the Division of Molecular and Cellular Biosciences (MCB) with a success rate of 12%. Moreover, success rates specific to many NSF institutional solicitations such as the ERC, STC, IGERT (now NRT), AGEP, ADVANCE, etc. are often under 4%.

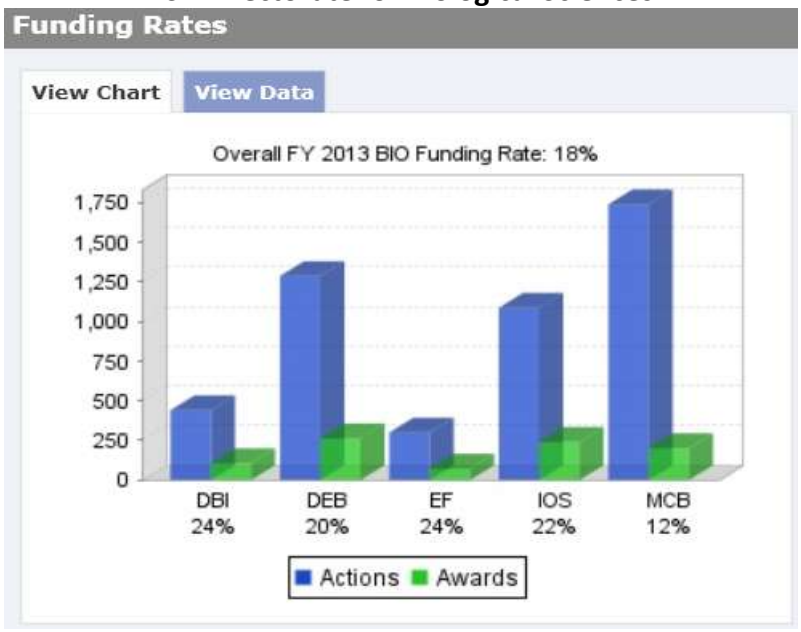
However, the applicant's focus needs to be on the number of declined proposals. The next step in this process is to parse out the number of competitive declined proposals and the number of noncompetitive declined proposals ("*the bad and the ugly and the truly horrid*") with no chance of being funded. For example, if you talk to those who frequently review proposals, you will soon learn that a significant number of proposals submitted don't have a snowball's chance of being funded; yet, for statistical purposes, they are treated as the equivalent of proposals that are well reviewed and clustered close to the funding line.

Therefore, it is not an unrealistic rule of thumb to assume that the ***real*** funding rate of any competition may be two or three times the ***actual*** funding rate calculated by simply dividing the number of proposals funded by the total number of proposals reviewed for funding. Just making the ***very conservative assumption*** that 50% of the proposals received for any competition are sufficiently flawed so as to preclude any possible chance of funding will, by halving the denominator, double the real funding rate.

The important point here, as with the referenced Gould essay, is not to let very simplistic statistical calculations, such as those published by research agencies, dissuade you from submitting a very good idea for funding. Of course, this presupposes that your research team has an idea of significant importance to the funding agency and that you are able to plan, develop, and write a proposal that makes it competitive for funding. While a competitive proposal is not always funded, submitting competitive proposals consistently over time will increase your long-term funding success, raising it well higher than the average funding rate.

In the end, it all comes down to making sure that when you plan, develop, and write a proposal, you do so with a ***commitment to achieving perfection in every aspect of the proposal***—the ideas, the writing, the organization, etc. If you do these things exceptionally well, then taking at face value the oft-quoted statistics of funding success will underestimate significantly your likelihood of being funded—by agency, directorate, division, program, or specific solicitation.

NSF Directorate for Biological Sciences



NSF's New Advanced Technology Education

By **Mike Cronan**, co-publisher

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NSF's new solicitation (NSF 14-577) for the *Advanced Technology Education* (**ATE**) program represents yet another significant transformation of this decades-old program that has funded to date over 1,400 centers and projects focused on the education of technicians for the high-technology fields that drive our nation's economy. For this new competition, NSF anticipates making 40 to 55 awards for a total of $65 million. If you are thinking of developing an ATE proposal, keep in mind that, to be competitive, you will need every bit of the time remaining until the **October 19** due date.

Regardless of funding level, ATE proposals are large-team grant proposals grounded on partnerships and collaborations among two- and four-year institutions, secondary schools, business, industry, government and other entities that may impact technician education, such as workforce commissions. Most importantly, keep in mind that there is a long-standing ATE community going back decades that represents various ATE operational models, partnership models, training models, evaluation models, skill-set models, course and curriculum models, etc. Here, NSF suggests that proposers should "***contact the PIs of previously funded projects*** and centers to explore the possibilities for adapting materials, evaluating materials, receiving guidance, or collaborating in other ways, such as conducting research projects which focus on the effectiveness of technician education."

For this new solicitation, the ATE program is particularly interested in projects addressing issues in "***rural technician education and projects that broaden the diversity of the entry-level technical workforce, including strategies to recruit veterans into technician education programs***." Also new to this solicitation is the project category for ***Small Grants for Institutions New to the ATE Program*** that seeks to increase the incentive and opportunity for community colleges with little or no previous experience with the ATE program. Only community college campuses that have not had an ATE award within the past 10 years may be the "performing organization" on a proposal in this category. However, this is a good opportunity to start the process of institutional capacity building that will have many long-term funding benefits at NSF, both for larger ATE projects and in other areas as well (see *STEM Grant Opportunities for Community Colleges* by the American Association of Community Colleges).

Moreover, NSF expects an ATE project or center to ***communicate a realistic vision for sustainability and a plan for achieving it***. This is not a trivial requirement (see *Writing the Project Sustainability Statement* in the October 2012 issue of this newsletter). The sustainability plan, just as the critical ATE evaluation plan, needs to be integrated into project design thinking from day one. Any attempt to substitute "*smoke and mirrors*" and similar programmatic legerdemain for a substantive sustainability plan will ensure a declined proposal. Don't make the mistake of thinking the ATE program officers and reviewers just fell off the turnip wagon and cannot differentiate between a robust and carefully prepared plan for sustainability and institutionalization and one that is just generalized hot air.

If there was ever a solicitation that made it critical to ***assign someone on the development team as a background researcher***, it is this current ATE solicitation. Whether you are new to ATE or have been part of a funded ATE in the past, understanding the scope, scale, context, and the all important "lessons learned" revealed in the NSF referenced documents in this solicitation will be critical to your success in this current competition. Importantly, all ATE projects must include a literature review that establishes the basis for the proposed study; a clear description of the alignment of research questions with methodologies; and evidence that it is informed by the Common Guidelines for Education Research and Development.

Here, keep in mind the essayist George Santayana's observation that "*Those who are unaware of history are destined to repeat it*." He did not mean in a good way, but more along the lines of the oft-quoted NSF program officer speaking of the importance of familiarizing yourself with NSF reference documents included in the solicitation so that "***your proposed project will not reinvent the flat tire***." This solicitation requires that a very thorough ***explication of text*** be done to inform the ATE development team.

With this in mind, a good strategy for the background researcher would be to do a search on the ATE solicitation for "***http:***" to identify each of the many URL references included in the solicitation and compile a separate working document that contains a table of hotlinks for all of them. Moreover, in this back grounding process, follow NSF's advice to proposers encouraging them to visit the ATE Central Website to search for and contact PIs of previous ATE awards, something that can also be done at the NSF recent awards website. Most PIs are very generous in this regard. NSF expects that they be so. Talking to PIs of **recent** ATE awards can give you valuable insight into ATE operational issues, insight into the NSF review process, particularly annual performance reviews, and a sense of the best practices for a successful program.

Also, download and review the very valuable ATE Central Handbook, a 48-page document that will serve as an indispensible roadmap for those considering an ATE submission by October 19. **Bottom line**: The current ATE solicitation is a goldmine of URL references helping to guide the potential applicant to submitting a successful proposal. For example, NSF notes that "past program evaluation reports and other research studies on ***best practices in technician education*** may be found at the Evaluation Center at Western Michigan University. Or, as NSF states, "***The almost 1,400 ATE projects supported to date provide a base upon which future ATE projects should build***." Take this to heart as you design and build your proposed ATE project.

Equally as important as knowing where the ATE program has been is knowing where it is going with this new solicitation. ***NSF has noted the changes in the ATE program solicitation for FY 2015, FY 2016, and FY 2017, which include***:

- A **new focus area** for ATE projects called "***ATE-Coordination Networks***." In many ways similar to the NSF Research Coordination Networks (RCN) program, the goal of the ATE coordination networks (ATE-CN) is to advance a field or create new directions in technician education by supporting faculty, industry, and other stakeholders to communicate and coordinate their research, training, and educational activities across disciplinary, organizational, geographic and international boundaries

- The Targeted Research on Technician Education track has been **expanded**. This track now supports planning, exploratory research and development, and full-scale research and development proposals. All projects must demonstrate substantive faculty partnerships between two-year and four-year colleges and universities.
- Proposals submitted for a Center renewal may submit up to five pages on Results of Prior Support in the supplementary documents section of the proposal, and refer the reader to that section in the Project Description section.
- The funding duration and size of award for the Centers track has been changed, and "resource centers" renamed to "support centers".
- Large Scale Material Development projects are **no longer supported**.
- An additional requirement is described under "Reporting Requirements". This is a requirement to work with ATE Central to archive resources developed with grant funds.
- For proposals describing the development of new learning materials and computer software, source code developers are encouraged to license these materials (See text under "Reporting Requirements").

Moreover, ATE proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

The ATE Project Description must explain the project's motivating rationale, goals, objectives, deliverables, and activities; the timetable; the management plan; the roles and responsibilities of the PI, co-PI(s), and other senior personnel; the plan for sustainability after the period of NSF funding; the evaluation plan; and the dissemination plan. This is the heart of the successful ATE proposal. It is not a trivial task to respond fully to the above required narrative components.

Specifically, the ATE program supports proposals in three major tracks: (**1) Projects, (2) Centers, and (3) Targeted Research in Technician Education**.

1. **ATE Projects** focus on one or a few of the activities described below. Multifaceted projects that cut across some of these activity categories are encouraged:

- **Program Development and Improvement**: These projects should increase the relevance of technician education to modern practices and assure an increased number of students with an enhanced STEM theoretical understanding and technical skills and competencies entering the high performance workplace.
- **Curriculum and Educational Materials Development**: A project may also focus on curriculum and materials development with the intent of nationally disseminating the developed products. Proposed project activities should affect the learning environment, course content, and experience of instruction for students preparing to be science and engineering technicians and for their teachers.

- **Leadership Capacity Building for Faculty**: The vitality and growth of the ATE community is closely linked to industry trends and needs as well as the acumen of the PIs and their institutions who educate technicians.
- **Teacher Preparation**: The foundation for advanced technological education is grounded in strong mathematics, science, and technology education in K-12 schools. The preparation of future teachers who will facilitate student learning in mathematics and science and cultivate an interest in technological careers is an important component of the ATE program.
- **Business and Entrepreneurial Skills Development for Students**: In addition to technical skills and disciplinary content, students entering the industry environment need skills that allow them to understand and work effectively in a business environment.
- **Small Grants for Institutions New to the ATE Program**: This category seeks to increase the incentive and opportunity for community colleges that have little or no previous experience with the ATE program to undertake projects to improve science and engineering technician education programs or teacher preparation programs that focus on technological education.
- **Conferences and Workshops**: The ATE program supports a small number of conferences, workshops, and special projects that lead to a better understanding of issues in advanced technological education.
- **ATE Coordination Networks**: The goal of the ATE coordination networks (ATE-CN) is to advance a field or create new directions in technician education by supporting faculty, industry, and other stakeholders to communicate and coordinate their research, training and educational activities across disciplinary, organizational, geographic, and international boundaries.

2. ATE Centers

The ATE program supports three types of centers: national, regional, and support centers. Proposals for centers must clearly articulate a vision of technological education and must describe a workable plan for achieving that vision during the period of NSF funding as well as describing a plan for sustaining a subset of activities post-award. Typically, centers are recognized as leaders in a particular field or technology based on significant prior efforts. A pathway to a center may begin with several successful projects and then progress to a center proposal.

3. Targeted Research on Technician Education

The goals of this track are: (1) to simulate and support research on technician education in established and emerging advanced technology fields in STEM, and (2) to build the partnership capacity between 2-year and 4-year institutions and universities to design and conduct research and development projects. Projects must clearly demonstrate partnerships between faculty at two-yr and four-yr colleges and universities, and the two-yr faculty must have leadership roles on all projects.

