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Strategies for Planning, Developing and Writing Large Team Grants
An interactive workshop presented by Mike Cronan
Academic Research Funding Strategies, LLC

ABOUT THE WORKSHOP: This interactive workshop offers a step-by-step “how to” guide to faculty and research offices to help them better meet the unique challenges of successfully writing large team grants (LTG). LTGs differ from smaller grants in many ways that make them more challenging to plan, develop and write. LTGs involve more disciplines, components, and moving parts (i.e., complexity); more team members and team dynamics; more partnered institutions; more time needed to plan, develop, and write; more interdisciplinarity; a clear vision for the synergy required to demonstrate the value-added benefits of team research and center structures; and more development challenges for PIs.

The workshop addresses key LTG topics (below), including, how best to communicate a compelling research vision; demonstrate major value-added benefits to the team structure; achieve research synthesis, integration, and synergy; address multiple program components that build on the research core; offer a management plan that enables the research vision to succeed; propose a convincing research strategic plan over a multi-year performance period; convince program officers and reviewers the proposed research is transformational and not merely incremental; and navigate multiple review gates to funding success.

4-HOUR WORKSHOP SCHEDULE OF TOPICS
- Introduction to Team Grants (30 minutes)
- Interactive Discussion: Characteristics of a Successful Research Vision (15 minutes)
- Strategic Planning (30 minutes)
- Interactive Discussion: Characteristics of Research Synergy (15 minutes)
- Proposal Planning and Production (30 minutes)
- Writing the Project Description (30 minutes)
- Writing Key Narrative Sections (30 minutes)
- Characteristics of Successful Narratives (30 minutes)
- Red Teaming and Writing for Reviewers (30 minutes)

2-HOUR WORKSHOP INCLUDED CONSULTATIONS: Individual consultations with faculty and/or research office staff on workshop topics (e.g., 4 consultations @30 minutes each).

WORKSHOP COSTS: Cost of the 4-hour interactive workshop and 2-hours of individual consultations with faculty and/or research office staff on presentation topics: $3,500 plus travel costs. A second day of consultations is available at a rate of $125/hr (4 hour minimum). Please contact Mike Cronan (mjcronan@gmail.com; 979-229-8009) for a full cost quote that will include travel costs; final workshop cost will be invoiced as one lump sum.

WORKSHOP LOGISTICS: Workshops may be scheduled any day Monday through Saturday, February 1 to May 10, 2014. CLIENT PROVIDES all facilities, handouts, and IT set-up support,
including presentation room, projector, and computer with compatible version of Microsoft PowerPoint. **PRESENTER PROVIDES** all workshop materials to the client in electronic form for loading on the presentation computer and producing hard copy handouts three days prior to the workshop.

**ABOUT THE PRESENTER**

Mike Cronan is a research development and grant writing consultant with Academic Research Funding Strategies, LLC. He is the principal co-publisher of the nationally distributed newsletter *Research Development and Grant Writing News*, co-author of the book *New Faculty Guide to Competing for Research Funding*, and author of the book *Strategies for Planning, Developing and Writing Large Team Grants*. He has 23 years of experience developing and writing successful proposals at Texas A&M University (1987-2010). He was named a Texas A&M University System **Regents Fellow** (2001-2010) for developing and writing A&M System-wide grants funded at over $100 million by NSF and other research agencies, 1990-2000. He developed, staffed, and directed two research and proposal development offices at Texas A&M, one for the 15-division, statewide Texas Engineering Experiment Station (1994-2004), and the second for the Vice President for Research (2004-09). Mike Cronan has undergraduate degrees in **civil engineering** (University of Michigan), **political science** (Michigan State University), and an MFA in **English** (University of California-Irvine). He is a registered professional engineer in Texas (inactive).
Topics of Interest URLs

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Notice to Presidents of Universities and other NSF Awardee Organizations
Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards
NSF Academic Institution Profiles
Community Foundation Locator
NSF Award and Administration Guide, February 2014
NIH Announces Six Funding Opportunities for the BRAIN Initiative in fiscal 2014
NSF FastLane Changed Checks for Preliminary Proposals and Supplementary Funding Requests
NSF MSP STEM C 2012/2013 Meeting Slides
Dimensions of Biodiversity FY2014
NIFA Releases Request for Applications for AFRI Foundational Program
2014 R&D Magazine Global Funding Forecast
Business Research and Development and Innovation Survey (BRDIS)
Higher Education Research and Development Survey (HERD)
DOE Strategic Plan from ASA, CSSA, & SSSA
Wenner-Gren Foundation for Anthropological Research
How to Write a Grant Proposal to the Wenner-Glen Foundation
Higher Education R&D Expenditures Remain Flat in FY 2012
The Geological Society of America 2014 Research Grants
National Research Council NRC Research Associateship Programs
Revised NCER Publications Handbook Available
Enhancing the Diversity of the NIH-Funded Workforce
Survey of Federal Funds for Research and Development
ERIC Releases 62,800 Full Text Documents and is Indexing New Content Weekly
Digest of Education Statistics, 2012
Dear Colleague Letter: Cancellation of FY 2015 FESD Competition
NSF DCL: DMREF Proposals of Special Interest to the Division Of Mathematical Sciences In FY 2014
SAMHSA Fiscal Year 2014 Grant Announcements
Summary of 2014 Global R&D Funding Forecast
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By Mike Cronan, co-publisher
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The 36-page 2014 R&D Magazine/Battelle Global R&D Funding Forecast (December 2013) on the state of industrial research worldwide will be of interest to university research offices and faculty engaged in the strategic planning of research and educational initiatives over the next several years. As the forecast notes, the nation’s research universities are the second largest performer of US R&D, accounting for 13% of the US total (projected at a total $465 billion for 2014) after industry (71%). Importantly, 60% of US basic research takes place at universities.

Moreover, as noted in the forecast, R&D investments serve as the foundation for generating new knowledge through basic research and ultimately for generating products and services through applied research and commercialization. To ensure that this generation will succeed and that innovation-driven growth will flourish requires what the forecast calls a “successful R&D ecosystem,” or what NSF calls the “innovation ecosystem.” This ecosystem is comprised of several elements: the convergence of the 2014 forecast, federal agency research strategic plans and roadmaps, and the strategic planning conducted by faculty and research offices. All of these help illuminate potential pathways by which universities can increase their funding portfolios by positioning themselves at the key intersections of basic and applied research, at industry and global research partnerships, and within robust R&D innovation ecosystems. These ecosystems also underlie the singular role universities play in training the future STEM workforce.

Of the four key features of successful R&D ecosystems identified in the forecast, perhaps the most important to the flourishing of innovation-sustaining R&D ecosystems is the Large Investments In Human Capital. This feature ensures that close attention is paid to encouraging and advancing a talent pipeline of STEM skills, along with a broader base of skills related to product design, management, sales, finance, and entrepreneurship required for commercial success. This feature also ensures that universities can significantly advance a research and education portfolio of initiatives based upon their unique capacities for research, research training, creating training infrastructures for innovation ecosystems, and partnering with other universities, federal research centers, and industry at a national and global scale.

Research strategic planners are therefore well advised to consider a portfolio of research and educational initiatives that gain institutional synergy through many intersecting common elements. For example, long-term strategic planning will account for the importance of STEM workforce development to a successful R&D ecosystem. Identifying programmatic domains of connectivity and intersection holds the key to implementing a strategic plan that maximizes the potential synergy residing in institutional research capacities.

It is helpful to think of this in terms of the Elements and Interrelationships in a Comprehensive R&D Ecosystem graphic from the R&D forecast shown at the end of this article. The graphic demonstrates the basic research to commercialization spectrum. It is worth noting here that the first three factors listed in this graphic as supporting the development of a
successful R&D infrastructure relate to paying attention to grant writing, competitive infrastructure, and researcher recruitment and development. One takeaway message here for research offices is the implicit importance of providing grant-writing support services and training to newly recruited faculty. After all, a competitive infrastructure depends significantly on the capacity to plan, develop, and write successful research grants. Paralleling the basic research to commercialization pathway, the graphic shows the key role of workforce development, attraction, and retention. This is in the wheelhouse of universities (see the companion article in this newsletter “Funding Your STEM Workforce Ecosystem”).

While the focus of the forecast relates to R&D funding outlooks for 2014, it is the above context framing the forecast that is important to faculty and research offices planning the most competitive strategies for pursuing funding over the next few years, particularly in areas the forecast identifies as breakout areas: life sciences; information and communication technologies; aerospace, defense and security; energy; and chemistry and advanced materials.

As a group, the forecast states, the nation’s research universities are the second largest performer of US R&D, accounting for 13% of the US total projected at $465 billion for 2014, and more than half of all US basic research (industry represents 71% total R&D). With nearly 60% of their R&D budget coming from the federal government, the recent dynamics of federal R&D funding, from increases via the American Recovery and Reinvestment Act (ARRA), investments in 2009-11 to budget reductions in 2012 and sequestration in 2013, are causing some institutions to seek diversification of their R&D funding. From all sources, academic R&D performance is forecast to increase by 2.2% to nearly $63 billion in 2014.

Federal R&D policy and implications of budget sequestration are the largest factors in funding for US academic research, which has dropped from a recent high of 6% annual funding increases in 2011 to a forecast of 2% in 2014, the report notes. Long recognized as an essential scientific foundation of US innovation, academic research programs have been under pressure as a result. The forecast notes the highlights of the academic research enterprise include:

- Academia performs about 60% of all US basic research.
- Federal funding for academia will increase 2.5% in 2014.
- US universities continue to lead world rankings.
- ARRA funding for academia has expired.

Over the coming years, the forecast notes, it will be increasingly critical to clarify the role of universities and their relationship to corporations in technology development. An understanding of this relationship will be necessary to drive policy decisions, both in terms of the university teaching mission and the research carried out at universities. If universities are expected to perform as for-profit companies, driven by short-term returns on investment, then the foundations upon which major high-risk scientific discoveries are made will eventually erode, the forecast states. As these research centers are slowly lost, so too will be lost the supply of highly-trained researchers who drive innovation and competition. The takeaway here related to competition is the need to couple research strategic planning with STEM workforce strategic planning by faculty and research offices in order to optimize competitiveness in the R&D environment the forecast describes.
Measuring R&D Success

This year’s survey asked respondents how they measure the success and impact of their R&D activities. There was little difference in the perspectives of US and non-US researchers, but interesting differences are linked to the type of research organization. According to the survey, publishing technical papers was cited as a key measure of success across all organizations, although the proportions were different: 95% of academics ranked publication as their #1 measure, while only 55% of corporate researchers did the same. Patents are a key measure of success among all organization types, with 40% of all respondents having at least one patent related to their research. Follow-on research grants are a key success measure for approximately half of the academic and research institute respondents. New product introductions, the most cited measure of success among multinational corporations, was not as highly ranked by respondents from other kinds of research organizations.

The most far-reaching projections for 2014 include the following:

- The ranking of the top ten countries as measured by R&D spending isn’t expected to change in 2014, with the US reprising its role as the dominant force in global research across numerous industries.
- US federal spending on R&D, a large contributor to R&D momentum in the U.S., is in turmoil because of enormous pressures to pare federal spending, especially defense and aerospace budgets.
- The growth in China’s R&D budgets will far outpace those of the U.S., which has resumed modest growth that is expected to be relatively stable through 2020.
- At the current rates of growth and investment, China’s total funding of R&D is expected to surpass that of the U.S. by about 2022.

For 2014, the forecast projects declines in defense and aerospace R&D, increases in energy-related research, increases in life science research and development, strong growth in information technology research investment, and growth in R&D budgets for chemicals and advanced materials. Significant R&D investments by western countries in long-range technology platforms like robotics, high-performance computing, social media, software, cost-effective energy sources and nanobiotechnology could stimulate rapid industry-scale economic growth. The forecast states that US R&D investment is back on track with modest growth that is expected to continue through 2020.

In the United States, R&D spending is likely to increase in 2014, according to the forecast, turning the corner from near-zero growth in 2013. Federal funding is difficult to forecast because of the breakdown of orderly budget processes, but there are indications of bipartisan political support for increases or reallocations that favor R&D. Historic postrecession economic data suggest that private-sector R&D spending will also increase in 2014. The forecast expects:

- US R&D investment will increase by 1.0% (after inflation) to $465 billion.
- National research intensity will remain stable at 2.8% of GDP.
- While government R&D funding is forecast to increase, flat or reduced spending are possibilities.
The private sector continues to account for about three quarters of U.S. research activity.