REFERENCED ATE RESOURCES

The ATE program encourages partnerships with other entities that may impact technician education. For example, with

- the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnerships (MEPs) as applicable to support technician education programs and the industries they serve;
- Institutes for Manufacturing Innovation addressing workforce development issues;
- Department of Labor Trade Adjustment Assistance Community College Career & Training (TAACCCT) program awardees; and
- NSF Industry & University Cooperative Research Program (I/UCRC) awardees..

Also, The SCATE Center hosts a website of interest to the ATE community. The Evalu-ate Center at Western Michigan University partners with ATE projects and centers to expand their use of exemplary evaluation practices, strengthen the knowledge base of the ATE program about evaluation, and support the continuous improvement of technician education throughout the nation. Past program evaluation reports and other research studies on best practices in technician education may be found at the Evaluation Center at Western Michigan University.

Additionally, ATE teacher preparation projects help prepare a future K-12 teaching workforce that is skilled in teaching science and mathematics, understands the technological workplace, and can prepare students to use a variety of approaches to solving real world technology related problems using design processes and principles (See Standards for Technological Literacy, ITEA,).

For information about effective approaches to ATE evaluation, see the following resources:

The 2010 User-Friendly Handbook for Project Evaluation

Online Evaluation Resource Library for NSF's Directorate for Education and Human Resources

Field-Tested Learning Assessment Guide (FLAG) for Science, Math, Engineering, and Technology Instructors

The proposal should address how the NVC will be used in the project. (Additional information describing the role of NVCs can be found HERE).

Senior NSF staff further review recommendations for awards. A flowchart that depicts the entire NSF proposal and award process (and associated timeline) is included in the GPG as Exhibit III-1.

Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities.

Note: This article was adapted from the NSF ATE solicitation and referenced documents. It includes quotes, abbreviated quotes, edited sections of the solicitation, and commentary.

Too Much "Why" and Not Enough "How"

By Lucy Deckard, co-publisher

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Put yourself in the place of a reviewer. You've already read three proposals. It's getting late, and you're getting just a little grumpy, and you start reading a proposal that starts this way:

> "The world is in urgent need of an invisibility cloak. If the US had an invisibility cloak, we would enjoy unquestioned military superiority. Without an invisibility cloak, we have numerous problems, such as being shot at. In the last 200 years, over 400,00 people have been shot at and killed because they didn't have invisibility cloaks. In the Afghanistan alone, if our military had access to an invisibility cloak, it would have saved 30,000 lives."

… and it goes on like that for two pages. You read on to the Background/State of the Art section, and it reads:

> "In the past, people have tried being invisible by using camouflage, but that has not been very effective [6–8]. Maneuvering at night is also a strategy that has been tried, with mixed results [9-12]…etc."

and the PI continues to describe all the ways that people have tried to make themselves hard to see. As a (somewhat grumpy) reviewer, what are you thinking? Probably something along the lines of, **"***Of course* it would be nice to have an invisibility cloak – I'm not an idiot – but ***how are you going to do that?***" If the PI doesn't get around to explaining how he's going to make that invisibility cloak until page 5, he has lost the reviewer by then. Worse yet, the PI may only provide a relatively vague plan for how he will accomplish this goal and continue to focus on all the wonderful benefits of the expected outcome of the project.

This is an extreme example, but it is emblematic of a mistake that PIs often make. If they're proposing to develop a new technology that will result in more efficient solar cells, they spend the first few pages discussing the importance of energy independence and improving the efficiency of solar cells. If they are proposing a new instructional strategy to improve undergraduate physics education, they spend the first few pages talking about how important it is to improve students' understanding of physics. Generally, the importance of these goals is self-evident; the question is *how* are they going to accomplish those laudable goals, but that explanation is buried deep in the proposal.

In cases such as these, it's sufficient to include one or two brief statements (ideally with statistics or hard facts) that make the case for the importance of your ultimate goal, and then move on to describing *how* you'll accomplish that goal, what's different or innovative about your approach, and why you're likely to be successful when others have not been.

Understand Your Reviewer

Sometimes you really do need to convince the reviewer that your project goal is worth pursuing. In those cases, you should devote considerable effort to convincing the reviewer that,

for example, it really is important to develop a better way to read fingerprints. But if the benefits of your ultimate goal are likely to be obvious to the reviewer, it's a waste of valuable space to belabor the obvious. This highlights the importance of understanding the likely backgrounds and knowledge of your reviewers. To take the previous example, if your reviewer will probably be a law enforcement expert with considerable background in the vagaries of reading fingerprints, it may be obvious to her why we need a better way to read fingerprints. On the other hand, if your reviewer will be a computer scientist who specializes in image analysis and has no background in fingerprints, you may need to make the case that this research is worth pursuing.

Effectively Communicating Impact and Significance

This is not to say that you don't need to communicate the impact and significance of your proposed research. However, that's usually best accomplished by connecting your particular research objectives and outcomes to the overall goal we've been discussing. So, for example, if you're proposing to conduct research to improve the efficiency of a photovoltaic cell, rather than spending a page discussing the importance of energy independence and improving solar technology, quickly move from one or two sentences making those points to explicitly describing how much improvement in efficiency you expect to attain if your project is successful and how that efficiency improvement would impact solar energy technology and our energy independence, with specific numbers and statistics.

Many researchers are by nature cautious and may be reluctant to make specific claims about the expected outcomes and impact of their project. As a result, they hedge their bets by using vague or tepid terms. For example, PIs often say that their research will "improve" performance, efficiency, etc. of a system, material, or method without ever stating by how much. For example, if your research is expected to improve efficiency of a photovoltaic cell, will it be a 50% improvement? A 5% improvement? A 0.0002% improvement? How will this improvement help to achieve the stated goal of improving the performance of solar technology? The reviewer is just left to wonder. As a result, the PI has stated a broadly laudable goal but then failed to convincingly connect the proposed project and its outcomes to that goal. No amount of exposition on the importance of the broad goal will convince the reviewer to fund the project because the PI is not answering the central question in the reviewer's mind: How are you going to achieve that goal?

Clearly, you don't want to make outlandish claims that invite the reviewers to question your honesty or competence, but you need to make the case that, if your project is successful, the payoff will be worth the $500K or whatever amount of taxpayer dollars you're requesting. To make that case, you may need to include calculations, refer to preliminary data, or in other ways rigorously justify the potential impact of your research. Use your limited space to do this rather than expound on the broadly understood benefits of reducing our dependence on foreign oil.

Placing Your Project in the Context of the State of the Art

Similarly, when you describe the current state of the art, it's important to focus on what others have done to address your particular research questions or problem rather than continuing to

focus on motivation. In other words, if you're proposing to develop an invisibility cloak, don't discuss all the ways that people have tried to make themselves hard to see. Instead talk about other researchers' efforts to make invisibility cloaks and previous work to address particular research questions that must be answered in order to make an invisibility cloak. One NSF reviewer described this section, not as a "Literature Review" or "State of the Art" section, but as a "What the Literature Brings to this Project" section.

To do this, you must identify the key research questions or critical problems that your proposed research will address. If a key problem in making an invisibility cloak is incorporating Pixie dust in the fibers so that all the particles are facing with the magic side out, then you would discuss at length what others have done related to incorporating dust in textiles and orienting dust particles, what is not known, and what you will build on from that previous work. If the key problem is that the Pixie dust won't stay in the cloak but instead falls out, you'd discuss what others have done to adhere dust to textiles.

A basic rule of thumb when writing these sections of your proposal is to put yourself in the place of the reviewer and think, "If I were reading this, what questions would I want answered?" Often, those questions are more focused on the "how" of your project rather than the "why."

Helping New Faculty Give Birth to Fundable Ideas

By Mike Cronan, co-publisher

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The recently concluded third season of the BBC (PBS) show, "*Call the Midwife,*" portrayed nurse midwives caring for expectant parents in London's desperately poor East End. While it might be a stretch to compare new faculty starting the quest for research funding with expectant residents of the 1950s East End, the commonality lies in the role of the midwife, either the nurse midwife or the "proposal midwife," whereby he or she develops a capacity to listen and help guide someone through a new and seemingly overwhelming experience.

In the case of proposals, while it is important to give workshops for new faculty presenting the how and why strategies of developing competitive proposals, it is equally important to actually work individually with faculty on the process of giving birth to a ***fundable idea***. Keep in mind that ***all ideas are not born fundable***; rather, most require modification to meet agency funding objectives detailed in the solicitation. Prospective PIs sometimes forget that ***funding agencies do not fund good ideas***-- only those good ideas that meet their mission priorities and bring significant value-added benefit to that mission. Workshops explain the process to a group of faculty from multiple disciplines with a wide range of grant-writing skills, most often from none to some, whereas individual consultations deliver faculty-specific advice that lasers in on a proposer's unique needs, disciplinary domain, and funding agency.

After all, the research idea itself is entirely in the wheel house of the faculty member, but ***making it a fundable idea*** benefits from the experience of someone who has, like the East End nurse midwife, been through the "proposal birth process" many times. The experienced, successful veteran of funding competitions can offer guidance based on an "institutional memory" of what to do right, what not to do, and, most importantly, how to refocus a proposal gone awry.

Therefore, individual consultations with new faculty conducted by experienced research development staff are a key complement to workshop programs that help initiate new faculty into the world of successful research grant writing. Grant-writing workshops give a critical overview of many of the key issues confronting new faculty as a group trying to determine how to best meet the research funding expectations of a third-year review and for tenure and promotion—and to jump start this process quickly. Such workshop topics may include presentations, for example, on: (1) Finding research funding at federal agencies and foundations; (2) Analyzing the funding solicitation and review criteria; (3) Understanding the mission, culture, and investment priorities of research agencies; and (4) Writing the major research narrative sections (project summary; introduction and background; vision, goals, objectives, etc.)

Moreover, the most successful new faculty workshops on these kinds of topics are interactive, whereby questions and discussions among presenter and participants on certain key topics are encouraged. For example, the skillful presenter will be prepared to answer "*What is research synergy and what does it mean in the context of a successful research narrative*?" Or "*What constitutes a compelling statement of vision and research significance in a*

successful research narrative?" Time permitting, highly effective "hands-on" activities should also be introduced into the workshop. For example, participants may be asked to form small review teams and read and review several examples of research project summaries, and then score the summaries and discuss weaknesses and strengths that went into the review score.

However, these interactive and "hands-on" strategies for workshops benefit enormously from follow-on, individual consultations between each new faculty and a workshop presenter. This allows workshop presenters or research development staffers to take the overarching competitive strategies and information from the workshops and relate them in a very finely grained fashion to the specific research grant-writing needs of the individual faculty member. New faculty bring their own unique questions to many of the general areas where advice is sought and offered on grant writing, such as how to interpret reviews for a possible resubmittal, where to find funding for research in the humanities, how to organize a research narrative, how are proposals reviewed, how to understand the culture of different funding agencies, among countless others.

The consultations, typically performed by research development staff linked to workshops, address specifically the singular questions of particular faculty. In a workshop, by contrast, a presenter will always try to first answer participants' specific questions, but then will follow that with generic answers for the benefit of the entire audience. Workshops can't spend the considerable time required to respond specifically to individual questions, nor are workshop participants as a group prepared for a presenter to go into detail on any one topic of interest to only one person in the group.

Think of grant-writing workshops for new faculty as offering global generic advice and competitive strategies on writing a research proposal—grant writing from the so called "*30,000 foot level*." At this level, the presenter might explain, in a generic way, to a disciplinarily and agency-diverse audience the key common narrative components and organization of an *Introduction and Background* section of the research narrative, or how to establish the value-added benefits of the proposed research by demonstrating its significance and context in the field.

Now think of the individual consultations with a faculty member as applying the overarching "theory" of research grant writing ***in very specific ways*** to the many unique questions each individual faculty member will have when transitioning from the generic overview of grant writing (~85 percent of grant-writing advice is common across agencies and disciplines) to the very specific requirements of writing an actual proposal on a specific disciplinary topic, to a specific agency, to a specific program area with the agency, to a specific funding opportunity within the program area, to a specific mission objective of the solicitation, and to a specific set of review criteria.

The birth of a competitive research proposal often begins with consultations between a new faculty member and an experienced research development staffer functioning, so to speak, as a proposal midwife. These individual consultations improve the overall success of a university funding portfolio by assisting one new faculty member at a time and thereby enhancing the overall competitiveness of the research enterprise.