Industry Breakout — Life Sciences
As represented in this forecast, the life science industry includes biopharmaceuticals, medical instruments and devices, animal/agricultural bioscience and commercial research and testing. However, the industry’s R&D spending is driven primarily by the mass and research intensity of the biopharmaceutical sector, which accounts for nearly 85% of all expenditures. Not only is life science—led by the biopharmaceutical sector—the leading US industry in terms of volume of research but US life science R&D accounts for 46% of the global total—one of the highest shares in any industry, the forecast notes. For the US life science industry, the forecast projects a small rebound over 2013 levels (up 2.2%) to R&D spending of about $93 billion in 2014, with the growth coming primarily from smaller biopharmaceutical innovators and medical device manufacturers.

The survey also explored the link between R&D investment and technology development. One conclusion, according to the survey, is that **open innovation plays a more integrated and pervasive role in life science than in other industries**. Considering the degree of reliance on research collaborations, acquisitions, and licensing, internal development capabilities appear to have a slightly smaller role relative to other industries. **This suggests that the innovation ecosystem for life science is more complex and inter-related than other research ecosystems.** The diverse nature of this industry was also reflected in responses related to key areas for technology development. The largest was biomaterials, with 68% of the life science respondents seeing future development in this area. Other leading areas of interest noted in the forecast included personal genomics (59%) and stem cell applications (54%). In medical devices, increased development emphasis is expected for biomedical monitoring devices (43%) and surgical implants (34%).

Industry Breakout — Information and Communication Technologies
The information and communications technologies (ICT) industry, and the significant level of R&D that supports it, is driven by constant change in consumer preferences, market demand, and technological evolution. The ICT industry is the largest private-sector R&D investor in the U.S., *performing nearly one-third of the total*. The US ICT industry is forecast to grow by 5.4% to $146 billion in 2014. US ICT firms are also dominant globally and will account for more than half (57%) of the industry’s worldwide R&D expenditures of $257 billion in 2014.

Though ICT involves numerous areas of focus, **cloud computing and technologies built on it will remain a major R&D thrust for the foreseeable future**. The ICT industry provides hardware, software, and services that make up the modern information age, spanning semiconductors, telecommunications, productivity or security software, computers, tablets, and gaming. Across all these applications, the integration of smaller, faster, mobile, and more powerful electronics with the increasingly pervasive Internet continues to drive innovation in networking and information technologies across all industries. The forecast expects the U.S. ICT industry to grow again this year by 5.4%, reaching $146.5 billion in 2014.
Industry Breakout — Aerospace, Defense, and Security

R&D among aerospace, defense, and security firms is primarily driven by two sectors: the US Department of Defense (DOD) and the global airline industry. With the combination of reductions in defense spending, and a commercial market that is essentially flat in R&D expenditures, the forecast predicts a small decline of 1.2% in US ADS R&D to $12.6 billion in 2014.

Industry Breakout — Energy

The energy industry includes a broad array of companies, ranging from multinational oil and gas firms to large and small technology firms. Reducing costs of production is a large driver of R&D in the energy space, and materials development and advanced materials integration are increasingly important in shaping the industry’s R&D investment. For 2014, the forecast expects the level of the energy industry’s R&D will exceed $7 billion in the US (up 1.7%) and reach nearly $22 billion globally (up 4.8%).

The federal government, through grants, tax incentives, and R&D at DOE national laboratories and extramural academic institutions, plays an integral and often technology-leading role in the research directions of the US energy industry, sometimes extending to piloting, scale-up, and translation stage finance. Over the 2009-12 period, alternative and renewable energy applications saw substantial increases in federal technology development support (e.g., through ARRA, ARPA-E and other DOE programs).

Other government initiatives have been designed to build market demand and make larger-scale adoption of new technologies viable. That said, the substantial increase in natural gas production from shale resources has, at least temporarily, removed some of the energy price and national energy security pressure behind in development of alternative and renewable energy technologies. In the U.S., government-supported research in these areas continues, but private, early-stage investment has waned, the forecast notes.

Industry Breakout — Chemistry and Advanced Materials

The forecast for R&D growth in the chemical and advanced materials industry reflects the improving global economy and the key markets the industry serves. US R&D spending in chemicals and advanced materials is forecast to grow by 3.6% to reach $12 billion in 2014. Overall global R&D is forecast to grow at a slightly higher 4.7% rate to $45 billion in 2014. The chemicals and advanced materials industry includes traditional chemical/polymer firms, all of which continue to push the envelope in feedstock and material development, as well as niche material companies both large and small that focus research activities on unique material properties and the development of applications to exploit these properties, the forecast notes. R&D in this industry also works to improve process efficiency and reduce the costs of the large-scale production facilities.

For US advanced materials firms, the global nature of the industry is a double-edged sword. More than a third (35%) of the survey’s industry respondents expect to increase their level of foreign collaboration over the next year, yet nearly half (45%) feel that the US is at a moderate to significant risk of losing its leadership position in key material areas.
Nanomaterials, a key focus of chemical and advanced materials R&D, are expected to be even more important over the next three years, with 80% of survey respondents citing nanomaterials as a key area of technology development (a substantial increase from 67% of the respondents in our previous survey). Similarly, the forecast notes, biomaterials will continue to grow in importance as a focus of R&D, with 56% of this year’s industry respondents believing biomaterials research will be a key development area, compared to just 38% two years ago.

Composite materials development provides a good example of the unique market position of the chemical and advanced materials industry. Among chemical and advanced materials respondents, composites were viewed as the third most important future technology development area, cited by 47% of the industry respondents. Among aerospace and defense respondents, composite materials were cited by 50% of respondents as a key area for development.
A well-prepared, innovative science, technology, engineering and mathematics (STEM) workforce is crucial to the nation's health and economy. This is an oft repeated mantra by NSF and one that is echoed by many other federal research agencies, as well as numerous reports from the National Academies and STEM associations. Recent policy actions and reports have drawn attention to the opportunities and challenges inherent in increasing the number of highly qualified STEM graduates, including STEM teachers. STEM workforce priorities include educating students to be leaders and innovators in emerging and rapidly changing STEM fields as well as educating a scientifically literate populace. Both of these priorities depend on the nature and quality of the undergraduate education experience. Hence, this is a key area of strategic planning for educational institutions of all types seeking to develop a more robust STEM Workforce Ecosystem on campus through intra-institutional partnerships and collaborative proposal development strategies.

In addressing these STEM challenges and priorities, for example, NSF invests in research-based and research-generating approaches to understanding STEM learning; to designing, testing, and studying curricular change; to wide dissemination and implementation of best practices; and to broadening participation of individuals and institutions in STEM fields. The goals of these investments include: increasing student retention in STEM, better preparing students to participate in science, and improving students' STEM learning outcomes. Federal mission agencies, by comparison, typically reflect these overarching STEM workforce goals in ways more tightly mapped to their mission-critical STEM objectives (for example, see: Securing Our Future: The Navy Science, Technology, Engineering and Mathematics (STEM) Workforce Roadmap).

Regardless, in aggregate, NSF’s and other agencies’ well publicized goals for advancing the STEM workforce make it relatively easy to develop a university-specific roadmap. This roadmap details a long-term plan of action for developing and writing STEM proposals that leverage institutional capacities and educational mission objectives to better compete in this important arena and thereby create a more robust and successfully funded STEM Workforce Ecosystem on your campus.

Moreover, critical to this planning process, the publication last May of the 143-page Federal Science, Technology, Engineering, and Mathematics (STEM) Education 5-Year Strategic Plan,[STEM Report], A Report from the Committee on STEM Education, National Science and Technology Council (May 2013), provided additional impetus to this long-standing mission focus by many federal research agencies, often in partnership with industry (see STEMConnector and STEM: How to Educate for America’s Future), linking our nation’s economic future to technological innovation that requires a well-trained STEM workforce.

As stated in a companion article in this issue of the newsletter, Summary Report: 2014 Global R&D Funding Forecast, of the four key features of successful R&D ecosystems identified in the forecast, perhaps the most important to the flourishing of innovation-sustaining R&D
ecosystems is the large investment in human capital, specifically, paying close attention to encouraging and *advancing a talent pipeline of STEM skills, along with a broader base of product design, management, sales, finance and entrepreneurs to ensure commercial success.* Of course, this compelling goal is part of the educational mission of every college and university and one that lends itself well to long-term strategic planning for creating a more robust STEM Workforce Ecosystem on your campus.

Moreover, the federal agency investment in the STEM workforce is huge. In this regard, keep in mind Louis Pasteur’s observation that “fortune favors the prepared mind,” since it can be easily paraphrased as “**funding favors the strategically prepared grant writer.**” This includes putting in place a 2014 strategic plan for making your STEM Workforce Ecosystem more robust by submitting successful proposals in this broad topic area. Clearly, the federal funding resources to reward competitive proposals exists: STEM program inventory data in the STEM Report indicate that in FY 2011 the Federal Government expended $2.891 billion on more than 200 STEM-focused investments. **Almost 80 percent of FY 2011 Federal STEM education funding was distributed through three Federal entities**: the National Science Foundation (40%); the Department of Health and Human Services, including NIH (20%); and ED (19%).

Clearly, NSF, NIH and ED are the three key agencies where university research offices, STEM faculty, and campus STEM program professionals can form very competitive strategic planning partnerships for the long-term goal of training the future STEM workforce. Several convergent factors make such institutional partnerships for STEM workforce proposal planning a timely pursuit in 2014, particularly given the upcoming programmatic changes and evolutions at these three key agencies.

First, keep in mind when planning STEM workforce proposals that NSF and ED account for 59% of Federal STEM education funding and that The National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education recently released a collaborative publication, **Common Guidelines for Education Research and Development**. The **Guidelines** describe six types of research studies that can generate evidence about how to increase student learning, a perennial objective in STEM workforce training programs of all types. Study types include those that generate the most fundamental understandings related to education and learning; examinations of associations between variables; iterative design and testing of strategies or interventions; and assessments of the impact of a fully-developed intervention on an education outcome. For each study type, there is a description of the purpose and the expected empirical and/or theoretical justifications, types of project outcomes, and quality of evidence.

The **Guidelines** publication can be found on the NSF website with the number NSF 13-126. A set of FAQs regarding the **Guidelines** is available with the number NSF 13-127. Since publication of the guidelines last fall, the partnered agencies have encouraged grant proposal writers and PIs to familiarize themselves with both documents and use the information therein to help in the preparation of their proposals. **Although the guidelines do not always map directly onto all the many categories of STEM workforce proposals**, they are helpful in framing the methodological logic of the proposed project and in writing a well-organized project narrative. The takeaway message for any institutional partnership of STEM faculty, research offices, and campus STEM program professionals is to familiarize the team with these
Guidelines. For example, **NSF is already referencing these guidelines in new solicitations related to the STEM workforce**, e.g., the STEM-C solicitations with upcoming due dates (also see NSF EHR [ECR Webinar Slides](#)). Moreover, in many cases, STEM workforce program opportunities fall in the category of large team grants (LTGs) and thereby benefit from sustained intra-institutional planning partnerships of faculty from multiple colleges and departments. These faculty work with campus STEM program offices and research offices to build a sustained institutional capacity and infrastructure to compete successfully at NSF and other agencies for these important grants, both for STEM workforce-specific grants as well as center-level research grants where STEM workforce programs are a required part of an educational or research training component.

At the macro level, this STEM Workforce Report has played out in part at NSF, for example, by its focus on improving the delivery of undergraduate STEM teaching and learning through evidence-based reforms, including a new program aimed at improving retention of undergraduates in STEM fields. NSF also created a new National Graduate Research Fellowship, using a common NSF infrastructure to reach more students and to offer a set of opportunities addressing national needs and mission-critical workforce needs for the CoSTEM agencies (see **New NSF EHR Programs: EHR Core, IUSE & REAL** and companion articles in the December 2013 newsletter).

At ED this STEM Workforce Report has played out by an increased agency role in improving P-12 STEM instruction by supporting partnerships among school districts and universities, science agencies, businesses, and other community partners to transform teaching and learning. Overall, the STEM Workforce Report was developed in a partnership that included over 16 federal research agencies, including NSF, NIH, ED, USDA, DOE, USDA, DoD, NASA, NOAA, DHS, and EPA, among others.

At NIH (20% of federal workforce budget), for example, a **Biomedical Workforce Task Force** is developing a model for a sustainable and diverse U.S. biomedical research workforce that can inform decisions about training of the optimal number of people for the appropriate types of positions that will advance science and promote health. Developing the model will include an analysis of the current composition and size of the workforce to understand the consequences of current funding policies on the research framework. The model will include an assessment of present and future needs in the academic research arena, but also current and future needs in industry, science policy, education, communication, and other pathways. The model will also require an assessment of current and future availability of trainees from the domestic and international communities. The Biomedical Workforce Task Force has published four key reports addressing this topic:

- **Information on NIH Implementation of the Report Recommendations**
- **Biomedical Workforce Working Group Report**
- **Executive Summary of the Biomedical Workforce Working Group**
- **ACD Biomedical Workforce Working Group Data**

Moreover, last week NIH announced it will Fund **Research Workforce Diversity Program Awards** that support creative and transformative approaches to prepare students for successful biomedical research careers. The NIH released three new FOAs to develop approaches to
engage researchers, especially from backgrounds underrepresented in biomedical sciences, and prepare them to thrive in NIH-funded research careers. The funding through the Enhancing the Diversity of the [NIH-Funded Workforce Program](#) will establish a national consortium to develop, implement, and evaluate approaches to encourage individuals to start and stay in biomedical research careers:

- Read the National Research Mentoring Network (NRMN) FOA ([RM-RFA-13-017](#))
- Read the Building Infrastructure Leading to Diversity (BUILD) FOA ([RM-RFA-13-016](#))
- Read the Coordination and Evaluation Center (CEC) FOA ([RM-RFA-13-015](#))

Regardless of agency, however, the common core strategic goals named in the STEM Workforce Report are to:

- Improve STEM instruction,
- Increase and sustain youth and public engagement in STEM,
- Enhance STEM experience of undergraduate students,
- Better serve groups historically underrepresented in STEM fields, and
- Design graduate education for tomorrow’s STEM workforce

Of course, flying at the macro or so-called “thirty thousand foot level,” is relatively easy when it comes to strategic ideas for the future STEM workforce, as it is in most other cases of flying at lofty altitudes blissfully free of the nitty-gritty inconvenience of having to implement strategic goals successfully. As Chicago architect Ludwig Mies van der Rohe often noted, “the devil is in the detail,” meaning it will be the small details that are the real challenge to those planning, developing, and writing proposals in response to federal agency solicitations that implement this five-year strategic plan for STEM education of the future workforce.

Moreover, workforce development grants are funded by numerous federal agencies and represent a broad spectrum of underlying mission objectives. For instance, a search on “STEM workforce” on Grants.gov identified 146 currently open workforce grants, including the below examples with due dates in the January to March 2014 range. Additionally, many agencies use open BAAs to address workforce development opportunities that advance the specific agency’s core mission objectives. Regardless, as you familiarize yourself with the spectrum of STEM workforce grants funded by federal agencies, you will begin to identify a common core of programmatic requirements that, in aggregate, will help you plan and develop more competitive grants.

- Ruth L. Kirschstein National Research Service Award (NRSA) Institutional Research Training Grant (Parent T32) ([PA-14-015](#));
- Nursing Workforce Diversity (NWD) Program ([HRSA-14-069](#));
- National Security Science and Engineering Faculty Fellowship ([ONRFOA14-005](#));
- FY 2014 Economic Development Assistance Programs ([EDAP2014](#));
- Nanomanufacturing ([PD-14-1788](#));
- Historically Black Colleges and Universities - Undergraduate Program ([14-513](#));
- Innovative Technology Experiences for Students and Teachers ([14-512](#));
- CyberCorps(R): Scholarship for Service ([14-510](#));
- Robert Noyce Teacher Scholarship Program ([14-508](#));
Improving Undergraduate STEM Education (PD-14-7513);
Cooperative Training Partnership in Environmental Health Sciences Research (EPA-G2014-ORD-T1);
Alliances for Graduate Education and the Professoriate (14-505);
AFRI NIFA Fellowships Grant Program (USDA-NIFA-AFRI-004368);
Advancing Informal STEM Learning (13-608);
Long Range BAA for Navy and Marine Corps Science and Technology (ONRBA14-001);
EHR Core Research (13-555);
Research Interests of the Air Force Office of Scientific Research (BAA-AFOSR-2013-0001);
Science, Technology, Engineering (ONRBA13-007);
Computing Education for the 21st Century (12-609);
NSF Scholarships in Science, Technology, Engineering, and Mathematics (12-529);
Research Training Groups in the Mathematical Sciences (11-540);
Workforce Program in the Mathematical Sciences (PD-08-7335).

Moreover, many STEM workforce grants may require or are strengthened by partnerships with industry. NDIA's (National Defense Industrial Association) Science, Technology, Engineering, and Mathematics (STEM) Workforce Division, for example, provides a forum for effective interaction between government, industry, academia, and the public at large for strengthening the national security STEM workforce. For example, The Defense Department hires more scientists and engineers, and sponsors more research and development projects than any other federal employer. It also faces more challenges for retaining and attracting its work force than private sector employers (Defense Department Embraces STEM Education Outreach).

According to NDIA, the US is not turning out the engineering students that we need to compete as an innovative country. The skill level in science and math reasoning among the students coming out of high school is not where it needs to be. There are not enough US students with an interest in the STEM fields. To address this, NDIA’s broad goals related to the STEM workforce include:

- Increase NDIA’s participation in exciting and attracting K-12 students into STEM careers.
- Maximize cooperation between federal departments, agencies, and industry on STEM workforce development initiatives.
- Support the development of integrated polices around the STEM workforce.
- Establish partnerships to collect and disseminate information and coordinate resources to build a robust STEM workforce of the future.

For example, the Office of Naval Research (ONR) is interested in receiving proposals for developing innovative solutions that directly support the development and maintenance of a robust STEM workforce. Successful efforts will be targeted towards one or more of the following: K-12, Undergraduate, Graduate STEM education. The goal of any proposed effort should be to provide "game changing" solutions that will establish and maintain a diverse pipeline of U.S. citizens who are interested in participating in Naval STEM education programs.
and who ultimately will be interested in STEM careers. While not a formal requirement of the BAA, where applicable, programs are encouraged to consider focusing on bringing Naval STEM to under-represented populations (including women and minorities). Science, Technology, Engineering & Mathematics (STEM) Education and Outreach for K-12 and Higher Education BAA 13-007.

The National Science Foundation, however, remains the principal agency of focus for those in the university STEM community seeking to build a more robust STEM Workforce Ecosystem on campus. The broad yet integrative nature of NSF STEM workforce program solicitations is a natural fit for universities, given such common mission objectives as research, research training, and the recruitment, retention, and graduation of STEM participants at all degree levels.

Moreover, given the evolving nature of NSF’s STEM workforce solicitations, especially for 2014, it is important for anyone writing NSF grants in this area to read newly published solicitations, both those you may apply for and those you will not, to get a better sense of the NSF expectations for STEM workforce going forward. This reading will give you a significant competitive advantage in writing NSF grants during 2014. Examples of some NSF programs that are part of the NSF STEM workforce universe are listed below. Familiarity with these solicitations and the documents and reports referenced in these solicitations offers a competitive advantage to anyone who takes the time to read them, recalling that “funding favors the strategically prepared grant writer.” As mentioned, you will note in many of these below solicitations that NSF specifically addresses the role the joint agency report Common Guidelines for Education Research and Development plays in the specific program:

The Innovative Technology Experiences for Students and Teachers (ITEST) program supports the development, implementation, testing, and scaling of programs that add breadth and depth to the skills of the STEM workforce. ITEST projects must include students and may include K-12 teachers. Robotics competitions and other initiatives to improve students’ readiness for STEM disciplines are of particular interest. Proposal deadline is February 11, 2014 and November 6, 2014.

The NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) program makes grants to institutions of higher education to support scholarships for academically talented, financially needy students, enabling them to enter the STEM workforce following completion of an associate, baccalaureate, or graduate-level degree in science and engineering disciplines. Grantee institutions are responsible for selecting scholarship recipients, reporting demographic information about student scholars, and managing the S-STEM project at the institution. The next proposal deadline for S-STEM is August 12, 2014.

STEM-C Partnerships: MSP National Science Foundation. The STEM-C (Science, Technology, Engineering and Mathematics, including Computing) Partnerships program is a major research and development effort of two NSF Directorates, the Directorate for Education and Human Resources and the Directorate for Computer and Information Science and Engineering, which supports innovative partnerships to improve teaching and learning in science, technology, engineering, and mathematics (STEM) disciplines. STEM-C Partnerships combines and advances the efforts of both the former Math and Science Partnership (MSP) and the former Computing Education for the 21st Century (CE21) programs. It is critical that our
nation maintain a competent, competitive and creative STEM workforce, including teachers. Therefore, NSF aims to inspire and motivate the next generation of that workforce, while ensuring that it has the skills, competencies, and preparation to be successful. As we transition to a global, knowledge-based economy that is often driven by information technology and innovation, it is increasingly important that STEM workforce preparation include a strong foundation in computing. Due March 18, 2014.

**STEM-C Partnerships: Computing Education for the 21st Century (STEM-CP: CE21).** The STEM-C (Science, Technology, Engineering and Mathematics, including Computing) Partnerships program is a major research and development effort of two NSF Directorates, the Directorate for Education and Human Resources (EHR) and the Directorate for Computer and Information Science and Engineering (CISE), which supports innovative partnerships to improve teaching and learning in science, technology, engineering, and mathematics (STEM) disciplines. STEM-C Partnerships combines and advances the efforts of both the former Math and Science Partnership (MSP) and the former Computing Education for the 21st Century (CE21) programs. It is critical that our nation maintain a competent, competitive, and creative STEM workforce, including teachers. Due March 18, 2014.

**STEM Workforce References**


- [Community Colleges in the Evolving STEM Education Landscape: Summary of a Summit (2012)](ISBN 0309256542) Steve Olson and Jay B. Labov, Rapporteurs; Planning Committee on Evolving Relationships and Dynamics Between Two- and Four-Year Colleges and Universities; Board on Higher Education and Workforce, PGA; Board on Life Sciences, DELS; Board on Science Education

- [Emerging Workforce Trends in the U.S. Energy and Mining Industries: A Call to Action (2013)](ISBN 0309267447) Committee on Earth Resources; Board on Earth Sciences and Resources; Division on Earth and Life Studies; in Collaboration with Board on Higher Education and Workforce; Policy and Global Affairs; National Research Council

• **Preparing the Next Generation of Earth Scientists: An Examination of Federal Education and Training Programs (2013)** (ISBN 0309287472) Committee on Trends and Opportunities in Federal Earth Science Education and Workforce Development; Board on Earth Sciences and Resources; Division on Earth and Life Studies; National Research Council

• **Successful K-12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics (2011)** (ISBN 0309212960) Committee on Highly Successful Schools or Programs in K-12 STEM Education; National Research Council

• **Expanding Underrepresented Minority Participation: America’s Science and Technology Talent at the Crossroads (2011)** (ISBN 0309159687) Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline; Committee on Science, Engineering, and Public Policy; Policy and Global Affairs; National Academy of Sciences, National Academy of Engineering

• **Monitoring Progress Toward Successful K-12 STEM Education: A Nation Advancing? (2013)** (ISBN 0309264812) Committee on the Evaluation Framework for Successful K-12 STEM Education; Board on Science Education; Board on Testing and Assessment; Division of Behavioral and Social Sciences and Education; National Research Council

• **Building a Workforce for the Information Economy (2001)** (ISBN 0309069939) Committee on Workforce Needs in Information Technology; Board on Testing and Assessment; Board on Science, Technology, and Economic Policy; Office of Scientific and Engineering Personnel; National Research Council

• **Capturing Change in Science, Technology, and Innovation: Improving Indicators to Inform Policy (2013)** (ISBN 0309297443) Robert E. Litan, Andrew W. Wyckoff, and Kaye Husbands Fealing, Editors; Panel on Developing Science, Technology, and Innovation Indicators for the Future; Committee on National Statistics; Division on Behavioral and Social Sciences and Education


Review of the U.S. Department of Defense, Air and Space Systems Science and Technology Program; National Research Council


- **Assuring a Future U.S.-Based Nuclear and Radiochemistry Expertise (2012)** (ISBN 0309225345) Committee on Assuring a Future U.S.-Based Nuclear Chemistry Expertise; Board on Chemical Sciences and Technology; Division on Earth and Life Studies; National Research Council
NIH Grant Writing: New/Early Stage Investigators

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By Mike Cronan, co-publisher

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Journalist Ambrose Bierce made the observation that “There is nothing new under the sun but there are lots of old things we don’t know.” This is good advice to anyone writing proposals to NIH, particularly those classified by that agency as New Investigators or Early Stage Investigators (ESIs)--those without prior NIH funding, or those within ten years of completing a terminal degree (see New Investigator). In many ways, the best practices and strategies for writing successful proposals are largely generic across federal research agencies and foundations. However, each federal agency typically offers grant-writing advice expressed in terms of its own mission context, and this is certainly true at NIH. If you are new to a particular agency, such as NIH, it is important to first understand NIH’s published advice on the best grant-writing practices to ensure success at that agency, as well as to talk to colleagues successful at NIH and research professionals who have assisted in the writing and editing of numerous NIH applications. It is particularly important in grant writing, for instance, to analyze a funding agency sufficiently well to understand, as Bierce would have it, what it is you don’t know about writing successful grants to the agency and then use that knowledge to write more competitive proposals.