Research at Undergraduate Institutions

By **Mike Cronan**, co-publisher

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Earlier this month, NSF posted a new solicitation (NSF 14-579) for the long-standing *Facilitating Research at Primarily Undergraduate Institutions (PUI): Research in Undergraduate Institutions (RUI) and Research Opportunity Awards (ROA) program*. ***NSF expects to make 255 awards for a total of $56 million in this funding cycle across all NSF directorates***. Keep in mind, however, that funding for the program does not come from a separate RUI/ROA funding allocation, but is a part of the research and education funding allocation within various NSF divisions and programs who award the funds at their discretion. Likewise, the guidelines for submitting to any particular opportunity under the RUI program are specific to that program and the NSF Grant Proposal Guide. That process is addressed in the above-referenced RUI/ROA solicitation URL.

In other words, ***NSF does not set aside an allocation to fund RUI/ROA.*** Applicants under this program compete for the same pot of money allocated within divisions, offices, programs, etc. for all applicants. The key distinction that should inform an applicant's decision to submit to this program is that **RUI proposals must contain two key supplemental documents**: (1) A Certification of RUI/ROA Eligibility; and (2) A separate **RUI Impact Statement**. The 5-page **RUI Impact Statement** lies at the heart of the process and differentiates the RUI applicant from other applicants to any specific program or solicitation within a division.

"Proposals for RUI faculty research projects," NSF states, "typically request support for salaries and wages, research assistantships, fringe benefits, travel, materials and supplies, publication costs and page charges, consultant services, essential equipment, field work, research at other institutions, and indirect costs." Moreover, NSF encourages collaborative projects. "The core of a collaborative RUI research proposal," NSF notes, "will include two or more faculty members and several undergraduates from one or more predominantly undergraduate institutions."

Moreover, take note that this current solicitation contains some revisions to processes and guidelines. For example, "This solicitation," NSF notes, "has been modified to indicate that support for instrumentation through this solicitation varies among divisions and offices, and that the Foundation-wide Major Research Instrumentation (MRI) program ***should be explored as a first choice for research instrumentation requests***."

Other important changes to this program are noted in the ***Important Information and Revision Notes*** of the solicitation.

NSF describes three key information points for potential applicants below:

- RUI proposals support PUI faculty in research that engages them in their professional field(s), builds capacity for research at their home institution, and supports the integration of research and undergraduate education.
- ROAs similarly support PUI faculty research, but these awards typically allow faculty to work as visiting scientists at research-intensive organizations where they collaborate with other NSF-supported investigators.

- Eligible PUIs are accredited colleges and universities (***including two-year community colleges***) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all ***NSF-supported fields*** during the combined previous ***two academic years***.

If you are considering a submitting a proposal under the scope of this solicitation, it is important that you first ***contact NSF disciplinary program officers*** to identify specific NSF programs and to determine the feasibility and timing of RUI/ROA requests. General RUI/ROA points of contact are available through the website **HERE.**

That said, one of the most important keys to RUI success is the RUI Impact Statement. Here, however, note NSF instructions related to the ROA: "Since ROA activities typically occur away from the PUI campus, ***a RUI Impact Statement should not be included in a ROA request***; otherwise the same type of information that is supplied for a RUI proposal should also be supplied for a ROA request." However, in recent years, ***over 80% of the RUI/ROA funding has been awarded to RUI proposals***. So writing a compelling RUI Impact Statement addressing the below NSF requirements is critical to success.

"*The [Impact]statement is an opportunity to provide information that will help a reviewer to assess the likely* ***impact of the proposed project on the research environment of the predominantly undergraduate institutions(s); the impact on the career(s) of the faculty participants, and on the ability of the involved department(s) to better prepare students for entry into advanced-degree programs and/or careers in science and engineering.*** *An enhanced departmental environment may be reflected in direct student training in research and in increased involvement of the faculty in competitive research. These factors, in turn, may lead to improved student preparation, curricular impact and faculty development.*

"The RUI Impact Statement should highlight the record of the department(s) and institution(s) in educating undergraduates for science and engineering careers. The statement should also discuss the plans to attract qualified undergraduate students to the project, ***including the criteria for their selection****, and any provisions that will increase the participation of groups underrepresented in science and engineering. It should explain* ***any plans for measuring the effect of project participation on the participating students*** *during and after their undergraduate years. Finally, the RUI Impact Statement should explain the anticipated contribution of any new research tools (instrumentation, databases, etc.) to both the education and research opportunities for students and faculty.*

"The RUI Impact Statement may include information on factors affecting research productivity, ***such as teaching loads, availability (or lack) of support personnel, nature of experimental and computational facilities, and features of the student population****. It may also describe institutional support for research activity by faculty and students and the anticipated impact of that support on the proposed project*."

Many universities have posted online samples of successful RUI Impact Statements, including the University of Wisconsin – Whitewater (Example 1; Example 2); Buffalo State College; and Montclair State University (Example 1; Example 2). However, the key point to keep in mind is that the Impact Statement needs to make a compelling case for the benefit of the proposed funding as it impacts the faculty, students, and research and educational

infrastructure of your institution. Moreover, you need to make these arguments in the context of the ***NSF core values related to the integration of research and education and to the diversity of the STEM workforce***.

Specifically, NSF recommends that for an RUI proposal "Proposers should also be aware of core strategies that are essential to the fulfillment of NSF's mission, as articulated in *Investing in Science, Engineering, and Education for the Nation's Future: NSF Strategic Plan for 2014-2018*. These strategies are integrated in the program planning and implementation process, of which proposal review is one part. NSF's mission is particularly well-implemented through the integration of research and education and broadening participation in NSF programs, projects, and activities."

Keep in mind that "*RUI proposals are evaluated with all other proposals submitted to a given program in accordance with the Foundation's merit review procedures. The reviewers of these proposals* ***usually include several individuals from predominantly undergraduate institutions****, but also researchers from other institutions who are experts in the particular research area*." When writing the RUI proposal and the Impact Statement, keep the above and below review statements in mind and make sure that whatever they address is woven into the Impact Statement narrative.

Moreover, NSF notes, "*Special reviewer instructions are supplied with the request for reviews. These instructions* ***call attention to the RUI Impact Statement and the special circumstances under which PUI investigators work****.* ***Reviewers are also asked to recognize that the publication rate of PUI investigators and the pace of their research may be slower than at a major research university****.* ***The slower pace can be attributed to heavier teaching loads and limited availability of support personnel, facilities and equipment, as well as the involvement of undergraduates rather than graduate students in the research activities.***

*"****Reviewers will look for indications of impacts such as****: increased faculty involvement in the mainstream of research; direct student experience in research; enhanced departmental ability to prepare students for entry into graduate study or scientific and engineering careers; and creation of a research-enriched learning environment for all students. Evaluation of research instrumentation proposals may consider additional factors, including the criticality of the instrumentation for the research proposed, the expected extent of usage of the instrumentation and the number of investigators and students benefiting and the institution's commitment for operation and maintenance*."

Finally, anyone considering applying to this program will want to give the RUI/ROA solicitation a very close reading to ensure that they submit a highly competitive proposal.

Research Grant Writing Web Resources

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CISE Research Initiation Initiative (CRII) Program Webinar

The National Science Foundation's Directorate for Computer and Information Science and Engineering (CISE) invites you to attend a webinar to learn more about its recently released solicitation, *Computer and Information Science and Engineering (CISE) Research Initiation Initiative (CRII))* (see NSF 14-562; http://www.nsf.gov/pubs/2014/nsf14562/nsf14562.htm). **July 28.**

Partnerships for Innovation: Accelerating Innovation Research- Technology Translation

AIR Presentation Slides

Introduction to Submitting Interdisciplinary Research Proposals to NSF

NSF has long recognized the value of interdisciplinary research in pushing fields forward and accelerating scientific discovery. Important research ideas often transcend the scope of a single discipline or program. NSF also understands that the integration of research and education through interdisciplinary training prepares a workforce that undertakes scientific challenges in innovative ways. Thus, NSF gives high priority to promoting interdisciplinary research and supports it through a number of specific solicitations. NSF also encourages researchers to submit unsolicited interdisciplinary proposals for ideas that are in novel or emerging areas extending beyond any particular current NSF program. This site is meant to be a guide to the different mechanisms through which NSF promotes and supports interdisciplinary research. Here we provide information on whom to contact for assistance in deciding where and how to submit an interdisciplinary proposal. A primary purpose of this site is to assist investigators in submitting an unsolicited interdisciplinary proposal for which there may not be a natural "home" in one of the existing NSF programs.

Educational Grant Writing Web Resources

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Designing Strong Studies: A What Works Clearinghouse Webinar for Researchers

Education decision makers depend on *high quality* research to inform policy and resource allocation in schools. Therefore, education researchers need the tools to design strong experiment studies that are useful in understanding what works for students. Join us on Monday, July 21, 2014, from 1:00–2:30 p.m. EDT for a look at how to design strong studies testing the effectiveness of interventions in schools and classrooms. This webinar will draw on WWC resources to explain how to design and execute strong studies, with specific examples for studying interventions targeting teachers.

In this interactive webinar sponsored by the Institute of Education Sciences at the U.S. Department of Education, learn about the key features of strong effectiveness studies and how to embed those features in your own research. The presentation will include guidance on how to develop the strongest study design possible, identify and maintain a research sample, plan for and collect all necessary data, and conduct analysis so that your study is consistent with WWC's rigorous design standards. The presentation will also recommend strategies to prevent or address some of the common pitfalls in effectiveness research.

If you are interested in attending the webinar, please register by clicking this link. We will also answer your questions about study design as they relate to WWC standards. You may submit questions in advance of the webinar for panelists to address through the WWC contact us form.

Five Steps for Structuring Data-Informed Conversations and Action in Education

- Purpose: Provide a framework and the skills and language needed to support an informed conversation around data.
- Description: A facilitation guide containing leading questions and blank activity forms.

Pacific Education Research Resource Module 1: Education Logic Model Application

- Purpose: Assist education stakeholders in creating logic models to monitor and evaluate programs and initiatives.
- Description: A step-by-step electronic program that guides users through the processes of designing a logic model.

Why create a logic model of your education program?

"Logic models are an invaluable tool for teachers, administrators, policy makers and evaluators to visually represent the structure, process, and goals of a program, both conceptual and

actionable," notes REL Pacific. "Logic models can contribute to the success of your program in the following ways:

- making the intention behind your program clear;
- introducing common language and references for collaborators in your program;
- defining resources and outlining activities, as in an action plan;
- showing quantitative outputs as well as short-, mid-, or long-term effects;
- using a visual display as a proven and effective learning tool;
- illustrating the *process* of your program, speaking to its value beyond the measureable effects; and
- using theories of change to guide the planning process, making lessons learned more evident in the evaluation stage."

The Effects of Increased Learning Time on Student Academic and Nonacademic Outcomes: Findings from a Meta-Analytic Review

REL Appalachia conducted a systematic review of the research evidence on the effects of increased learning time. After screening more than 7,000 studies, REL Appalachia identified 30 that met the most rigorous standards for research. A review of those 30 studies found that increased learning time does not always produce positive results. However, some forms of instruction tailored to the needs of specific types of students were found to improve their circumstances. Specific findings include:

- Increased learning time promoted student achievement in mathematics and literacy when instruction was led by a certified teacher and when teachers used a traditional instructional style (i.e., the teacher is responsible for the progression of activities and students follow directions to complete tasks).
- Increased learning time improved literacy outcomes for students performing below standards.
- Increased learning time improved social-emotional skills of students with attention deficit/hyperactivity disorder.

Report from the Field: How Cross-Sector Collaborations are Advancing STEM Learning

STEM learning ecosystems harness unique contributions of educators, policymakers, families, and others in symbiosis toward a comprehensive vision of science, technology, engineering, and math (STEM) education for all children. This paper, by Kathleen Traphagen & Saskia Traill and commissioned by the Noyce Foundation, describes the attributes and strategies of 15 leading ecosystem efforts throughout the country that include a cross-sector collaboration among formal K-12 education, after-school or summer programs, and/or some type of science-expert organization.

STEM Learning Is Everywhere: Summary of a Convocation on Building Learning Systems (Prepublication)

Science, technology, engineering, and mathematics (STEM) permeate the modern world. The jobs people do, the foods they eat, the vehicles in which they travel, the information they

receive, the medicines they take, and many other facets of modern life are constantly changing as STEM knowledge steadily accumulates. Yet STEM education in the United States, despite the importance of these subjects, is consistently falling short. Many students are not graduating from high school with the knowledge and capacities they will need to pursue STEM careers or understand STEM-related issues in the workforce or in their roles as citizens. For decades, efforts to improve STEM education have focused largely on the formal education system. Learning standards for STEM subjects have been developed, teachers have participated in STEM-related professional development, and assessments of various kinds have sought to measure STEM learning. But students do not learn about STEM subjects just in school. Much STEM learning occurs out of school--in organized activities such as afterschool and summer programs, in institutions such as museums and zoos, from the things students watch or read on television and online, and during interactions with peers, parents, mentors, and role models.