For example, it is helpful to know that NIH intends to support New Investigators at success rates comparable to those for established investigators submitting new applications. ESIs should comprise a majority of the New Investigators supported, according to NIH. Where possible, New Investigator applications will be clustered during review, NIH notes. The applications will be given special consideration during peer review and at the time of funding. Peer reviewers will be instructed to focus more on the proposed approach than on the track record, and to expect less preliminary data than would be provided by an established investigator. NIH New Investigator policies are limited to applications for traditional research project grant (R01) support. Nevertheless, this information will significantly influence how you write your application, particularly in terms of where emphasis is placed in the application.

Accordingly, NIH strongly encourages New Investigators, particularly ESIs, to apply for R01 grants when seeking first-time NIH funding (2.3.7.5 New Investigators and Early Stage Investigators). To determine New Investigator and Early Stage Investigator status, NIH relies on the data entered by applicants in their eRA Commons Profile; it is therefore important that PD/PIs verify the accuracy of their personal profiles. Particularly key for ESIs are the data fields showing terminal research degree and end date of residency. Each applicant’s ESI status and end of eligibility date also appear in the Commons profile.

Moreover, it is important to understand that NIH defines its role as the “steward of medical and behavioral research for the Nation. Its mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.” Furthermore, the majority of applications submitted to NIH under the categories of research and research training (including
fellowships) are investigator initiated. NIH omnibus parent announcements are provided for applicants to submit investigator-initiated (unsolicited) applications.

Before writing an NIH proposal, it is critical to fully understand how your proposal will be reviewed since that will impact what you address in the application and the hierarchical importance of the information you provide. In the case of NIH, five core review criteria are part of this process, specifically: significance, investigators, innovation, approach, and environment. Each criterion has associated with it a series of probing questions that need to be answered in the application. How well you respond to these questions will, in large part, determine whether or not your application succeeds.

According to NIH, the critical first step in submitting an application is to determine the ideas you want to put forward and determine where those ideas best fit at NIH. You should first learn about NIH by exploring the website. It’s always important to understand the process under which you’ll be evaluated, so that’s one of the first and foremost things to do. The second thing is to try to figure out what type of research you’re going to submit, and where it belongs at NIH, and whether it's appropriate and meets the strategic goals of the particular Institute and Center to which you will apply.

NIH encourages New Investigators to first learn about NIH by going onto the NIH website to better understand the different Institutes and Centers and the types of research that they support. It also recommends contacting NIH Program Officers. Program Officers are responsible for monitoring the science and managing the awards once they are made. They understand the research programs associated with their particular Institute and Center, and they can give individuals advice about their research areas and whether or not an area fits within that particular Institute and Center. NIH recommends contacting Program Officers “early and often” to help you find your research home at NIH.

You can contact a Program Officer by going onto the NIH website and looking under the particular Institute and Center, or under the Extramural Research Program where their programs are listed. You can also find Program Officers at the NIH RePORTER site. On RePORTER you can look up abstracts and enter key words to find particular areas of science. From the abstracts, you can then find Program Officers associated with particular types of programs. When a grant is awarded, it typically will list the Program Officer associated with it. Also, at the end of each of funding opportunity announcement, NIH will list a Program Officer you can call or e-mail. A new investigator occasionally may want to submit a paragraph or two about her research to the Program Officer through an e-mail.

However, the key to NIH funding is to have a creative idea that will catch the interest of reviewers and also the Institute or Center to which you submit your application. It is important to include any preliminary data that you have and also to put the appropriate number of aims that will signify to the reviewers that you’ve thought about the project and you know the boundaries of the project--how big it should be, or how small it should be. But demonstrating creativity and putting forward your best idea is the most important factor in a successful application, according to NIH.

Here again, the NIH RePORTER is an excellent tool for helping you better understand what NIH funds. If you write grants to NIH, then RePORTER will be a key tool in your grant-writing toolkit. As a database of NIH-funded projects, RePORTER will help you understand the
projects NIH funds and, by inference, research that might be redundant, or might complement the NIH research roadmap. The takeaway message, however, is that you want to gather all the information you can from whatever source regarding what NIH is currently funding in your particular area. Successful grants essentially rely upon sound strategy and the positioning of your research in a way that best maps to the funding agency objectives. RePORTER will help you do that.

But that doesn't mean that you can't go outside the box, according to NIH, and so some of the creative ideas may never have been thought of before. NIH does encourage you to think outside of the box. But at the same time, because it's a new application, you have to think about the risk involved in presenting brand new, untested ideas, NIH cautions. If you don't have a strong research record, as many new investigators don't, the panels reviewing your application may be unwilling to take the risk of funding the new ideas of a new investigator. So, NIH notes, it's a fine balance between coming out with a genuinely new creative idea and offering an idea that seems plausible and achievable.

In any case, NIH advises, the agency recognizes that new investigators are not going to have the large research publication record typical of established investigators. If you did have that publication record, you likely would not be eligible to apply as a new investigator. So, during the review and funding processes, reviewers will not expect new investigators to have a mature publication record, but they will expect applicants to demonstrate experience adequate to conduct the research proposed in the application.

For example, in your application you want to highlight any parts of your education and experience that demonstrate a capacity to perform the methodologies proposed. **If you don’t have that record, but you still have a great idea, the best plan is to come forth with a collaborator**, NIH advises. NIH encourages new researchers to find established investigators who can collaborate with them, thereby broadening the areas of expertise presented in an application. So, when possible, NIH suggests finding an established investigator with whom to collaborate on your first application.

NIH will typically ask collaborators to submit letters demonstrating their willingness to work with you. In addition, the CVs and other information documenting collaborators’ skills are usually included in the application, all of which add to the proposal’s strength by broadening the base of expertise and by demonstrating your realistic awareness of your strengths and weaknesses together with your commitment to the research idea put forward in your application.

**In terms of preliminary data**, NIH encourages applicants to have as much as possible, but again, NIH recognizes that new investigators probably won’t have the same amount of preliminary data as more experienced investigators. However, new investigators often have data from training grants or from their post doc projects, much of which also can be used as preliminary data in a first application as an R01 or an R21.

NIH emphasizes the importance of attending to the components of the application, and writing them carefully. **NIH encourages new investigators to get grant-writing advice and to learn about grant writing and what characterizes a well-written NIH application.** For instance, NIH points out, it is critical that applicants know how to be concise, to avoid overly ambitious applications, to promote their great ideas in the most compelling way, to put the...
appropriate amount of methods and other components in the application, and to make sure to use spell check and correct grammar.

NIH cautions that there is nothing more aggravating to reviewers than poor grammar in an application. **NIH is emphatic on this point:** *Errors in spelling and grammar can kill your application.* So all of these points made by NIH are important parts of the grant-writing process and, the agency advises, it is important to enhance your grant-writing skills to ensure that your application is well written and error free. When possible, for example, new investigators can gain key insights into grant writing by looking at other successful grant applications, perhaps applications shared by colleagues who are established investigators. So, NIH recommends, if you have an opportunity to ask established investigators for a copy of their funded applications, do so, as they can give you a good idea of what a fundable application looks like, and you can learn many tricks from those applications.

Of course, learning to write successful applications to NIH involves studying positive examples, as in the above NIH suggestion of reading funded applications, as well as becoming aware of the common reasons that applications from new investigators are not funded, i.e., **knowing the common mistakes made by new investigators in unsuccessful applications.**

According to NIH, **the most common mistake made by new investigators is to design overly ambitious projects.** Too often, new investigators have so many great ideas that they come in with ten or twelve objectives, something clearly not possible to accomplish in a three to four year funding time frame. And reviewers pick up on that, NIH cautions. So, first and foremost, you want to try to put some boundaries around your objectives and to carefully examine how many are appropriate to accomplishing your goals, and limit them appropriately. **NIH typically recommends no more than four objectives or specific aims in an application for a new investigator,** and even fewer can be sufficient.

Another mistake made by new investigators, according to NIH, is to **present an application that lacks conciseness.** NIH notes the importance of getting straight to the point of your research and doing so in a way that enables the reviewers to quickly and clearly understand what you propose to do. **Too often, NIH notes, new investigators fail to get to the point of their particular objectives.** NIH encourages applicants to describe their research in terms that are easily understood by peer reviewers, scientists, Congress, and the public. Titles, abstracts, and statements of public health relevance should:

- Convey the value of the research in plain language – **clear, succinct, and professional**
- Be comprehensible to **both** scientists and the public, and
- Relay the potential **impact of the research on health**

Another mistake noted by NIH in new investigator applications is the absence of appropriate collaborator documentation. So, if you don't have collaborators, it'll be picked up on quickly by reviewers, and they will fear you don't have the experience to really accomplish the goals stated in the application.

Moreover, you must demonstrate that your institution is going to support you. As a new investigator, reviewers will want to see that your institution is behind you in whatever you need, whether it be space, equipment, or relief from teaching. NIH wants to see that there is
institutional support behind your research. If that is absent, NIH notes, often times your application can be downgraded.

Moreover, if your application is not funded, NIH points out that you are in good company. NIH funds only about 20% of the applications received, meaning a lot of other people have been declined along with you. However, it is very important to take to heart reviewers’ comments as a means of becoming more successful in the future. NIH recommends paying particular attention to the components of the review that talk about whether or not you need collaborations and whether or not your application is overly ambitious. After making changes in accord with the reviewers’ comments, you can consider resubmitting the application to NIH. NIH will allow you to resubmit that idea again, just one more time. And at that point, you need to talk to the Program Officer because the Program Officer has listened to the review of your application and has an idea of what happened, and can give you helpful tips for approaching a resubmission. So, NIH advises, pick up the phone at some point and talk to the Program Officer before resubmitting your application.