To explore how connections among the formal education system, afterschool programs, and the informal education sector could improve STEM learning, a committee of experts from these communities and under the auspices of the Teacher Advisory Council of the National Research Council, in association with the California Teacher Advisory Council organized a convocation that was held in February 2014. Entitled "STEM Learning Is Everywhere: Engaging Schools and Empowering Teachers to Integrate Formal, Informal, and Afterschool Education to Enhance Teaching and Learning in Grades K-8," the convocation brought together more than 100 representatives of all three sectors, along with researchers, policy makers, advocates, and others, to explore a topic that could have far-reaching implications for how students learn about STEM subjects and how educational activities are organized and interact. This report is the summary of that meeting. STEM Learning is Everywhere explores how engaging representatives from the formal, afterschool, and informal education sectors in California and from across the United States could foster more seamless learning of STEM subjects for students in the elementary and middle grades. The report also discusses opportunities for STEM that may result from the new expectations of the Next Generation Science Standards and the Common Core Standards for Mathematics and Language Arts.

Agency Research News

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Proposers Day Announcement for Machine Intelligence from Cortical Networks (MICRONS) program IARPA-BAA-14-06

The Intelligence Advanced Research Projects Activity (IARPA) will host a Proposers' Day conference for the Machine Intelligence from Cortical Networks (MICrONS) program on Thursday, July 17, 2014 **in anticipation of the release of a new solicitation in support of the program.** The conference will be held from 8:00 AM to 5:00 PM EST in the College Park, Maryland metropolitan area. The conference will provide information on the MICrONS program, address questions from potential proposers, and provide a forum for potential proposers to present their capabilities for teaming opportunities. **This announcement serves as a pre-solicitation notice and is issued solely for informational and planning purposes**. The Proposers' Day conference does not constitute a formal solicitation for proposals or proposal abstracts. Conference attendance is voluntary and is not required to propose to future solicitations (if any) associated with this program.

DE-FOA-0001157: RFI: Wind Energy Bat and Eagle Impact Minimization Technologies and Field Testing Opportunities

The Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) invites input from the public regarding a potential funding opportunity to advance the readiness of technologies intended to reduce mortality of bats, eagles, or other wildlife at operational wind turbines or wind facilities. EERE in particular seeks input on the current state of wildlife impact mitigation and minimization technologies, conditions under which technology vendors or developers would consider participating in a campaign to field test and validate their technologies, and the conditions under which wind farm owner/operators would consider hosting field testing and validation activities at their operational facilities. Finally, EERE seeks input on a proposed framework for conducting both technology field testing and validation activities and focused research and development (R&D) to advance wildlife impact minimization technologies towards commercialization, and on how to prioritize funding for research within this framework. The purpose of this Request for Information (RFI) is to gather feedback from stakeholders prior to DOE potentially issuing a Funding Opportunity Announcement (FOA). This RFI is not a FOA; therefore, DOE is not accepting applications at this time. Responses to this RFI must be submitted electronically to WindMitigationRFI@ee.doe.gov no later than 5:00PM ET on July 25, 2014. Responses must be provided as a Microsoft Word (.docx or .doc) attachment to the email, of no more than 10 pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted. EERE will not respond to individual submissions or publish publicly a compendium of responses.

USAID Call For Partnership Concept Papers Middle East Water Security Initiative in Egypt, Jordan, Lebanon, West Bank/Gaza, and Yemen

This program is authorized in accordance with Part 1 of the Foreign Assistance act of 1961, as amended. Through this Addendum to the FY 2014 and FY 2015 Global Development Alliance

(GDA) Annual Program Statement (APS) No. APS-OAA-14-000001 (the GDA APS), USAID/Middle East is making a special call for the submission of **Concept Papers focused on the Middle East Water Security Initiative** (MWSI) by **October 1**. The goal of the MWSI is to improve sustainable, long-term access to water for up to 20 million people living in the Middle East. The MWSI will target Egypt, Jordan, Lebanon, West Bank/Gaza, and Yemen and promote sharing of best practices and lessons learned among the five participating countries. To achieve its bold but doable goal, MWSI will engage both international and local actors from the private sector, civil society, public sector, and other organizations to (a) support dynamic young entrepreneurs, researchers, and consumers with opportunities to develop, test, scale-up and market **"water-smart" technologies**; and (b) increase awareness of and local ability to address water security challenges in the Middle East through behavior change and advocacy campaigns.

DE-FOA-0001143 Integrated Biorefinery Lessons Learned and Best Practices

The Office of Energy Efficiency and Renewable Energy (EERE), within the Department of Energy (DOE), accelerates development and facilitates deployment of energy efficiency and renewable energy technologies. EERE, through its Bioenergy Technologies Office (BETO) is seeking public comment on Integrated Biorefinery Lessons Learned and Best Practices. Since 2006, many companies that specialize in converting biomass to fuels and products have taken the next step to build and operate integrated pilot, demonstration, and commercial scale facilities. During the design, financing, and construction of these projects many lessons learned and best practices have been developed. BETO compiles and updates the lesson learned and best practices information from its portfolio of integrated biorefinery projects as they move forward towards completion. This is a Request for Information (RFI) only. DOE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. DOE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI. Information on where to submit questions regarding the content of this RFI and where to submit questions regarding submission of responses can be found in the full RFI posted on the EERE Exchange website at https://eere-exchange.energy.gov. Responses to this RFI must be submitted electronically to IBR_LL_RFI@go.doe.gov no later than 5:00pm (EDT) on **July 22**, 2014. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Only electronic responses will be accepted. THIS RFI IS NOT A FUNDING OPPORTUNITY ANNOUNCEMENT (FOA). THEREFORE, DOE IS NOT ACCEPTING APPLICATIONS.

RFI: Fuel Cells for Continuous On-Board Recharging Application for Battery Electric Light-Duty Vehicles Department of Energy

The Fuel Cell Technologies Office is a key component of the Department of Energy's (DOE) Energy Efficiency and Renewable Energy (EERE) portfolio. EERE seeks to provide clean, safe, secure, affordable, and reliable energy from diverse domestic resources, along with the benefits of increased energy security and reduced criteria pollutants and greenhouse gas emissions. DOE seeks input from interested stakeholders on fuel cell technology validation, commercial acceleration, and potential deployment strategies for continuous fuel cell

rechargers on board light-duty electric vehicles in fleets. Information on where to submit questions regarding the content of the Request for Information (RFI) and where to submit responses can be found in the full RFI document posted on the EERE Exchange website at https://eere-exchange.energy.gov . THIS RFI IS NOT A FUNDING OPPORTUNITY ANNOUNCEMENT (FOA); THEREFORE, DOE IS NOT ACCEPTING APPLICATIONS. **Respond by August 7**.

The National Institute of Justice Randomized Controlled Trial Challenge in Criminal Justice Agencies

The National Institute of Justice (NIJ) was created in 1968 to facilitate research and scientific inquiry to help state, local and tribal governments address crime problems and challenges in the American criminal justice system. Of the various scientific methods of inquiry available, randomized controlled trials (RCTs) have the greatest likelihood of producing sound evidence because of the ability of random assignment to isolate a specific treatment of interest from all of the other factors that influence any given outcome.

RCTs are the scientific gold standard for evaluating programs. They are pervasive in medicine and marketing as part of the standard process for making decisions and advancing the field. The criminal justice system has been slow to adopt RCTs as the standard process for testing programs and could do more with RCTs to determine whether a strategy or intervention makes a meaningful difference. For example, the Coalition for Evidence-Based Policy noted that when the Institute of Education Sciences assessed 120 education programs using RCTs, they found that 90 percent of those education programs had little or no effect. They also found that 60 percent of proposed medical interventions that had already been through some initial screening were not effective when evaluated with an RCT.

To encourage the use of RCTs in the criminal justice field, NIJ is issuing this Challenge for timely and innovative RCTs that address meaningful criminal justice problems. NIJ wants to encourage criminal justice agencies to use rigorous research methods to craft solutions to the problems they face. This competition hopes to create incentives for criminal justice agencies to use low-cost RCTs as a standard and straightforward approach to answering their questions and conducting their day-to-day business operations.

Agency Reports, Workshops & Research Roadmaps

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NREL Geothermal Exploration Policy Mechanisms: Lessons for the United States from International Applications

According to a U.S. Geological Survey (USGS) estimate, the United States has nearly 40 gigawatts (GW) of power generation potential from identified and unidentified conventional geothermal resources (Williams et al. 2008a).1 To realize these resources, geothermal project developers must overcome several obstacles that are unique among the renewable energy technologies. One significant barrier in geothermal project development is the high investment risk during the resource exploration phase, which can make financing a geothermal project difficult as compared to other renewable energy sources, including wind and solar (Salmon et al. 2011).

Delivery and Evaluation of Sexual Assault Forensic (SAFE) Training Programs (pdf, 240 pages)

This study evaluated the effectiveness of the International Association of Forensic Nurses (IAFN) SAFE training programs. The programs used an innovative blended learning approach, which included a didactic portion online over a 12-week period and a two-day simulated clinical skills workshop. Healthcare clinicians (e.g., registered nurses) from across the United States were enrolled in the training. Students completed a Web-based survey prior to the training to examine three factors that may impact training completion: student characteristics, motivation and external barriers. The qualitative interviews suggested that the clinical training helped clarify, broaden or solidify the content covered in the online modules. The evaluation's overall assessment is that the IAFN SAFE training curriculum and blended training model offer a strong foundation that can be built upon to meet the diverse learning needs of clinicians across the country.

Complex Operational Decision Making in Networked Systems of Humans and Machines: A Multidisciplinary Approach

Over the last two decades, computers have become omnipresent in daily life. Their increased power and accessibility have enabled the accumulation, organization, and analysis of massive amounts of data. These data, in turn, have been transformed into practical knowledge that can be applied to simple and complex decision making alike. In many of today's activities, decision making is no longer an exclusively human endeavor. In both virtual and real ways, technology has vastly extended people's range of movement, speed and access to massive amounts of data. Consequently, the scope of complex decisions that human beings are capable of making has greatly expanded. At the same time, some of these technologies have also complicated the decision making process. The potential for changes to complex decision making is particularly significant now, as advances in software, memory storage and access to large amounts of multimodal data have dramatically increased. Increasingly, our decision making process integrates input from human judgment, computing results and assistance, and networks. Human beings do not have the ability to analyze the vast quantities of computer-generated or -

mediated data that are now available. How might humans and computers team up to turn data into reliable (and when necessary, speedy) decisions?

Complex Operational Decision Making in Networked Systems of Humans and Machines explores the possibilities for better decision making through collaboration between humans and computers. This study is situated around the essence of decision making; the vast amounts of data that have become available as the basis for complex decision making; and the nature of collaboration that is possible between humans and machines in the process of making complex decisions. This report discusses the research goals and relevant milestones in several enabling subfields as they relate to enhanced human-machine collaboration for complex decision making; the relevant impediments and systems-integration challenges that are preventing technological breakthroughs in these subfields; and a sense of the research that is occurring in university, government and industrial labs outside of the United States, and the implications of this research for U.S. policy. The development of human-machine collaboration for complex decision making is still in its infancy relative to where cross-disciplinary research could take it over the next generation. Complex Operational Decision Making explores challenges to progress, impediments to achieving technological breakthroughs, opportunities, and key research goals.

Baccalaureate and Beyond: A First Look at the Employment Experiences and Lives of College Graduates, 4 Years On

This report presents initial findings about the employment outcomes of bachelor's degree recipients approximately 4 years after they completed their 2007–08 degrees. These findings are based on data from the second follow-up of the Baccalaureate and Beyond Longitudinal Study (B&B:08/12), a nationally representative longitudinal sample survey of students who completed the requirements for a bachelor's degree during the 2007–08 academic year. The study addresses questions related to bachelor's degree recipients' education and employment experiences and includes two follow-ups. The first follow-up, which was conducted 1 year after graduation, explored both undergraduate education experiences and early postbaccalaureate employment and enrollment. This second follow-up, conducted in 2012, examines bachelor's degree recipients' labor market experiences and enrollment in additional postsecondary degree programs through the 4th year after graduation.

New Funding Opportunities

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Content Order

New Funding Posted Since June 15 Newsletter
URL Links to New & Open Funding Solicitations
Solicitations Remaining Open from Prior Issues of the Newsletter
Open Solicitations and BAAs

[User Note: URL links are active on date of publication, but if a URL link breaks or changes a Google search on the key words will typically take you to a working link.]

New Funding Solicitations Posted Since June 15 Newsletter

Advanced Analytics and Data Science for Naval Warfare Planning and Execution
The Office of Naval Research is interested in receiving white papers and full proposals for Advanced Technology Development that will forge major advancements towards a well developed and robust Naval Big Data Ecosystem that enables more sophisticated and powerful analytics for supporting Naval Warfighting applications. To accomplish this objective, ONR seeks to make advancements in four key Thrust Areas: (1) Development of a robust Naval Data Science foundation that addresses data representations and ontologies required to support a wide range of Naval Warfare Mission Areas; (2) Identifying, acquiring, ingesting, and indexing Data Sources pertinent to Naval Warfighting Missions; (3) Development of advanced analytics for Naval Warfare Mission Areas; and (4) Development of data protection and security mechanisms to ensure the integrity of data used throughout the analytic process. The overall objective of this effort is to achieve unprecedented access to data; to extract new and deeper insights by exploiting data in new and innovative ways; and to apply those new insights to improving Naval Warfare activities. A major goal of this effort is to significantly improve the Naval community's real-time ability to bring together information from National systems and sensors with information from Naval combat and weapon systems and sensors. In the past, the ability to merge these types of information to support tactical warfighting has been extremely limited. Emerging technologies (such as Cloud, Computing, Big Data, and more effective Cross Domain technologies) are enabling us to overcome many of the technological and infrastructure limitations that limit the ability to integrate and exploit National and tactical data sources. This BAA seeks to leverage the power of these emerging technologies to develop innovative and ground-breaking analytic capabilities that enhance threat assessment and prediction, combat ID, integrated fires, and Naval mission planning and execution. Enhancements to these capabilities will be focused on two Naval Warfare Areas: Anti-Submarine Warfare and Integrated Air/Missile Defense. **White Papers: July 18, 2014; Proposals: October 3, 2014**.

National Priorities: Systems-Based Strategies to Improve The Nation's Ability to Plan And Respond to Water Scarcity and Drought Due to Climate Change

The U.S. Environmental Protection Agency (EPA) is seeking applications that use a systems approach to investigate how drought, climate change, and land use practices impact the quality and availability of surface and groundwater sources nationally. EPA is also interested in research that will help communities anticipate, plan and adapt to these new climate scenarios in the future.

Clean, safe and available water resources are essential for humans and ecosystems to thrive. Many factors influence water demand and availability such as population growth, changes in land use practices, and higher water demands from different sectors. Nationally, as weather patterns change (drought, flash floods, wildfires, etc), climate will increasingly play a major role in determining water quality and availability. This research will investigate the direct impact of climate change on water scarcity and drought, and how it affects the quality and availability of our water resources. As communities address their water needs, there are innovative opportunities to more effectively and sustainably.

Protecting our nation's water resources is one of EPA's top priorities. EPA's Safe and Sustainable Water Resources Research Program is designed to provide the science and innovative technologies needed to protect our nation's water resources. Significant threats to our resources include increased demand, changing land uses, aging water infrastructure and climate change/ variability. In facing these threats, the SSWR Program focuses on two main areas: ensuring water quality and availability, and promoting a sustainable water infrastructure. For more information on this unique funding opportunity, please visit: National Priorities: Systems-Based Strategies to Improve The Nation's Ability to Plan And Respond to Water Scarcity and Drought Due to Climate Change. **Due August 5.**

Innovation Corps (I-Corps™) Team Training Pilot Program for NIH Phase I SBIR and STTR

The National Institutes of Health (NIH), through its Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, seeks to develop and nurture a national innovation ecosystem that builds upon biomedical research to develop technologies, products and services that benefit society. Toward meeting this objective, the NIH is collaborating with the National Science Foundation (NSF) to help accelerate the commercialization of early stage biomedical technologies by leveraging the NSF's established I-Corps team training program, which is focused on educating researchers and technologists on how to translate technologies from the lab into the marketplace. Under this funding opportunity announcement (FOA), participating NIH Institutes and Centers will provide administrative supplement awards to a pilot cohort of currently-funded SBIR and STTR Phase I grantees to support entrepreneurial training under the I-Corps Team Training Pilot Program at the NIH. The program is designed to provide three-member project teams with access to instruction and mentoring in order to accelerate the translation of technologies currently being developed with NIH SBIR and STTR funding. It is anticipated that outcomes for the I-Corps teams participating in this program will include significantly refined commercialization plans and well-informed pivots in their overall commercialization strategies. Prospective applicants

are strongly encouraged to contact NIH Scientific/Research staff for more information about this pilot program before applying. **Due August 7.**

Advanced Technological Education (ATE)

Changes in the ATE program solicitation for FY 2015, FY 2016, and FY 2017 include:
A new focus area for ATE projects called "**ATE-Coordination Networks**" is described.
The Targeted Research on Technician Education track has been expanded. This track now supports planning, exploratory research and development, and full scale research and development proposals. All projects must demonstrate substantive faculty partnerships between 2-year and 4-year colleges and universities. Proposals submitted for a Center renewal may submit up to five pages on Results of Prior Support in the supplementary documents section of the proposal, and refer the reader to that section in the Project Description section.
The funding duration and size of award for the Centers track has been changed, and resource centers renamed to support centers. Large Scale Material Development projects are no longer supported. An additional requirement is described under "Reporting Requirements". This is a requirement to work with ATE Central to archive resources developed with grant funds.
For proposals describing the development of new learning materials and computer software source code developers are encouraged to license these materials (See text under "Reporting Requirements").

With an emphasis on two-year colleges, the Advanced Technological Education (ATE) program focuses on the education of technicians for the high-technology fields that drive our nation's economy. The program involves partnerships between academic institutions and industry to promote improvement in the education of science and engineering technicians at the undergraduate and secondary school levels. The ATE program supports curriculum development; professional development of college faculty and secondary school teachers; career pathways to two-year colleges from secondary schools and from two-year colleges to four-year institutions; and other activities. Another goal is articulation between two-year and four-year programs for K-12 prospective STEM teachers that focus on technological education. The program invites research proposals that advance the knowledge base related to technician education. **Due October 6.**

Capacity Building Grants for Non Land Grant Colleges of Agriculture Program

NLGCA Institutions may use the funds: (a) to successfully compete for funds from Federal grants and other sources to carry out educational, research, and outreach activities that address priority concerns of national, regional, State, and local interest; (b) to disseminate information relating to priority concerns to interested members of the agriculture, renewable resources, and other relevant communities, the public, and any other interested entity; (c) to encourage members of the agriculture, renewable resources, and other relevant communities to participate in priority education, research, and outreach activities by providing matching funding to leverage grant funds; and (d) through: (1) the purchase or other acquisition of equipment and other infrastructure (not including alteration, repair, renovation, or construction of buildings); (2) the professional growth and development of the faculty of the NLGCA Institution; and (3) the development of graduate assistantships. **Due September 5**.

Digital Humanities Start-up Grants National Endowment for the Humanities

The Digital Humanities Start-Up Grants program awards relatively small grants to support the planning stages of innovative projects that promise to benefit the humanities. Proposals should be for the planning or initial stages of digital initiatives in any area of the humanities. Digital Humanities Start-Up Grants may involve research that brings new approaches or documents best practices in the study of the digital humanities; planning and developing prototypes of new digital tools for preserving, analyzing, and making accessible digital resources, including libraries and museums digital assets; scholarship that focuses on the history, criticism, and philosophy of digital culture and its impact on society; scholarship or studies that examine the philosophical or practical implications and impact of the use of emerging technologies in specific fields or disciplines of the humanities, or in interdisciplinary collaborations involving several fields or disciplines; ¿ innovative uses of technology for public programming and education incorporating both traditional and new media; and new digital modes of publication that facilitate the dissemination of humanities scholarship in advanced academic as well as informal or formal educational settings at all academic levels. Innovation is a hallmark of this grant category, which incorporates the high risk/high reward paradigm often used by funding agencies in the sciences. NEH is requesting proposals for projects that take some risks in the pursuit of innovation and excellence. Digital Humanities Start-Up Grants should result in plans, prototypes, or proofs of concept for long-term digital humanities projects prior to implementation. **Due September 11.**

Enduring Questions National Endowment for the Humanities

The NEH Enduring Questions grant program supports faculty members in the preparation of a new course on a fundamental concern of human life as addressed by the humanities. This question-driven course would encourage undergraduates and teachers to join together in a deep and sustained program of reading in order to encounter influential ideas, works, and thinkers over the centuries. **Due September 11.**

Interdisciplinary Research in Hazards and Disasters (Hazards SEES)

Hazards SEES is a program involving multiple NSF Directorates and Offices (CISE, ENG, GEO, MPS, OIIA, and SBE) that seeks to: (1) advance understanding of the fundamental processes associated with specific natural hazards and technological hazards linked to natural phenomena, and their interactions; (2) better understand the causes, interdependences, impacts, and cumulative effects of these hazards on individuals, the natural and built environment, and society as a whole; and (3) improve capabilities for forecasting or predicting hazards, mitigating their effects, and enhancing the capacity to respond to and recover from resultant disasters. The overarching goal of Hazards SEES is to catalyze well-integrated interdisciplinary research efforts in hazards-related science and engineering in order to reduce the impact of hazards, enhance the safety of society, and contribute to sustainability.

Hazards SEES seeks research projects that will productively cross the boundaries of the atmospheric and geospace, earth, and ocean sciences; computer and information science (including cyberinfrastructure); engineering; mathematics and statistics; and social, economic, and behavioral sciences. Successful proposals will integrate across multiple disciplines to

promote research that advances new paradigms that contribute to creating a society resilient to hazards. Hazards SEES intends to transform hazards and disaster research by fostering the development of interdisciplinary research that allows for appropriately targeted data collection, integration, and management; modeling (including predictive models for real-time decision making); visualization and simulation; data analytics and data-driven discovery; real-time sensing; cross-cutting knowledge development; and synthesis of applicable models and theory. Proposals must demonstrate the inclusion of the appropriate expertise to address the research questions, hypotheses, and problems being posed. **LOI September 26 ; full November 28.**

BAA-RQKD-2014-0001 Open Innovation and Collaboration Department of Defense Air Force -- Research Lab

Open innovation is a methodology to capitalize on diverse, often non-traditional talents and insights, wherever they reside, to solve problems. Commercial industry has proven open innovation to be an effective and efficient mechanism to overcome seemingly impossible technology and/or new product barriers. AFRL has actively and successfully participated in collaborative open innovation efforts. While these experiences have demonstrated the power of open innovation in the research world, existing mechanisms do not allow AFRL to rapidly enter into contractual relationships to further refine or develop solutions that were identified. This BAA will capitalize on commercial industry experience in open innovation and the benefits already achieved by AFRL using this approach. This BAA will provide AFRL an acquisition tool with the flexibility to rapidly solicit proposals through Calls for Proposals and make awards to deliver innovative technical solutions to meet present and future compelling Air Force needs as ever-changing operational issues become known. The requirements, terms and specific deliverables of each Call for Proposals will vary depending on the nature of the challenge being addressed. It is anticipated that Call(s) for Proposals will address challenges in (or the intersection between) such as the following technology areas: Materials: - Exploiting material properties to meet unique needs - Material analysis, concept / prototype development, and scale up Manufacturing Processes that enable affordable design, production and sustainment operations Aerospace systems: - Vehicle design, control, and coordinated autonomous and/or manned operations - Power and propulsion to enable next generation systems Human Effectiveness: - Methods and techniques to enhance human performance and resiliency in challenging environments - Man – Machine teaming and coordinated activities Sensors and Sensing Systems: - Sensor and sensing system concept development, design, integration and prototyping - Data integration and exploitation. **Open to July 12, 2019.**

URL Links to New & Open Funding Solicitations

Links verified: Wednesday, February 19, 2014

- **HHS Grants Forecast**
- **American Cancer Society Index of Grants**
- **SAMHSA FY 2014 Grant Announcements and Awards**
- **DARPA Microsystems Technology Office Solicitations**
- **Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)**