Finally, other tips by NIH for New Investigators submitting an application include:

- The application instructions require that materials be organized in a particular format. Reviewers are accustomed to finding information in specific sections of the application. Organize your application to effortlessly guide reviewers through it. This creates an efficient evaluation process and saves reviewers from having to hunt for required information.
- Think like a reviewer. A reviewer must often read 10 to 15 applications in great detail and form an opinion about each of them. Your application has a better chance at being successful, if it is easy to read and follows the usual format. Make a good impression by submitting a clear, well-written, properly organized application.
- Start with an outline following the suggested organization of the application.
- Be complete and include all pertinent information.
- Be organized and logical. The thought process of the application should be easy to follow. The parts of the application should fit together.
- Write one sentence summarizing the topic sentence of each main section. Do the same for each main point in the outline.
- Make one point in each paragraph. This is key to ensuring readability. Keep sentences to 20 words or less. Write simple, clear sentences.
- Before you start writing the application, think about the budget and how it is related to your research plan. Remember that everything in the budget must be justified by the work you’ve proposed to do.
- Be realistic. Don't propose more work than can be reasonably completed during the proposed project period. Make sure that the personnel have appropriate scientific expertise and training. Make sure that the budget is reasonable and well justified.
- Capture the reviewers' attention by making the case for why NIH should fund your research. Tell reviewers why testing your hypothesis is worth NIH’s money, why you are the person to do it, and how your institution can give you the support you’ll need to get it done. Be persuasive.
• Include enough background information to enable an intelligent reader to understand your proposed work.
• Although it’s not a requirement for assignment purposes, a cover letter can help the Division of Receipt and Referral in the Center for Scientific Review assign your application for initial peer review and to an IC for possible funding.
• **Use the active, rather than passive, voice.** For example, write "We will develop an experiment," not "An experiment will be developed."
• **Use a clear and concise writing style so that a non-expert may understand the proposed research.** Make your points as directly as possible. Use basic English, avoiding jargon or excessive language. Be consistent with terms, references, and writing style.
• Spell out all acronyms on first reference.
• Use subheadings, short paragraphs, and other techniques to make the application as easy to navigate as possible. Be specific and informative, and avoid redundancies.
• Use diagrams, figures, and tables, and include appropriate legends, to assist the reviewers to understand complex information. **These should complement the text and be appropriately inserted.** Make sure the figures and labels are readable in the size they will appear in the application.
• Use bullets and numbered lists for effective organization. Indents **and bold print add readability.** Bolding highlights key concepts and allows reviewers to scan the pages and retrieve information quickly. Do not use headers or footers.
• Identify weak links in your application so the application you submit is solid, making a strong case for your project.
• **If writing is not your forte, seek help!**

**Proofreading and Final Edits**

• Allow sufficient time to put the completed application aside, and then edit it from a fresh vantage point. Try proofreading by reading the application aloud.
• **Allow time for an internal review by collaborators, colleagues, and mentors, and make revisions/edits from that review.** If possible, have both experts in your field and those who are less familiar with your science provide feedback. The application should be easy to understand by all.
• Arrange for an independent expert to provide an objective critique of your application. If possible, arrange for neutral third-party reviewers.
• If more than one investigator is contributing to the writing, it would be helpful to have **one overall editor.**
• **Have zero tolerance for typographical errors, misspellings, grammatical mistakes, or sloppy formatting.** A sloppy or disorganized application may lead the reviewers to conclude that your research may be conducted in the same manner.
• Prior to submission, perform a final proofread of the entire grant application.
NSF held four webinars on the EHR Core Research (ECR) program during December, 2013, related to four core program objectives--STEM learning, STEM learning environments, workforce development, and broadening participation in STEM (also see Webinar Slides; ECR Webinar Slides). In these webinars, NSF addressed three key questions: “Should the ECR proposal [due February 4] have a dissemination plan?” “Do I need to present baseline data and a theory of change?” and “Must a project be evidence-based or evidence-generating?” NSF’s responses bulleted below are important not just for this specific ECR solicitation but for many other NSF STEM education programs, as well as those at other federal agencies funding STEM education. These other agencies include those listed in the 143-page Federal Science, Technology, Engineering, and Mathematics (STEM) Education 5-Year Strategic Plan, A Report from the Committee on STEM Education, National Science and Technology Council (May 2013) and in the recently published Common Guidelines for Education Research and Development (NSF 13-126; NSF 13-127), as noted in companion articles in this issue of the newsletter. Given the well-funded STEM enterprise across federal agencies (in FY 2011 the Federal Government expended $2.891 billion on more than 200 STEM-focused investments), dissemination plans can be an important part of a proposal’s overall competitiveness, as NSF notes below.

Should the ECR Proposal Have a Dissemination Plan?

- The spread of the use of effective approaches to STEM education relies on outreach to the community, including presentation at professional society meetings, workshops, publication, and other mechanisms.
- Investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections, and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing.
- Under all NSF awards, investigators are expected to promptly prepare and submit for publication, with authorship that accurately reflects the contributions of those involved, all significant findings from work conducted under NSF grants.

(NSF Awards and Administration Guide (AAG) Chapter VI.D.4.a contains further information on this topic, as given at the end of this article.)

Do I need to present baseline data and a theory of change?

If the rationale for your project and the basis and execution of its activities can be illuminated by such data or any other data or information, then you are encouraged to provide it.

Must a project be evidence-based or evidence-generating?
As per the Program Description: “Proposals should describe projects that build on available evidence and theory, and that will generate evidence and build knowledge.”

The take away here in terms of the NSF response to these questions is that successful proposals place data in a context, both of the proposed project itself and in a broader national context whereby your project specific data is juxtaposed to national data in order for the agency and reviewers to calibrate the importance of your project to agency objectives and to judge its relative merit in relation to other proposed project submitted in response to a specific solicitation, as well as judge against the field itself.

The fundamental generic questions asked by program officers and reviewers across federal agencies for both research and education proposals relates to how well your proposed project advances the agency-specific mission objectives and advances the field in some significant way, or perhaps impacts other fields. Answers to these questions may be in the background section of the proposal, or in a section discussing the state of the art in the field, or it may be woven and integrated into the project narrative in a more seamless fashion that addresses the innovative and transformational nature of your project. Regardless, for program officers and reviewers to understand the relative importance of your proposed project compared to other proposed projects submitted under the same solicitation and to judge the merits of your proposed project compared to the state of the art in the field requires that you establish a data context.

That data context may be institutionally specific and based on past performance in the project area, perhaps institutional data collected as part of annual performance reviews on prior grants, e.g., the type of information that might be included in a “Results from Prior Support” section of a proposal, or similar proof of concept data that validate your proposed research project model. The other type of data sets the stage for your proposed project on a larger, typically national, scale.

In the case of STEM education projects, or in the case of research projects requiring STEM educational and training components, e.g., everything from an NSF ERC or STC to a CAREER, there are many good sources of national data and resources, but any list would likely include The Math and Science Partnership Network (MSPNet), Educational Resources Information Center (ERIC), Regional Educational Laboratories (RELs), What Works Clearinghouse (WWC), Institute of Education Sciences (IES) [National Center for Education Research (NCES), National Center for Education Statistics (NCES), National Center for Education Evaluation and Regional Assistance (NCEE), National Center for Special Education Research (NCSER), as well as extensive context data at NSF’s National Center for Science and Engineering Statistics (NCSES). Moreover, with the exception of the CAREER award, most STEM education projects are typically large team grants (LTGs) that will benefit enormously from the data and resources listed above as provided by the below agencies and centers.

- **MSPnet** is an electronic learning community for the Math and Science Partnership Program. With the MSP Program, the National Science Foundation implemented an important facet of the President's No Child Left Behind (NCLB) vision for K-12 education. A major research and development effort, the MSP program responds to concern over the performance of the nation's children in mathematics and science. Institutions of
higher education partner with K-12 districts and others to effect deep, lasting improvement in K-12 mathematics and science education.

- **ERIC** is an online digital library of education research and information. ERIC is sponsored by the Institute of Education Sciences (IES) of the U.S. Department of Education. ERIC provides ready access to education literature in support of using educational research and information to improve practice in learning, teaching, educational decision making, and research. The ERIC mission is to provide a comprehensive, easy-to-use, searchable, Internet-based bibliographic and full-text database of education research and information that also meets the requirements of the Education Sciences Reform Act of 2002.

- **RELs** work in partnership with school districts, state departments of education, and others to use data and research to improve academic outcomes for students. The RELs’ mission is to provide support for a more evidence-reliant education system.

- WWC reviews the research on the different programs, products, practices, and policies in education. Then, by focusing on the results from high-quality research, WWC answers the question “What works in education?” The WWC goal is to provide educators with the information they need to make evidence-based decisions.

- The Education Sciences Reform Act of 2002 was established within the U.S. Department of Education, the Institute of Education Sciences (IES). IES’s mission is to provide rigorous evidence on which to ground education practice and policy. This is accomplished through the work of its four centers.

- NCER supports rigorous research that addresses the nation’s most pressing education needs, from early childhood to adult education.

- NCES is the primary federal entity for collecting and analyzing data related to education.

- NCEE conducts unbiased, large-scale evaluations of education programs and practices supported by federal funds; provides research-based technical assistance to educators and policymakers; and supports the synthesis and the widespread dissemination of the results of research and evaluation throughout the United States.

- NCSER sponsors a comprehensive program of special education research designed to expand the knowledge and understanding of infants, toddlers, and children with disabilities. (For NCSER's complete definition of disability and risk for disability, [click here](#).)

- The National Center for Science and Engineering Statistics (NCSES) is the nation’s leading provider of statistical data on the U.S. science and engineering enterprise. Explore its website for data on research and development, the science and engineering workforce, the condition and progress of STEM education, and U.S. competitiveness in science, engineering, technology, and R&D. [Learn more about NCSES](#).

**NSF’s serious commitment to disseminating research results is codified in its NSF Awards and Administration Guide (AAG) Chapter VI.D.4.a as follows:**

4. Dissemination and Sharing of Research Results
a. Investigators are expected to promptly prepare and submit for publication, with authorship that accurately reflects the contributions of those involved, all significant findings from work conducted under NSF grants. Grantees are expected to permit and encourage such publication by those actually performing that work, unless a grantee intends to publish or disseminate such findings himself.

b. Investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections and other supporting materials created or gathered in the course of work under NSF grants. Grantees are expected to encourage and facilitate such sharing. Privileged or confidential information should be released only in a form that protects the privacy of individuals and subjects involved. General adjustments and, where essential, exceptions to this sharing expectation may be specified by the funding NSF Program or Division/Office for a particular field or discipline to safeguard the rights of individuals and subjects, the validity of results, or the integrity of collections or to accommodate the legitimate interest of investigators. A grantee or investigator also may request a particular adjustment or exception from the cognizant NSF Program Officer.

c. Investigators and grantees are encouraged to share software and inventions created under the grant or otherwise make them or their products widely available and usable.

d. NSF normally allows grantees to retain principal legal rights to intellectual property developed under NSF grants to provide incentives for development and dissemination of inventions, software, and publications that can enhance their usefulness, accessibility, and upkeep. Such incentives do not, however, reduce the responsibility that investigators and organizations have as members of the scientific and engineering community, to make results, data, and collections available to other researchers.

e. NSF program management will implement these policies for dissemination and sharing of research results, in ways appropriate to field and circumstances, through the proposal review process; through award negotiations and conditions; and through appropriate support and incentives for data cleanup, documentation, dissemination, storage and the like.
Research Grant Writing Web Resources

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Enhancing the Diversity of the NIH-Funded Workforce

The NIH has published three new Funding Opportunity Announcements (FOAs) for the "Enhancing the Diversity of the NIH-Funded Workforce" program.

- Read the National Research Mentoring Network (NRMN) FOA (RM-RFA-13-017)
- Read the Building Infrastructure Leading to Diversity (BUILD) FOA (RM-RFA-13-016)
- Read the Coordination and Evaluation Center (CEC) FOA (RM-RFA-13-015)

*There will be a technical assistance webinar for applicants in January 2014.* More details and a link to register will be posted on this site. Subscribe to our email list to receive updates, or check back on this website for updates. Read Frequently Asked Questions for this program.

In 2012, the NIH Advisory Committee to the Director (ACD) Working Group on Diversity in the Biomedical Research Workforce explored ways to improve the recruitment of individuals from diverse backgrounds underrepresented in biomedical research and prepare them for successful biomedical research careers. (These individuals include persons from underrepresented racial and ethnic groups, people with disabilities, and people from disadvantaged backgrounds [here], and the latest [NSF report](http://www.nsf.gov/statistics/) on Women, Minorities, and Persons with Disabilities in Science and Engineering. The Working Group provided recommendations, endorsed by the ACD, about how to develop and support individuals from diverse backgrounds across the lifespan of a biomedical research career [here]. In response to these recommendations, the NIH has established the "Enhancing the Diversity of the NIH-Funded Workforce" program.

Business Research and Development and Innovation Survey (BRDIS)

The Business Research and Development and Innovation Survey, successor to the Survey of Industrial Research and Development, is the primary source of information on research and development performed or funded by businesses within the United States. The survey is conducted by the Census Bureau in accordance with an interagency agreement with the National Center for Science and Engineering Statistics. Results are used to assess trends in the performance and funding of business R&D. The annual survey examines a nationally representative sample of companies in manufacturing and nonmanufacturing industries.
**Expanding Evidence Approaches for Learning in a Digital World**

This report combines the views of education researchers, technology developers, educators, and researchers in emerging fields such as educational data mining and technology-supported evidence centered design to present an expanded view of approaches to evidence. It presents the case for why the transition to digital learning warrants a reexamination of how we think about educational evidence. The report describes approaches to evidence-gathering that capitalize on digital learning data and draws implications for policy, education practice, and R&D funding.