- Bureau of Educational and Cultural Affairs, Open Solicitations, DOS
- ARPA-E Funding Opportunity Exchange
- DOE Funding Opportunity Exchange
- NIAID Funding Opportunities List
- NPS Broad Agency Announcements (BAAs)
- NIJ Current Funding Opportunities
- NIJ Forthcoming Funding Opportunities
- Engineering Information Foundation Grant Program
- Comprehensive List of Collaborative Funding Mechanisms, NORDP
- ARL Funding Opportunities — Open Broad Agency Announcements (BAA)
- HHS Grants Forecast
- American Psychological Association, Scholarships, Grants and Awards
- EPA 2014 Science To Achieve Results (STAR) Research Grants
- NASA Open Solicitations
- Defense Sciences Office Solicitations
- The Mathematics Education Trust
- EPA Open Funding Opportunities
- CDMRP FY 2014 Funding Announcements
- Office of Minority Health
- Department of Justice Open Solicitations
- DOE/EERE Funding Opportunity Exchange
- New Funding Opportunities at NIEHS (NIH)
- National Human Genome Research Institute Funding Opportunities
- Army Research Laboratory Open Broad Agency Announcements (BAA)
- SBIR Gateway to Funding
- Water Research Funding
- Fellowship and Grant Opportunities for Faculty Humanities and Social Sciences
- DARPA Current Solicitations
- Office of Naval Research Currently Active BAAs
- HRSA Health Professions Open Opportunities
- NIH Funding Opportunities Relevant to NIAID
- National Institute of Justice Current Funding Opportunities
- Funding Opportunities by the Department of Education Discretionary Grant Programs
- EPA's Office of Air and Radiation (OAR) Open Solicitations
- NETL Open Solicitations
- DoED List of Currently Open Grant Competitions
- Foundation Center RFP Weekly Funding Bulletin

Solicitations Remaining Open from Prior Issues of the Newsletter

NIH Science Education Partnership Award (SEPA) (R25)

The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. The goal of the Science Education Partnership Award (SEPA) program is to invest in educational activities that enhance the training of a workforce to meet the nation's biomedical, behavioral and clinical research needs. To this end, this funding opportunity announcement (FOA) encourages the development of innovative educational activities for pre-kindergarten to grade 12 (P-12), teachers and students from underserved communities with a focus on Courses for Skills Development, Research Experiences, Mentoring Activities, Curriculum or Methods Development or Informal science Education (ISE) exhibits, and Outreach activities. **Due July 30.**

DE-FOA-0001139 Atmospheric System Research

The Atmospheric System Research Program (ASR) in the Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S. Department of Energy (DOE), supports research that uses laboratory studies or field data from the Atmospheric Radiation Measurement (ARM) Climate Research Facility, along with process level models, to study key cloud, aerosol, precipitation, and radiative transfer processes that are relevant to improving the accuracy of regional and global climate model predictions. Key ASR science goals are to determine the properties of, and interactions among, aerosols, clouds, precipitation, and radiation that are most critical to understand in order to improve their representation in climate models; ascertain the roles of atmospheric dynamics, thermodynamic structure, radiation, surface properties, and chemical and microphysical processes in the life cycles of aerosols and clouds; and identify and quantify process es along the aerosol-cloud-precipitation continuum that affect radiative fluxes at the surface and top of the atmosphere and radiative and latent heating rate profiles. ASR also supports research that develops and evaluates models of these afore-mentioned processes. More information on the ASR program is available HERE. **Due July 31.**

RFA-OAA-14-000029 Feed the Future Biotechnology Partnership

Over the past decade, USAID has funded a consortium of institutions in Asia and Africa under the Agricultural Biotechnology Support Program to use modern biotechnology, particularly genetic engineering, to develop products to address major production constraints for which conventional plant breeding tools have been ineffective. The work has included development of disease and nematode resistant banana, fruit and shoot borer resistant eggplant (Bt Eggplant), and late blight resistant potato (LBR Potato). The Feed the Future Biotechnology Partnership, for which applications are requested by this RFA, will lead and manage a product development and capacity-building program supporting development of late blight resistant potato in Bangladesh, India, and Indonesia, as well as fruit and stem borer resistant eggplant in Bangladesh, India and the Philippines. **Due August 1 ($10 million).**

NSF Opportunities for Promoting Understanding through Synthesis

All four clusters within the Division of Environmental Biology (Population and Community Ecology, Ecosystem Science, Evolutionary Processes, and Systematics and Biodiversity Science) encourage the submission of proposals aimed at synthesizing a body of related research

projects conducted by a single individual or a group of investigators over an extended period. OPUS proposals will often be appropriately submitted in mid-to-late career, but will also be appropriate early enough in a career to produce unique, integrated insight useful both to the scientific community and to the development of the investigator's future work. In cases where multiple scientists have worked collaboratively, an OPUS award will provide support for collaboration on a synthesis. **Due August 1.**

ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)

The goals of the ADVANCE program are (1) to develop systemic approaches to increase the representation and advancement of women in academic STEM careers; (2) to develop innovative and sustainable ways to promote gender equity in the STEM academic workforce; and (3) to contribute to the development of a more diverse science and engineering workforce. ADVANCE also has as its goal to contribute to and inform the general knowledge base on gender equity in the academic STEM disciplines. There are three tracks with distinct purposes. The Institutional Transformation (IT) track is meant to produce large-scale comprehensive change and serve as a locus for research on gender equity and institutional transformation for academic STEM. The Institutional Transformation Catalyst (IT Catalyst) track is meant either to conduct self-assessment or to implement unique strategies – either adapted from those found effective in the IT track or ones designed to be responsive to the unique environments of eligible institutions – and evaluate their effectiveness. **Multiple deadlines beginning August 11.**

Geography and Spatial Sciences Doctoral Dissertation Research Improvement Awards

The Geography and Spatial Sciences Program sponsors research on the geographic distributions and interactions of human, physical, and biotic systems on Earth. Investigators are encouraged to propose plans for research about the nature, causes, and consequences of human activity and natural environmental processes across a range of scales. Projects on a variety of topics qualify for support if they offer promise of contributing to scholarship by enhancing geographical knowledge, concepts, theories, methods, and their application to societal problems and concerns. **Due August 14.**

Cultural Anthropology Program - Doctoral Dissertation Research Improvement Grants

As part of its effort to encourage and support projects that explicitly integrate education and basic research, CA provides support to enhance and improve the conduct of doctoral dissertation projects carried out by doctoral students enrolled in U.S. universities who are conducting scientific research that enhances basic scientific knowledge. **Due August 15.**

14-SN-0012 Compact High-Density Tactical Energy Storage Office of Naval Research

The Office of Naval Research (ONR) is interested in receiving proposals on the topic of "Compact High-Density Tactical Energy Storage." The objective is to encourage innovation, advance technology development, and foster technology transition that benefits future war-fighters and meets US Marine Corps future needs. One example of USMC future needs for energy storage is documented in the 2012 Marine Corps Science & Technology Strategic Plan1

that identifies Expeditionary Energy Science & Technology Objective, EE STO-04, entitled "Energy Storage Other than Liquid" as a technology needed to bridge the gap between on-site energy harvesting and demand. Another example is the 2011 Marine Corps Initial Capabilities Document (ICD) for Expeditionary Energy, Water and Waste2 which identifies five gaps to be addressed by its Mobile Electric Hybrid Power Sources (MEHPS) initiative: 1) Lack of existing capability to automatically match load to demand (3.LC.1); 2) Lack existing capability to autonomously and automatically match power production to consumption (6.LC.1); 3) Lack of existing capability to efficiently integrate multiple energy sources (6.LC.2); 4) Lack of common and/or renewable power sources (14.LC.1); and 5) No scalable expeditionary energy storage capability (22.LC.1). See BAA for whitepaper instructions. **Due August 20.**

DoD Amyotrophic Lateral Sclerosis Therapeutic Development Award

The Therapeutic Development Award supports the preclinical assessment of therapeutics for ALS. The proposed studies are expected to be empirical in nature and product-driven but may have a hypothesis-driven approach, provided the focus is on therapeutics. It is anticipated that the agents and/or data generated from these awards will lead to the advancement of new therapies for ALS. **Due August 20.**

DoD Amyotrophic Lateral Sclerosis Therapeutic Idea Award

The Therapeutic Idea Award is designed to promote new ideas that are still in the early stages of development with the potential to yield highly impactful data and new avenues of investigation for novel therapeutics for ALS treatment. This mechanism supports conceptually innovative, high-risk/high-reward research that could ultimately lead to critical discoveries or major advancement in ALS therapeutics. Proposed research projects should include a well-formulated, testable hypothesis based on strong scientific rationale that holds translational potential to improve ALS treatment and/or advances a novel treatment modality. Projects that focus primarily on investigating the pathophysiology of ALS are outside the scientific scope of this mechanism. **Due August 20.**

Partnerships for Innovation: Accelerating Innovation Research- Technology Translation

The NSF Partnerships for Innovation (PFI) program within the Division of Industrial Innovation and Partnerships (IIP) is an umbrella for two complementary subprograms, Accelerating Innovation Research (AIR) and Building Innovation Capacity (BIC). Overall, the PFI program offers opportunities to connect new knowledge to societal benefit through translational research efforts and/or partnerships that encourage, enhance and accelerate innovation and entrepreneurship. The subject of this solicitation is PFI: AIR-Technology Translation (PFI: AIR-TT). The PFI: AIR-TT solicitation serves as an early opportunity to move previously NSF-funded research results with promising commercial potential along the path toward commercialization. Projects are supported to demonstrate proof-of-concept, prototype, or scale-up while engaging faculty and students in entrepreneurial/innovative thinking. **WEBINAR**: A webinar will be held within 6 weeks of the release date of this solicitation to answer any questions about this solicitation. Details will be posted on the IIP website (http://www.nsf.gov/eng/iip/pfi/air-tt.jsp) as they become available. **Required LOI September 2; full March 15.**

EPA-G2014-STAR-J1 Air, Climate and Energy (ACE) Centers: Science Supporting Solutions
The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications for Air, Climate and Energy (ACE) Centers. EPA is interested in supporting research on the development of sound science to systematically inform policy makers at the state and local levels regarding the development of innovative approaches to enable effective implementation of air pollution control strategies to achieve the greatest public health benefits by reducing exposure to harmful air pollution. Priority research areas include: enhancing understanding of spatial and temporal differences in individual pollutants and pollutant mixtures within and across different areas (including urban areas, or between urban, suburban, and rural areas) or geographic regions; identifying and improving the characterization of the most important factors contributing to regional or city-to-city differences or similarities in air pollution and health effects beyond topography and meteorology; improving the ability to understand and project how these contributing factors and differences may change over the next one to several decades; and advancing scientific knowledge and tools needed to develop robust strategies for air pollution control to improve public and environmental health under a variety of conditions, including consideration of approaches for addressing climate change preparedness. **Due September 4.**

Geography and Spatial Sciences Program (GSS)
This solicitation provides instructions for preparation of a set of different kinds of proposals to the Geography and Spatial Sciences (GSS) Program, including regular research awards; proposals for awards for conferences, workshops, group-travel support, and community-development or community-serving activities; proposals for research coordination network (RCN) awards; and proposals for rapid-response research (RAPID) awards. This solicitation replaces instructions that had been included in the general GSS solicitation (previously NSF 12-570). The Geography and Spatial Sciences Program sponsors research on the geographic distributions and interactions of human, physical, and biotic systems on Earth. Investigators are encouraged to propose plans for research about the nature, causes, and consequences of human activity and natural environmental processes across a range of scales. Projects on a variety of topics qualify for support if they offer promise of contributing to scholarship by enhancing geographical knowledge, concepts, theories, methods, and their application to societal problems and concerns. **Due September 4.**

DARPA-BAA-14-30 Hand Proprioception DARPA - Biological Technologies Office
The HAPTIX program will develop new science and technology to achieve closed-loop control of dexterous mechatronic prostheses that will provide amputees with prosthetic limb systems that feel and function like natural limbs. HAPTIX will focus on development of implantable peripheral interfaces for volitional motor recording and sensory feedback signals; implantable electronic systems to transferport information between these interface(s) and the prosthesis; and sophisticated encoding and decoding algorithms to transform recorded volitional motor control signals into limb movements and patterned stimulation into naturalistic touch and proprioceptive sensations. System performance and the ultimate benefit to prosthetic users

will be determined in a year-long, take-home trial before the end of the HAPTIX program. **Due September 10.**

NEH/DFG Bilateral Digital Humanities Program

The National Endowment for the Humanities in the United States and the German Research Foundation (Deutsche Forschungsgemeinschaft e.V., DFG) are working together to offer support for projects that contribute to developing and implementing digital infrastructures and services for humanities research. **Due September 25.**

ONRBAA14-008 Fiscal Year 2015 Non-Lethal Weapons Technologies

The Office of Naval Research is soliciting proposals for: (1) applied non-lethal weapon (NLW) research; (2) early NLW technology development, and (3) rapid NLW development, test, and demonstration of next-generation NLW and capabilities. The objective of this BAA is to stimulate applied research, advanced technology development (ATD), and advanced component development and prototypes (ACD&P) to include rapid-prototyping, testing and evaluation of NLW technologies in an attempt to address known military needs. Refer to the BAA or application instructions for white paper due dates. **Due September 26.**

NPS-BAA-14-002 FY14 Acquisition Research Program Department of Defense

The Government is interested in stimulating and supporting scholarly research in academic disciplines that bear on public policy and management in the field of government acquisition. These include economics, finance, financial management, information systems, organization theory, operations management, human resources management, risk management, and marketing, as well as the traditional acquisition areas such as contracting, program/project management, logistics, test and evaluation and systems engineering management. The ARP primarily supports scholarly research through assistance vehicles that will benefit the general public and/or private sector to a larger extent than any direct benefits that may be gained by the Department of Defense (DOD). Studies of government processes, systems, or policies should focus on expanding the body of knowledge, theory and/or research methodologies that are also relevant to processes, systems, or policies outside the DOD. The Government in this BAA is interested only in proposals that will provide unclassified and non-proprietary findings suitable for publication in open scholarly literature. Offerors bear prime responsibility for the design, management, direction, and conduct of research, and exercise judgment and original thought toward attaining the goals within broad parameters of the research areas proposed and the resources provided. **Due September 30.**

NPS-BAA-14-001 FY14 Masint Emerging Technologies Research Program

Research Areas: Measurement and Signature Intelligence (MASINT) is an intelligence discipline that employs a broad range of scientific developments to gather foreign intelligence. In our efforts to enhance this intelligence competency we are interested in stimulating and supporting research that creates new knowledge and capabilities, or the transition of current capabilities, that have the potential to enhance the following areas: Remote assessment and detection of weapons of mass destruction, specifically nuclear and radiological weapons, as

well as chemical and biological weapons. Remote assessment and detection of directed energy weapons. This would include all lasers that are primarily designed as weapons as well as high-powered microwave (HPM) and electromagnetic pulse (EMP) weapons. Bioinformatics, the science of collecting and analyzing complex biological data such as genetic codes, has become an important part of many areas of biology. Research should focus on how this science promotes the extraction of useful results from large amounts of raw data as well as how its intrinsic characteristics are applicable to many related research topics. Telematics typically is any integrated use of telecommunications and informatics, also known as ICT (Information and Communications Technology). Possible telematics applications can track vehicles, trailers, and shipping containers. Telematics is also used for relaying environmental conditions within vehicles, trailers or shipping containers, fleet management, mobile data and mobile television, wireless vehicle safety communications allowing vehicles to communicate with those around it and emergency warning system for vehicles. Navy seeks White Papers only from the most knowledgeable experts and universities in the field, with submissions briefly describing expertise. Note: Proposals for workshops, conferences, and symposia, or for acquisition of technical, engineering and other types of support services will not be considered (Link to all NPS BAA's). **Due September 30.**

NPS-BAA-14-002 FY14 Acquisition Research Program, Naval Supply Systems Command

The Government is interested in stimulating and supporting scholarly research in academic disciplines that bear on public policy and management in the field of government acquisition. These include economics, finance, financial management, information systems, organization theory, operations management, human resources management, risk management, and marketing, as well as the traditional acquisition areas such as contracting, program/project management, logistics, test and evaluation and systems engineering management. The ARP primarily supports scholarly research through assistance vehicles that will benefit the general public and/or private sector to a larger extent than any direct benefits that may be gained by the Department of Defense (DOD). Studies of government processes, systems, or policies should focus on expanding the body of knowledge, theory and/or research methodologies that are also relevant to processes, systems, or policies outside the DOD. The Government in this BAA is interested only in proposals that will provide unclassified and non-proprietary findings suitable for publication in open scholarly literature. Offerors bear prime responsibility for the design, management, direction, and conduct of research, and exercise judgment and original thought toward attaining the goals within broad parameters of the research areas proposed and the resources provided. **Due September 30.**

NSF/DOE Partnership On Advanced Frontiers In Renewable Hydrogen Fuel Production Via Solar Water Splitting Technologies 2014-2016

The Directorate for Engineering at the National Science Foundation (NSF) has established a partnership with the Fuel Cell Technologies (FCT) Office of the U.S. Department of Energy (DOE) in order to address critical fundamental and applied research challenges associated with advanced technologies for the production of hydrogen fuel via solar water splitting processes. The goal of the partnership is to leverage the complementary missions of applied research,

development and demonstration (DOE) and use-inspired fundamental research and education (NSF) to address issues of national importance that impact the sustainable production of fuels using renewable resources. The Directorate for Engineering seeks proposals with transformative ideas that meet the detailed requirements delineated in this solicitation. **LOI October 6; full December 11.**

Centers of Research Excellence in Science and Technology (CREST)

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. 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. 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. [Anticipated number of awards is across fiscal years 2015 and 2016. In fiscal year 2015, up to 2 Broadening Participation Research in STEM Education standard grants, up to 8 SBIR/STTR Diversity Collaborative Supplements, up to 4 Partnership Supplements and up to 4 HBCU-RISE standard grants. In fiscal year 2016, up to 4 CREST Center continuing grants, up to 2 Broadening Participation Research in STEM Education standard grants, up to 8 SBIR/STTR Diversity Collaborative Supplements, up to 3 Partnership Supplements and up to 2 HBCU-RISE standard grants.] **CREST LOI due October 6; CREST preliminary due November 5; and CREST full June 5, 2015.**

W81XWH-14-SCIRP-IIRA DoD Spinal Cord Injury Investigator-Initiated Research Award

The SCIRP Investigator-Initiated Research Award mechanism was first offered in FY09. Since then, 211 Investigator-Initiated Research Award applications have been received, and 47 have been recommended for funding. The SCIRP Investigator-Initiated Research Award is intended to support studies that have the potential to make an important contribution to SCI research and/or patient care. Important aspects of this award mechanism include:  Impact: Applications should articulate both the short- and long-term impact of the proposed research.

Projects should address an FY14 Area of Encouragement or other research areas relevant to SCI.  Military Relevance: Projects should impact spinal cord injured military Service Members, Veterans, and/or their family members, as well as their caregivers. All applications must specifically and clearly address the military relevance of the proposed research project. Collaboration with military researchers and clinicians is encouraged.  Preliminary Data: Observations that drive a research idea may be derived from laboratory discovery, population-based studies, a clinician's first-hand knowledge of patients, or anecdotal data. Applications must include preliminary and/or published data that is relevant to SCI and the proposed research project. Investigator-Initiated Research Award applications may focus on any phase of research from basic through translational, including preclinical studies in animal models or human subjects, as well as correlative studies associated with an existing clinical trial. Clinical trials are not allowed under this funding opportunity. **Due October 30.**

PAR-14-242 Role of the Microflora in the Etiology of Gastro-Intestinal Cancer (R01)
This Funding Opportunity Announcement (FOA) encourages innovative multidisciplinary research projects that will advance our mechanistic understanding of microflora influences on Gastro-Intestinal (GI) carcinogenesis. Recent advances in our knowledge of GI microflora composition and function have generated a flood of new information, technologies, and capabilities that may for the first time allow mechanistic investigations of very complex, networked host/microbiome interactions on a systems wide scale. This FOA encourages investigators to ingrate this new information into hypothesis-driven studies that can define and validate molecular mechanisms that determine microbe-induced carcinogenic outcomes. Applicants may integrate information from existing large data sets, including metagenomic data sets, or may also propose to generate appropriate new data sets, including but not limited to analysis of host and microbial genomes, proteomes, metabalomes, post-translational modifications, secreted signals, and protein-protein interaction data. An additional goal of this program is to encourage collaborative efforts between scientists currently engaged in GI cancer research with those in scientific disciplines that may not otherwise apply their expertise to study cancer etiology and prevention. **Investigators particularly from the disciplines of microbiology, microbial ecology, molecular biology, immunology, nutrition sciences, bioinformatics, and computational sciences are encouraged to apply.** A value added from stimulating integrated, multidisciplinary experimental approaches may include the discovery of emergent properties of the GI ecosystem that could not be elucidated using either descriptive bioinformatics or molecular studies alone. **Due November 4**

Open Solicitations and BAAs

Research Interests of the Air Force Office of Scientific Research
AFOSR plans, coordinates, and executes the Air Force Research Laboratory's (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of

AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in three scientific directorates: Aerospace, Chemical and Material Sciences, Physics and Electronics, and Mathematics, Information and Life Sciences. **Open until superseded.**

Research Interests of the Air Force Office of Scientific Research

AFOSR solicits proposals for basic research through this general Broad Agency Announcement (BAA). This BAA outlines the Air Force Defense Research Sciences Program. AFOSR invites proposals for research in many broad areas. These areas are described in detail in Section I, Funding Opportunity Description. AFOSR is seeking unclassified, white papers and proposals that do not contain proprietary information. We expect our research to be fundamental. **Open until superseded.**

DARPA Microsystems Technology Office-Wide

The Microsystems Technology Office (MTO) supports DARPA's mission of maintaining technological superiority and preventing technological surprise by investing in areas such as microelectromechanical systems (MEMS), electronics, system architecture, photonics, and biotechnology. In recent years, the proliferation of commercial components and manufacturing processes has allowed our adversaries to achieve capabilities that were previously not possible. **Open to September 1, 2014.**

NINDS SBIR Technology Transfer (SBIR-TT [R43/R44])

This Funding Opportunity Announcement (FOA) encourages Small Business Innovation Research (SBIR) grant applications from small business concerns (SBCs) for projects to transfer technology out of the NIH intramural research labs into the private sector. If selected for SBIR funding, the SBC will be granted a royalty-free, non-exclusive internal research-use license for the term of and within the field of use of the SBIR award to technologies held by NIH with the intent that the SBC will develop the invention into a commercial product to benefit the public. **Open November 5, 2011, to September 8, 2014.**

Agriculture and Food Research Initiative: Foundational Program National Institute of Food and Agriculture USDA-NIFA-AFRI-004412

The AFRI Foundational Program is offered to support research grants in the six AFRI priority areas to continue building a foundation of knowledge critical for solving current and future societal challenges. The six priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Renewable Energy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. Single-function Research Projects, multi-function Integrated Projects and Food and Agricultural Science Enhancement (FASE) Grants are expected to address one of the Program Area Priorities (see Foundational Program RFA for details). **Open until September 29.**

Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology 14-001 ONRBAA14-001

This **BAA** is intended for proposals related to basic research, applied research, or advanced technology development. For NAVY and Marine Corps Science, Technology, Engineering & Mathematics (STEM) programs, refer to ONRBAA13-007, which may be found at the ONR Broad Agency Announcement (BAA) webpage- http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx . A brief description of the ONR Program Codes and the science and technology thrusts that ONR is pursuing is provided below. Additional information can be found at the ONR website at http://www.onr.navy.mil/Science-Technology/Departments.aspx. **Open to September 30, 2014.**

NOAA-NFA-NFAPO-2014-2003949 FY 2014 - 2015 Broad Agency Announcement (BAA)
The purpose of this notice is to request applications for special projects and programs associated with NOAA's strategic plan and mission goals, as well as to provide the general public with information and guidelines on how NOAA will select proposals and administer discretionary Federal assistance under this Broad Agency Announcement (BAA). This BAA is a mechanism to encourage research, education and outreach, innovative projects, or sponsorships that are not addressed through our competitive discretionary programs. It is not a mechanism for awarding congressionally directed funds or existing funded awards. Funding for potential projects in this notice is contingent upon the availability of Fiscal Year 2014 and Fiscal Year 2015 appropriations. Applicants are hereby given notice that funds have not yet been appropriated for any potential activities in this notice. Publication of this announcement does not oblige NOAA to review an application, or to award any specific project, or to obligate any available funds. **Open to September 30, 2014.**