This report describes how big data and an evidence framework can align across five contexts of educational improvement. It explains that before working with big data, there is an important prerequisite: the proposed innovation should align with deeper learning objectives and should incorporate sound learning sciences principles. New curriculum standards, such as the Common Core State Standards and the Next Generation Science Standards, emphasize deeper learning objectives. Unless these are substantively addressed at the core of a learning resource, it is unlikely the resource will meet these important objectives.

**Formative Assessment for Next Generation Science Standards: A Proposed Model**

Historically, educational policymakers have focused on and invested heavily in accountability testing of learning to leverage improvement in student learning. Through accountability testing, policy makers aim to communicate standards, establish performance goals, provide data through which educators can analyze and improve school programs and student performance, and establish incentives and sanctions to motivate action. Today, however, there is growing recognition of the limitations of accountability testing of learning and wide acknowledgment and accumulating evidence of the crucial role that formative assessment—assessment for learning—can play in helping all students achieve rigorous standards. Rather than looking back to judge what has been learned, formative assessment projects forward. It involves the ongoing collection and use of assessment during instruction to understand where students are relative to intended goals, as well as the use of that data to take immediate action-to adapt teaching and learning-to help students get to where they need to go. Attesting to the popularity of formative assessment in current educational policy and practice, the two Race to the Top Common Core State Standards assessment consortia are charged with developing formative and interim tools and practices, in addition to end-of-year accountability tests. Formative assessment must also be an essential—if not the key-component of any assessment system for the Next Generation Science Standards (NGSS Lead States, 2013).
Dear Colleague Letter: Cancellation of FY 2015 FESD Competition
Due to the uncertainty of future funding levels, GEO has revisited its budgetary plans. As a result, GEO will not be holding the third round of competition for the FESD program in FY 2015 as originally planned and at this time, GEO does not expect to hold any future FESD competitions. GEO regrets that this decision impacts many in our community who have invested time and other resources in building teams and projects for submission to the expected solicitation.

NSF FastLane Changed Checks for Preliminary Proposals and Supplementary Funding Requests Effective December 21, 2013
The National Science Foundation FastLane system will no longer provide “Required Item” or “Warning” messages if the following sections are not included in a preliminary proposal or supplemental funding request:
- project description
- references cited
- biographical sketches
- budget
- budget justification
- current and pending support
- facilities, equipment and other resources

Notice to Presidents of Universities and Colleges and Heads of other National Science Foundation Awardee Organizations
As a public agency, the National Science Foundation builds and sustains trust for our mission through the transparency of our processes and the accountability of our organization. Periodically, as a learning organization committed to continuous improvement, we review our processes to ensure that they continue to engender this trust. A recent review by NSF senior leadership in consultation with the National Science Board affirmed our fundamental principles and identified opportunities for improvements in two areas to enhance our public stewardship.

One area is our accountability for ensuring that our investment decisions support the national interest, defined by NSF’s mission “to promote the progress of science; to advance the national health, prosperity and welfare; to secure the national defense...” To strengthen this alignment, our directorates and offices are examining process improvements for defining research priorities and objectives at all levels of the organization and at all stages of merit review. As a result, the community should benefit from greater understanding and knowledge of the priorities and objectives of our research programs. We would certainly welcome the community’s thoughts and suggestions in this regard.

A second area is communications regarding our investment decisions. In the current fiscal environment, it is more important than ever to justify the expenditure of public funding. We believe we can enhance our public communications of what we are funding and why it is...
important. The immediate focus will be on improving our research abstracts, ensuring these primary sources of public information clearly articulate the broader context and funding justification. While our program officers are responsible for preparing abstracts, this often involves input from principal investigators, and so we will be directly engaging the community in this effort. Of course, one of the most effective outreach mechanisms for improved communication is through our community, and we look forward to working with you as we identify other mechanisms to strengthen our public message.

From an implementation perspective, our efforts may result in the adoption of new policies and improved processes, which we will share with the community. We expect that, over time, this increased focus on transparency and accountability will improve our processes, strengthen our research programs, enhance our communications and advance the national interest.

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0000971
Golden Field Office DE-FOA-0001038
The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Wind and Water Power Technologies Office, a Funding Opportunity Announcement (FOA) entitled "Environmental Stewardship for Renewable Energy Technologies: Marine and Hydrokinetic (MHK) Environmental and Resource Characterization Instrumentation?. This FOA will support the development of instrumentation, associated processing tools, and integration of instrumentation packages for monitoring the environmental impacts of marine and hydrokinetic technologies. It will also support the development and testing of sensors, instrumentation, or processing techniques to collect physical data on ocean waves (e.g., height, period, directionality, steepness) and characterize the available resources. The Notice of Intent is posted on the EERE eXCHANGE website. Prospective applicants to the FOA should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of this FOA. It is anticipated that this FOA will be posted to EERE Exchange in the first quarter of calendar year 2014. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for the EERE eXCHANGE can be found on the EERE website after logging in to the system.

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0000991 National Energy Technology Laboratory DE-FOA-0001053
The purpose of this Notice of Intent is to provide potential applicants advance notice that the Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Vehicle Technologies Office (VTO), a Funding Opportunity Announcement (FOA), number DE-FOA-0000991 entitled FY14 Vehicle Technologies Program Wide Funding Opportunity Announcement. Prospective applicants should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of this FOA. It is anticipated that this FOA will be posted to EERE Exchange on or about January 2014. This FOA will cover multiple areas of interest/topic areas that span a range of technologies that will enable VTO to achieve programmatic goals and objectives while contributing to the overall mission success of DOE and EERE.
Notice of Intent to Issue Funding Opportunity Announcement DE-FOA-0000841: Geothermal Play Fairway Analysis, Golden Field Office DE-FOA-0001061
The Geothermal Technologies Office (GTO) is interested in research that addresses the overarching theme of uncertainty quantification and reduction, specifically through the development of Geothermal Play Fairways. A play fairway analysis defines levels of uncertainty with respect to the presence and utility of geothermal system elements, and translates them into maps to high grade the geographic area over which the most favorable combinations of heat, permeability, and fluid are thought to extend. This analysis is conducted on a regional (basin) scale, with the resulting maps covering areas of up to several thousand square miles. The purpose of this Notice is to provide potential applicants advance notice that the Geothermal Technologies Office (GTO), on behalf of the DOE Office of Energy Efficiency and Renewable Energy (EERE), intends to issue a Funding Opportunity Announcement (FOA) titled, "Geothermal Play Fairway Analysis." Prospective applicants to the FOA should begin developing partnerships, formulating ideas, and gathering data in anticipation of the issuance of the FOA. It is anticipated that this FOA will be posted to EERE Exchange in January, 2014.

AHRQ Implements the Research Performance Progress Report (RPPR) for AHRQ Fellowship Grantees
The Agency for Healthcare Research and Quality will require its Fellowship grantees to use the eRA commons Research Performance Progress Report (RPPR) module in 2014, and will subsequently transition most other AHRQ awards to the RPPR.

DOE Strategic Plan from ASA, CSSA, & SSSA
ASA, CSSA, and SSSA have submitted comments on the Draft DOE Strategic Plan for 2014-2018. Three main components of the strategic plan have been addressed. They include the role of agriculture in our energy challenges, support for fundamental biological and environmental scientific research, and attracting and retaining necessary workforce to meet goals. Read full letter

NIH Announces Six Funding Opportunities for the BRAIN Initiative in fiscal 2014
The National Institutes of Health is releasing funding opportunities to build a new arsenal of tools and technologies for unlocking the mysteries of the brain. The NIH action is in support of President Obama’s Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative. The six opportunities announced today were developed in response to high priority areas (PDF - 536KB) identified by the NIH Advisory Committee to the Director’s BRAIN Working Group in September 2013. Awards are expected to be announced in September 2014 and will constitute NIH’s initial investment of $40 million in the initiative. For more information on the NIH BRAIN Initiative and funding opportunities, go to: http://www.nih.gov/science/brain.

Dear Colleague Letter: MPS/AST Portfolio Divestment Options
The National Science Foundation (NSF) has embarked on an exciting program in astronomy that involves construction of several new state-of-the art telescopes, in order to enable progress on...
key scientific questions in astronomy. In a constrained budget environment, building and operating these new facilities requires that difficult priority choices be made. Therefore, in 2011/2012, the NSF Directorate for Mathematical and Physical Sciences (MPS) conducted a community-based Portfolio Review of the program of its Division of Astronomical Sciences (MPS/AST). The Portfolio Review Committee report recommended significant adjustments to the MPS/AST research portfolio, including divestment of some major telescope facilities, in order to maintain the most compelling scientific program. In its written response to that report, MPS/AST noted that it would make decisions about divestments near the end of 2013. This letter provides information to the scientific community about the status of the response to the Portfolio Review Committee’s divestment recommendations. For some telescopes, studies of alternatives will be carried out in 2014, while the assessment of options for other telescopes will be deferred until alternatives can be defined more crisply; this letter presents the details and rationale on a telescope-by-telescope basis.

Dear Colleague Letter: Research on Privacy in Today’s Networked World
Privacy is a major issue of the information age. Organizations are increasingly acquiring and storing vast quantities of information about individuals. In addition, advances in big data analytics enable organizations to combine previously distinct information sources and to examine these data to uncover hidden patterns, correlations, and other revealing information. Research on privacy is needed to address how technological change and societal trends are combining to reshape privacy and the implications of such reshaping.

The directorates for Social, Behavioral, and Economic Sciences (SBE) and Computer and Information Science and Engineering (CISE) invite investigators to submit proposals that address the need to develop new and deeper understandings of privacy in today’s networked world. Our interest spans both disciplinary and interdisciplinary research in an array of SBE sciences. Proposals for workshops to explore novel and interdisciplinary SBE and SBE/CISE approaches to privacy are also welcome.

Below are some examples of the types of topics that SBE scientists or teams of SBE and CISE scientists could conceivably propose under this Dear Colleague Letter. The list is not exhaustive and is meant to suggest the broad spectrum of possibilities for research in this area. Topics might include, but are by no means limited to the following:

- The social and psychological functions of privacy
- The relationship between technical and psychological conceptualizations of privacy and trust
- Factors encouraging attention or inattention to privacy, including the role of technology
- The psychological or social consequences of privacy violations, especially those involving technology
- Institutional engagement with privacy-invading technologies, including adaptation to, utilization and avoidance
- The contextual nature of privacy and understanding what constitutes privacy or privacy violations in different social, political, cultural or technical contexts
- Privacy issues and impacts across different levels of analysis (e.g., the individual, dyad, group, organization, sector, or societal level) and with different kinds of technologies
**Dear Colleague Letter: Designing Materials to Revolutionize and Engineer our Future (DMREF)**

The National Science Foundation (NSF) announces the third year of a national materials initiative, Designing Materials to Revolutionize and Engineer our Future (DMREF). DMREF is the primary program by which NSF participates in the Materials Genome Initiative (MGI) for Global Competitiveness. MGI recognizes the importance of materials science to the well-being and advancement of society and aims to "deploy advanced materials at least twice as fast as possible today, at a fraction of the cost." As a national initiative, MGI integrates all aspects of the materials continuum, including materials discovery, development, property optimization, systems design and optimization, certification, manufacturing, and deployment, with each employing a toolset to be developed within a materials innovation infrastructure. The toolset will synergistically integrate advanced computational methods and visual analytics with data-enabled scientific discovery and innovative experimental techniques so as to revolutionize our approach to materials science and engineering.

**Dear Colleague Letter: Stimulating Integrative Research in Computational Cognition**

This Dear Colleague Letter is intended to enhance the scientific and societal impact of the field by encouraging active dialogue across the cognitive and computational communities, facilitating bidirectional cross-fertilization of ideas, and nurturing emerging areas of transdisciplinary research.