W912HZ-14-BAA-01 2014 BAA Engineer Research and Development Center — DOD
The U.S. Army Engineer Research and Development Center (ERDC) has issued a Broad Agency Announcement (BAA) for various research and development topic areas. The ERDC consists of the Coastal and Hydraulics Lab (CHL), the Geotechnical and Structures Lab (GSL), the Environmental Lab (EL) and the Information Technology Lab (ITL) in Vicksburg, Mississippi; the Cold Regions Research and Engineering Lab (CRREL) in Hanover, New Hampshire; the Construction Engineering Research Lab (CERL) in Champaign, Illinois; and the Topographic Engineering Center (TEC) in Alexandria, Virginia. The ERDC is responsible for conducting research in the broad fields of hydraulics, dredging, coastal engineering, instrumentation, oceanography, remote sensing, geotechnical engineering, earthquake engineering, soil effects, vehicle mobility, self-contained munitions, military engineering, geophysics, pavements, protective structures, aquatic plants, water quality, dredged material, treatment of hazardous waste, wetlands, physical/mechanical/ chemical properties of snow and other frozen precipitation, infrastructure and environmental issues for installations, computer science, telecommunications management, energy, facilities maintenance, materials and structures, engineering processes, environmental processes, land and heritage conservation, and ecological processes. The BAA is available at http://erdc.usace.army.mil/ and is open until superseded. Proposals may be accepted at any time. For questions regarding proposals to CHL, EL, GSL, TEC & ITL, contact Derek Howard at 601-634-3310 or via email at Derek.A.Howard@usace.army.mil . For questions concerning proposals to CERL, contact Wanda

Huber at 217-373-6730 or via email at wanda.l.huber@usace.army.mil or Andrea Krouse at 217-373-6746 or via email at andrea.j.krouse@usace.army.mil . For questions concerning proposals to CRREL, contact Wendy Adams at 603-646-4323 or via email at Wendy.A.Adams@usace.army.mil . Contact the technical personnel listed at the end of each topic area for questions concerning the topic areas themselves. **Open to January 31, 2015.**

DARPA-BAA-14-25 Innovative Systems for Military Missions

The Tactical Technology Office of the Defense Advanced Research Projects Agency is soliciting executive summaries, white papers and proposals for advanced research and development of Innovative Systems for Military Missions. This solicitation seeks system and subsystem level technologies that enable revolutionary improvements to the efficiency and effectiveness of the military. Novel concepts are sought in the following focus areas: Ground Systems, Maritime Systems, Air Systems, and Space Systems. Proposals may be submitted at any time while this solicitation is open. TTO may publish groups of special topics as modifications to this BAA throughout the year. TTO also welcomes classified submissions. A copy of the Broad Agency Announcement, DARPA-BAA-14-25, has been posted to the Federal Business Opportunities (FedBizOpps.gov) website at https://www.fbo.gov/spg/ODA/DARPA/CMO/DARPA-BAA-14-25/listing.html . **Open to April 24, 2015.**

Small University Grants Open 5-Year Broad Agency Announcement

Open to August 26, 2015

DHS-2014-OHA-BIOWATCH BioWatch Program: 2014-2015

The BioWatch Program is a cornerstone of the Department of Homeland Security's (DHS) comprehensive strategy for countering biological terrorism. The BioWatch Program is an early warning system that is designed to detect the intentional release of select aerosolized biological agents. The BioWatch Program's mission is to provide and maintain a continuous bio-terrorism air monitoring system in metropolitan areas and coordinate with state and local public health communities to prepare for and respond to a bioterrorist event. This mission is accomplished by serving as an early warning system which enhances the security of jurisdictions by providing the needed time to execute their comprehensive concept of operations plans to counter biological terrorism. The Biowatch Program is a critical part of an ongoing national effort to build and sustain preparedness which helps the United States to maintain momentum through targeted jurisdictional planning that highlights preventative actions necessary to allow for a proper and timely response and begin the process to recovery from a biological agent release. The BioWatch Evaluation Program (BWEP) will be conducted under the BioWatch Quality Assurance Program effective April 1, 2013. This program will consist of independent external audits (Quality Assurance) by Signature Science and internal audits (Quality Control) by BioWatch Systems Program Office field personnel. This approach will initially be conducted with a focus on adherence to the BioWatch Field Operations Standard Operating Procedure (SOP), Version 1.3 and will eventually evolve to encompass the Field Operations Quality Assurance Program Plan (QAPP). In order to ensure a robust QA / QC program the jurisdictions may be subject to a QA external audit and a QC internal audit during the same cooperative agreement cycle (year). **Closes September 30, 2015.**

Nuclear Energy University Programs - Fellowship and Scholarship
This program supports education and training for future nuclear scientists, engineers and policy-makers who are attending U.S. universities and colleges in nuclear-related graduate, undergraduate and two-year study programs. These are zero-dollar awards that will be funded as students apply through the Department of Energy, Office of Nuclear Energy. **Open until November 30, 2015.**

FY2011 – 2016 Basic Research for Combating Weapons of Mass Destruction (C-WMD) Broad Agency Announcement (BAA)

This BAA is focused on soliciting basic research projects that support the DTRA mission to safeguard America and its allies from WMD (e.g.***, chemical, biological, radiological, nuclear, and high-yield explosives***) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects.

Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)
Army Research Laboratory Broad Agency Announcement for Basic and Applied Scientific Research
This Broad Agency Announcement (BAA), which sets forth research areas of interest to the **Army Research Laboratory** (ARL) Directorates and Army Research Office (ARO), is issued under the paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of basic research proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provision of Public Law 98-369, "The Competition in Contracting Act of 1984" and subsequent amendments. **Open June 1, 2012 to March 31, 2017**.

ARL Core Broad Agency Announcement for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017

Air Force Research Laboratory, Directed Energy Directorate
University Small Grants Broad Agency Announcement
This is a five-year, open-ended Broad Agency Announcement (BAA) to solicit research proposals for the United States Air Force Research Laboratory (AFRL) Directed Energy (RD) Directorate. This BAA is a university grant vehicle that can provide small grants of $100k or less to students/professors in a timely manner for the purpose of engaging U.S./U.S. territories' colleges and universities in directed energy-related basic, applied, and advanced research projects that are of interest to the Department of Defense. **Open to April 1, 2017.**

HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program
NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features

and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

AFRL Research Collaboration Program

The objective of the AFRL Research Collaboration program is to enable collaborative research partnerships between AFRL and Academia and Industry in areas including but not limited to Materials and Manufacturing and Aerospace Sensors that engage a diverse pool of domestic businesses that employ scientists and engineers in technical areas required to develop critical war-fighting technologies for the nation's air, space and cyberspace forces through specific AFRL Core Technical Competencies (CTCs). **Open until December 20, 2017.**

United States Army Research Institute for the Behavioral and Social Sciences Broad Agency Announcement for Basic, Applied, and Advanced Scientific Research (FY13-18)

Announcement for Basic, Applied, and Advanced Scientific Research. This Broad Agency Announcement (BAA), which sets forth research areas of interest to the United States Army Research Institute for the Behavioral and Social Sciences, is issued under the provisions of paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), which provides for the competitive selection of proposals. Proposals submitted in response to this BAA and selected for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369 (The Competition in Contracting Act of 1984)and subsequent amendments. The US Army Research Institute for the Behavioral and Social Sciences is the Army's lead agency for the conduct of research, development, and analyses for

the improvement of Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. Programs funded under this BAA include basic research, applied research, and advanced technology development that can improve human performance and Army readiness. The funding opportunity is divided into two sections- (1) Basic Research and (2) Applied Research and Advanced Technology Development. The four major topic areas of research interest include the following: (1) Training; (2) Leader Development; (3) Team and Inter-Organizational Performance in Complex Environments; and (4) Solider/Personnel Issues. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

BAA-HPW-RHX-2014-0001 Human-Centered Intelligence, Surveillance Air Force Research Lab

This effort is an open-ended BAA soliciting innovative research concepts for the overall mission of the Human-Centered Intelligence, Surveillance, & Reconnaissance (ISR) Division (711 HPW/RHX). It is intended to generate research concepts not already defined and planned by RHX as part of its core S&T portfolio. The core RHX mission is to develop human-centered S&T that (1) enables the Air Force to better identify, locate and track humans within the ISR environment and (2) enhance the performance of ISR analysts. To accomplish this mission, the RHX core S&T portfolio is structured into three major research areas: (1) Human Signatures - develop technologies to sense and exploit human bio-signatures at the molecular and macro (anthropometric) level, (2) Human Trust and Interaction – develop technologies to improve human-to-human interactions as well as human-to-machine interactions, and (3) Human Analyst Augmentation – develop technologies to enhance ISR analyst performance and to test the efficacy of newly developed ISR technologies within a simulated operational environment. The RHX mission also includes research carried over from the Airman Biosciences and Performance Program. While not directly linked to the core S&T strategic plan, there exists a unique capability resident within RHX to address critical Air Force operational and sustainment needs resulting from chemical and biological hazards. Research areas include contamination detection, hazard assessment and management, individual and collective protection, and restoration and reconstitution of operational capability. **Open to Feb. 12, 2018.**

Research Interests of the Air Force Office of Scientific Research

The Air Force Office of Scientific Research (AFOSR) manages the basic research investment for the U.S. Air Force (USAF). To accomplish this task, AFOSR solicits proposals for basic research through this general Broad Agency Announcement (BAA). This BAA outlines the Air Force Defense Research Sciences Program. AFOSR invites proposals for research in many broad areas. These areas are described in detail in Section I of the BAA, Funding Opportunity Description. AFOSR plans, coordinates, and executes the Air Force Research Laboratory's (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in five

scientific directorates: Dynamical Systems and Control (RTA), Quantum & Non-Equilibrium Processes (RTB), Information, Decision, and Complex Networks (RTC), Complex materials and Devices (RTD), and Energy, Power, and Propulsion (RTE). The research activities managed within each directorate are summarized in Section I of the BAA**. Open until superseded.**

Air Force BAA - Innovative Techniques and Tools for the Automated Processing and Exploitation (APEX) Center

The AFRL/RIEA branch performs Research and Development (R&D) across a broad area of Air Force Command, Control, Communications, Computers/Cyber, and Intelligence (C4I). All applicable "INTs" are investigated with emphasis on Ground Moving Target Indication (GMTI), Electronic Intelligence (ELINT), Signals Intelligence (SIGINT), Image Intelligence (IMINT), Non Traditional Intelligence, Surveillance and Reconnaissance (NTISR), and Measurement and Signature Intelligence (MASINT). The APEX Center is used to perform analysis for seedling efforts, provide baseline tool development for major programs, and to provide realistic operational systems/networks/databases for integration efforts. The APEX Center resources will be used by the Government to perform the necessary research, development, experimentation, demonstration, and conduct objective evaluations in support of emerging capabilities within the Processing and Exploitation (PEX) area. Software tools, data sets, metrics (Measures of Performance/Measures of Effectiveness), and analysis are needed for the Government to perform the vetting, maturing, and analysis of efforts related to PEX, e.g. Automatic Tracking, Activity Based Intelligence, Entity, Event & Relationship (EER) Extraction, Association & Resolution (A&R), Analysis & Visualization (A&V), Social Network Analysis, Network Analytics, Pattern Discovery, Scalable Algorithms, and Novelty Detection. The AFRL APEX Center is the AFRL/RI gateway into the cross-directorate PCPAD-X (Planning & Direction, Collection, Processing & Exploitation, Analysis & Production, and Dissemination eXperimentation) initiative. **Open to FY 2018**.

Academic Research Funding Strategies, LLC (Page 1)

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What We Do--

We provide consulting for colleges and universities on a wide range of topics related to research development and grant writing, including:

- Strategic Planning - Assistance in formulating research development strategies and building institutional infrastructure for research development (including special strategies for Predominantly Undergraduate Institutions and Minority Serving Institutions)
- Training for Faculty - Workshops, seminars and webinars on how to find and compete for research funding from NSF, NIH, DoE and other government agencies as well as foundations. Proposal development retreats for new faculty.
- Large proposals - Assistance in planning and developing institutional and center-level proposals (e.g., NSF ERC, STC, IGERT, STEP, Dept of Ed GAANN, DoD MURI, etc.)
- Assistance for new and junior faculty - help in identifying funding opportunities and developing competitive research proposals, particularly to NSF CAREER, DoD Young Investigator and other junior investigator programs
- Facilities and Instrumentation - Assistance in identifying and competing for grants to fund facilities and instrumentation
- Training for Staff - Professional Development for research office and sponsored projects staff

Workshops by Academic Research Funding Strategies

We offer workshops on research development and grant writing for faculty and research professionals based on all published articles.
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