The National Science Foundation (NSF) is interested in receiving proposals to existing programs, listed in above URL, that explore computational models of human cognition, perception and communication and that integrate considerations and finding across disciplines. Proposals submitted to programs in SBE should include a rigorous computational context, and proposals submitted to programs in CISE should include a rigorous cognitive context. For example, proposals that explore human cognition, perception, action, communication or learning should integrate and exploit what has been learned in the fields of artificial intelligence, natural language processing, computational neuroscience, computer vision, robotics, machine learning, or other related areas. Similarly, proposals that explore artificial systems, cyber-human or co-robotics designs should leverage and integrate our understanding of human cognition, perception, action control, linguistics, or developmental science.

This is not a special competition or new program. Proposals in response to this Dear Colleague Letter must meet the requirements and deadlines of the program to which they are submitted, but should start the proposal title with “CompCog:”. Primary and secondary units of consideration on the cover sheet should indicate which participating SBE and CISE programs are most relevant. These proposals may, at the discretion of the cognizant program director, be reviewed in a special cross-directorate Computational Cognition panel.

**NSF DCL: DMREF Proposals of Special Interest to the Division of Mathematical Sciences 2014**

The Division of Mathematical Sciences (DMS) of the National Science Foundation (NSF) strongly encourages mathematicians and statisticians to participate in the 2014 NSF activity Designing Materials to Revolutionize and Engineer our Future (DMREF). DMREF is the main program by which NSF participates in the Materials Genome Initiative for Global Competitiveness (MGI), a national materials initiative. MGI recognizes the importance of materials science to the well-
being and advancement of society and aims to "deploy advanced materials at least twice as fast as possible today, at a fraction of the cost." It integrates all aspects of materials design, including materials discovery, development, property optimization, systems design and optimization, certification, manufacturing, and deployment, with each employing the toolset that is being developed within the materials innovation infrastructure. The toolset will integrate synergistically advanced computational methods and visual analytics with data-enabled scientific discovery and innovative experimental techniques, aiming to revolutionize the approach to materials research and engineering.

DMREF comprises well-coordinated activities involving the Directorates of Mathematical and Physical Sciences (MPS), Engineering (ENG), and Computer & Information Science & Engineering (CISE). For further details and participating divisions please see NSF 14-020, the broadly aimed Dear Colleague Letter about DMREF in fiscal year 2014. As described in that Letter, success in the initiative requires a collaborative, synergistic, iterative approach that shows interactions among theory, computation, and experiments. This approach is the central principle of MGI. DMREF proposals will be reviewed jointly by the appropriate participating divisions. Adherence to the aims and principles of MGI will facilitate this joint review.

DMREF proposals of specific interest to the Division of Mathematical Sciences must:

- seek new mathematical or statistical results that will advance the DMREF agenda;
- describe a research plan that meets the central Materials Genome Initiative principle of closely coupled, iterative interplay among theory, computation, and experiment;
- be submitted within the window 15 January - 18 February 2014, inclusive;
- be submitted to the Design of Engineering Materials Systems (DEMS/PD 12-8086) program; and
- deal with problems in the range of issues described in the DMREF Dear Colleague letter NSF 14-020.

**AFRI Program Area Deadline Dates**
The Agriculture and Food Research Initiative (AFRI) encompasses several different Request for Applications (RFA) that contain many Program Areas. These Program Areas cover a broad array of issues and topics important to U.S. agriculture. Important deadlines are summarized in the table below. Refer to the RFAs for Program Area Priorities for FY 2014.

- **FY 2014 AFRI RFAs**
- **AFRI NIFA Fellowships Grant Program RFA**
- **AFRI Foundational Program RFA**

**FY 2014 AFRI RFAs/AFRI Fellowships Grant Program RFA**

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<tr>
<th>Program Area</th>
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<tr>
<td>NIFA Predoctoral Fellowships</td>
<td>A7101</td>
<td>Dr. Ray Ali</td>
<td>December 12, 2013</td>
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<td>NIFA Postdoctoral Fellowships</td>
<td>A7201</td>
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<td>Plant Health and Production and Products</td>
<td>A1101 A1111 A1121 A1131 A1141 A1151</td>
<td>Dr. Liang-Shiou Lin Dr. Mary Purcell-Miramontes Dr. Ann Lichens-Park Dr. Michael Bowers Dr. Ann Marie Thro Dr. Shing Kwok</td>
<td>February 19, 2014</td>
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<tr>
<td>Animal Health and Production and Animal Products</td>
<td>A1201 A1211 A1221 A1223 A1224 A1231 A1251</td>
<td>Dr. Lakshmi Matukumalli Dr. Mark Miranda Dr. Margo Holland and Dr. Peter Johnson Dr. Peter Johnson and Dr. Margo Holland Dr. Steven Smith Dr. Margo Holland and Dr. Peter Johnson</td>
<td>February 27, 2014</td>
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<td>Food Safety, Nutrition and Health</td>
<td>A1331 A1341 A1361</td>
<td>Dr. Jeanette Thurston Dr. Deirdra Chester Dr. Jodi Williams</td>
<td>February 18, 2014</td>
<td>May 6, 2014</td>
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<td>Renewable Energy, Natural Resources and Environment</td>
<td>A1401 A1451</td>
<td>Dr. Ray Knighton Dr. Michael Bowers and Dr. Jill Auburn</td>
<td>March 12, 2014</td>
<td>June 4, 2014</td>
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<tr>
<td>Agriculture Systems and Technology</td>
<td>A1511 A1521</td>
<td>Dr. Hongda Chen and Dr. Mervin Morant Dr. Daniel Schmoldt and Ms. Charlotte Kirk-Baer</td>
<td>February 5, 2014</td>
<td>April 9, 2014</td>
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<td>Agriculture Economics and Rural</td>
<td>A1601 A1621 A1631</td>
<td>Dr. Denis Ebodaghe and Dr. Jill Auburn and Dr. Jill Auburn</td>
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<td>Communities</td>
<td>A1641 A1651</td>
<td>Dr. Denis Ebodaghe Dr. Jill Auburn and Dr. Denis Ebodaghe Dr. Robbin Shoemaker and Dr. Fen Hunt</td>
<td>19, 2014</td>
<td>2014</td>
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<td>Critical Agricultural Research and Extension</td>
<td>A1701</td>
<td>Dr. Martin Draper</td>
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<td>Exploratory</td>
<td>Refer to RFA for details</td>
<td>Dr. Michael Bowers</td>
<td>Refer to RFA for details</td>
<td>Refer to RFA for details</td>
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Technologies to Enable Autonomous Detection for BioWatch: Ensuring Timely and Accurate Information for Public Health Officials: Workshop Summary

Technologies to Enable Autonomous Detection for BioWatch is the summary of a workshop hosted jointly by the Institute of Medicine and the National Research Council in June 2013 to explore alternative cost-effective systems that would meet the requirements for a BioWatch Generation 3.0 autonomous detection system, or autonomous detector, for aerosolized agents. The workshop discussions and presentations focused on examination of the use of four classes of technologies—nucleic acid signatures, protein signatures, genomic sequencing, and mass spectrometry—that could reach Technology Readiness Level (TRL) 6-plus in which the technology has been validated and is ready to be tested in a relevant environment over three different tiers of temporal timeframes: those technologies that could be TRL 6-plus ready as part of an integrated system by 2016, those that are likely to be ready in the period 2016 to 2020, and those are not likely to be ready until after 2020. Technologies to Enable Autonomous Detection for BioWatch discusses the history of the BioWatch program, the role of public health officials and laboratorians in the interpretation of BioWatch data and the information that is needed from a system for effective decision making, and the current state of the art of four families of technology for the BioWatch program. This report explores how the technologies discussed might be strategically combined or deployed to optimize their contributions to an effective environmental detection capability.
New Funding Opportunities

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Content Order
New Funding Posted Since December 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 December 15 Newsletter

OVW FY 2014 Sexual Assault Services Culturally Specific Grant Program Office on Violence Against Women OVW-2014-3696
The Office on Violence Against Women (OVW) is a component of the United States Department of Justice (DOJ). Created in 1995, OVW implements the Violence Against Women Act (VAWA) and subsequent legislation and provides national leadership on issues of sexual assault, domestic violence, dating violence, and stalking. Since its inception, OVW has supported a multifaceted approach to responding to these crimes through implementation of grant programs authorized by VAWA. By forging state, local and tribal partnerships among police, prosecutors, judges, victim advocates, health care providers, faith leaders and others, OVW grants help provide victims with the protection and services they need to pursue safe and healthy lives, while improving communities’ capacity to hold offenders accountable for their crimes. Due January 29.

Environmental Education Model Grants
EPA is seeking grant funding applications to support environmental education projects that promote environmental stewardship and help develop knowledgeable and responsible students, teachers, and citizens. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques ... and that will serve as models that can be replicated in a variety of settings. Under this solicitation EPA expects to award environmental education grants from the 10 EPA Regional offices and from Headquarters. Due February 4.

Support of Advanced Coal Research at U.S. Colleges and Universities DE-FOA-0001032
Through its annual Funding Opportunity Announcement DE-FOA-0001032, entitled Support of Advanced Coal Research at U.S. Colleges and Universities, the University Coal Research Program supports the Department of Energy’s Office of Fossil Energy and the National Energy Technology Laboratory mission by supporting long-term, high-risk meritorious fundamental research that advances the science of coal technologies at U.S. colleges and universities. Since its inception in FY1979, the UCR Program has maintained three objectives, to be achieved
simultaneously, which are: 1 sustain a national university program of research in energy and
environmental science and engineering related to coal through innovative and fundamental
investigations pertinent to coal conversion and utilization; 2 to maintain and upgrade the coal
research capabilities and facilities of U.S. colleges and universities; and 3 to support the
education and training of our next generation of scientists and engineers. FedConnect: DE-
FOA-0001032 Due February 4.

**Systems Biology of Bioenergy-Relevant Microbes to Enable Production of Next-Generation
Biofuels DE-FOA-0001060**
The Office of Biological and Environmental Research (BER) of the Office of Science (SC), U.S.
Department of Energy (DOE), hereby announces its interest in receiving applications for
research that supports the Genomic Science research program (here). In this FOA, applications
are requested for: i) Research to advance the development of promising new model organisms
relevant to biofuels production, ii) development of novel microbial functional capabilities and
biosynthetic pathways relevant to the production of advanced biofuels and the development of
strategies to overcome associated metabolic challenges resulting from pathway modification,
and iii) development of novel analytical technologies or high-throughput screening approaches

**Support of Advanced Fossil Resource Utilization Research by Historically Black Colleges and
Universities and Other Minority Institutions (HBCU/OMI) DE-FOA-0001041**
This program is designed to raise the overall level of competitiveness of Historically Black
Colleges and Universities and Other Minority Institutions (HBCU/OMI) with other institutions in
the field of fossil energy research; and to tap an under-utilized resource by increasing the
number of opportunities in the areas of science, engineering, and technical management.

**Human and Ecological Health Impacts Associated with Water Reuse and Conservation
Practices EPA-G2014-STAR-F1**
The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR)
program, is seeking applications to conduct research on and demonstration of human and
ecological impacts of treated wastewater applications (reclaimed water and wastewater reuse),
and water conservation practices including the use of non-traditional water sources as well as
more comprehensive long-term management and availability of water resources. Due
February 18.

**Summer Seminars and Institutes, National Endowment for the Humanities 20140304-FS**
These grants support faculty development programs in the humanities for school teachers and
for college and university teachers. NEH Summer Seminars and Institutes may be as short as
two weeks or as long as five weeks.
• extend and deepen knowledge and understanding of the humanities by focusing on
significant topics and texts;
• contribute to the intellectual vitality and professional development of participants;
• build communities of inquiry and provide models of civility and excellent scholarship and teaching; and
• link teaching and research in the humanities.

An NEH Summer Seminar or Institute may be hosted by a college, university, learned society, center for advanced study, library or other repository, cultural or professional organization, or school or school system. The host site must be suitable for the project, providing facilities for scholarship and collegial interaction. These programs are designed for a national audience of teachers. **Due March 4.**

**Institutes for Advanced Topics in the Digital Humanities National Endowment for the Humanities 20140314-HT**

These NEH grants support national or regional (multistate) training programs for scholars and advanced graduate students to broaden and extend their knowledge of digital humanities. Through these programs, NEH seeks to increase the number of humanities scholars using digital technology in their research and to broadly disseminate knowledge about advanced technology tools and methodologies relevant to the humanities. The projects may be a single opportunity or offered multiple times to different audiences. Institutes may be as short as a few days and held at multiple locations or as long as six weeks at a single site. For example, training opportunities could be offered before or after regularly occurring scholarly meetings, during the summer months, or during appropriate times of the academic year. The duration of a program should allow for full and thorough treatment of the topic. **Due March 11.**

**Intelligence Community - Center for Academic Excellence Defense Intelligence Agency — Department of Defense HHM402-14-BAA-243**

Accessing the 2014 IC CAE Broad Agency Announcement, #HHM402-14-BAA-243 The Broad Agency Announcement (BAA) for new IC Centers for Academic Excellence grants has been posted on www.grants.gov, the single point for all government grants. New users of www.grants.gov website need to first register and obtain a user identifier and password to use for logging into the site. Once registered and logged into the website, an applicant can click the “Current Efforts” tab and select the “Intelligence Community Centers for Academic Excellence Broad Agency Announcement #HHM402-14-BAA-243” page under the list. A “Frequently Asked Questions” section will be developed where all can view responses to all questions and comments, including those submitted by other organizations. Answers will be posted as they are developed. All questions are sent to ~243CAE@dodiis.mil. Applicants are encouraged to review all previous questions and answers prior to posting a question to avoid duplication of questions. **Due March 15.**

**Cyberlearning and Future Learning Technologies**

**Proposal requirements:** Every project should address three thrusts: Innovation, Advancing understanding of how people learn in technology-rich learning environments, and Promoting generalizability and transferability of the newly proposed technological genre. The proposed innovation should be a new type or configuration of learning technologies rather than a
particular application or tool. It is expected that these three parts of every proposal will be interconnected. See Section II. Program Description.

Methodology: Proposers are encouraged to make use of the Common Guidelines for Education Research and Development, published jointly by the National Science Foundation and the Institute of Education Sciences in the U.S. Department of Education, in developing their research methodology. See Subsection "PROPOSAL REQUIREMENTS: Methodology" in Section II. Program Description.

Integration Projects: The largest projects, which were named "Integration and Deployment Projects (INDP)" in the past are now named "Integration Projects (INT)." Their purpose is to integrate several technologically-sophisticated efforts that have already shown promise, incorporate promising technologies and their uses into the lives of learners or organizations, or extend a promising innovation in ways that would allow it to be used by a larger population or variety of learners, and to answer foundational research questions related to learning that can only be answered in the context of an integration such as that proposed; these ARE NOT scale-up projects or effectiveness studies. See Subsection "PROPOSAL CATEGORIES" in Section II. Program Description.

Additional References: Additional references related to the solicitation are cited. See the Subsection "REFERENCES" in Section II. Project Description.

Change of Full-Proposal Deadlines and Target Dates:
- Development and Implementation Projects (DIPs): due late March, 2014 and mid-January, 2015 through 2017
- Capacity-Building Projects (CAPs): target dates are late March, late July, and early December each year through July, 2017

STEM-C Partnerships: MSP National Science Foundation
The STEM-C (Science, Technology, Engineering and Mathematics, including Computing) Partnerships program is a major research and development effort of two NSF Directorates, the Directorate for Education and Human Resources and the Directorate for Computer and Information Science and Engineering, which supports innovative partnerships to improve teaching and learning in science, technology, engineering, and mathematics (STEM) disciplines. STEM-C Partnerships combines and advances the efforts of both the former Math and Science Partnership (MSP) and the former Computing Education for the 21st Century (CE21) programs. It is critical that our nation maintain a competent, competitive and creative STEM workforce, including teachers. Therefore, NSF aims to inspire and motivate the next generation of that workforce, while ensuring that it has the skills, competencies, and preparation to be successful. As we transition to a global, knowledge-based economy that is often driven by information technology and innovation, it is increasingly important that STEM workforce preparation includes a strong foundation in computing. Thus, the STEM-C Partnerships program addresses both the need for advances in K-12 STEM education generally, as well as the need to elevate the inclusion of computer science education. Due March 18.
STEM-C Partnerships: Computing Education for the 21st Century (STEM-CP: CE21)
The STEM-C (Science, Technology, Engineering and Mathematics, including Computing) Partnerships program is a major research and development effort of two NSF Directorates, the Directorate for Education and Human Resources (EHR) and the Directorate for Computer and Information Science and Engineering (CISE), which supports innovative partnerships to improve teaching and learning in science, technology, engineering, and mathematics (STEM) disciplines. STEM-C Partnerships combines and advances the efforts of both the former Math and Science Partnership (MSP) and the former Computing Education for the 21st Century (CE21) programs. It is critical that our nation maintain a competent, competitive and creative STEM workforce, including teachers. Therefore, NSF aims to inspire and motivate the next generation of that workforce, while ensuring that it has the skills, competencies, and preparation to be successful. As we transition to a global, knowledge-based economy that is often driven by information technology and innovation, it is increasingly important that STEM workforce preparation includes a strong foundation in computing. Thus, the STEM-C Partnerships program addresses both the need for advances in K-12 STEM education generally, as well as the need to elevate the inclusion of computer science education. Due March 18.

NIH Coordination and Evaluation Center for Enhancing the Diversity of the NIH-Funded Workforce Program (U54)
The purpose of this Funding Opportunity Announcement (FOA) is to encourage institutions with expertise in data coordination and evaluation of research training, career development, and mentoring programs to submit applications for the establishment and operation of the Coordination and Evaluation Center (CEC) for the NIH Enhancing the Diversity of the NIH-Funded Workforce Program. This program will consist of three integrated initiatives: the Building Infrastructure Leading to Diversity (BUILD) initiative, the National Research Mentoring Network (NRMN) and the CEC. Awardees funded through these initiatives will work together as a consortium which will be coordinated by the CEC. The CEC will facilitate the establishment of program-wide goals and agreed upon hallmarks of successful biomedical researchers at multiple career stages. The CEC will develop appropriate instruments and processes to assess the impact of BUILD and NRMN activities on attainment of these hallmarks by program participants. It will coordinate the collection of data from BUILD and NRMN awardees and other sources, assess the data in an ongoing way, provide feedback to the consortium and facilitate an iterative process of program adjustment to maximize the research benefit of BUILD and NRMN activities. Due March 18.

NIH Building Infrastructure Leading to Diversity (BUILD) Initiative (U54)
The NIH encourages institutions that seek to engage undergraduate students in innovative mentored research training programs to submit applications for cooperative agreement awards through the NIH Building Infrastructure Leading to Diversity (BUILD) initiative, one of three new Common Fund initiatives that together aim to enhance diversity in the biomedical, behavioral, clinical, and social sciences research workforce. Addressing a major leakage point in the research workforce pipeline, BUILD awards are intended to support the design and implementation of innovative programs, strategies and approaches to transform undergraduate research training and mentorship. BUILD awards will also support institutional
and faculty development to further strengthen undergraduate research training environments. **Due March 18.**

**NIH National Research Mentoring Network (NRMN) (U54)**
The purpose of this Funding Opportunity Announcement (FOA) is to encourage organizations with experience in the mentorship of individuals from diverse backgrounds as they pursue careers in biomedical research to submit grant applications for the NIH National Research Mentoring Network (NRMN). The NRMN will be a nationwide consortium to enhance the training and career development of individuals from diverse backgrounds who are pursuing biomedical, behavioral, clinical, and social science research careers (collectively termed biomedical research careers), through enhanced networking and mentorship experiences. **Due March 18.**

**Scientific Data Management, Analysis and Visualization at Extreme Scale, Office of Science DE-FOA-0001043**
The Office of Advanced Scientific Computing Research (ASCR) in the Office of Science (SC), U.S. Department of Energy (DOE), hereby invites applications for basic research that significantly advances management, analysis and visualization of data in disciplines supported by DOE in the context of emerging architectures for extreme scale computing platforms. The purpose of this announcement is to invite applications for basic computer science research on five major themes: 1. Usability and user interface design; 2. In situ methods for data management, analysis and visualization; 3. Design of in situ workflows to support data management, processing, analysis and visualization; 4. New approaches to scalable interactive visual analytic environments; and/or 5. Proxy applications or workflows and/or simulations for data management, analysis and visualization software to support co-design of extreme scale systems. The supported research will lay the foundation for building the software infrastructure to support scientific data management, analysis and visualization in the context of extreme scale computing. A companion Program Announcement to DOE Laboratories (LAB 14-1043) will be posted on the SC Grants and Contracts website. The full text of the Funding Opportunity Announcement (FOA) is located on FedConnect: DE-FOA-0001043 . Instructions for completing the Grant Application Package are contained in the full text of the FOA which can be obtained here. **Due March 19.**

**Biotechnology Risk Assessment Grants**
The USDA National Institute of Food and Agriculture (NIFA) is seeking research grant funding applications in its 'Biotechnology Risk Assessment Grants (BRAG) Program' to support the generation of new information that will assist Federal regulatory agencies in making science-based decisions about the effects of introducing into the environment genetically engineered organisms (GE), including plants, microorganisms (including fungi, bacteria, and viruses), arthropods, fish, birds, mammals and other animals excluding humans. Investigations of effects on both managed and natural environments are relevant. The BRAG program accomplishes its purpose by providing Federal regulatory agencies with scientific information relevant to regulatory issues. **Due March 19.**
National Incubator Initiative for Clean Energy (NIICE) Golden Field Office DE-FOA-0001042
The Department of Energy Office of Energy Efficiency and Renewable Energy (EERE) is seeking applicants to establish the National Incubator Initiative for Clean Energy (NIICE). NIICE seeks to advance three goals: Improve the performance of existing and new clean energy business incubators across the country by setting a high performance standard, fostering best practices, and improving coordination of the incubator community; Strengthen support for early-stage companies developing high-risk technologies and scaling from prototype to domestically-based production; and Catalyze investment in early-stage clean energy businesses by improving information regarding capital access for incubators, including disseminating analysis and materials on philanthropic funds, corporate venture, and other innovative financing mechanisms. To accomplish these goals, NIICE is funding awards in two topic areas: (1) a national organization to serve as a coordinating body for clean energy incubators and a central source of information for clean energy stakeholders; and (2) set a benchmark to develop top-performing, clean energy-focused incubators by funding three to five incubators across the United States. The full Funding Opportunity Announcement (FOA) is posted on the EERE eXCHANGE website at https://eere-exchange.energy.gov. Applications must be submitted through the EERE eXCHANGE website to be considered for award. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for the EERE eXCHANGE can be found on the EERE website https://eere-exchange.energy.gov/Manuals.aspx after logging in to the system. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE eXCHANGE website. Due March 21.

Fiscal Year 2015 National Sea Grant College Program Dean John A. Knauss Marine Policy Fellowship NOAA-OAR-SG-2015-2003978
This notice announces that applications may be submitted for the 2015 National Sea Grant College Program Dean John A. Knauss Marine Policy Fellowship (Sea Grant Knauss Fellowship Program). Sea Grant anticipates funding not less than 30 selected applicants, of which those assigned to the Legislative branch may be limited to 10. Each award will be funded at a total of $56,500 in federal funding. Due March 28.

Folded Non-Natural Polymers with Biological Function (Fold F(x) DARPA - Defense Sciences Office DARPA-BAA-14-13
The DARPA Fold F(x) program objective is to develop processes enabling the rapid synthesis, screening, sequencing and scale-up of folded, non-natural, sequence-defined polymers with expanded functionality. The program will specifically address the development of non-natural affinity reagents that can bind and respond to a selected target, as well as catalytic systems that can either synthesize or degrade a desired target. DARPA anticipates that successful efforts will include (1) novel synthetic approaches that yield large libraries (>109 members) of non-natural sequence-defined polymers; (2) flexible screening strategies that enable the selection of high affinity/specificity binders and high activity/selectivity catalysts from the non-natural libraries; (3) demonstration that the screening approach can rapidly (<4 days) yield affinity reagents or catalysts against targets of interest to the DoD; and (4) demonstration of scalability and transferability to the DoD scientific community. Due April 3.
Cyber-Innovation for Sustainability Science and Engineering (CyberSEES)
The Cyber-Innovation for Sustainability Science and Engineering (CyberSEES) program aims to advance interdisciplinary research in which the science and engineering of sustainability are enabled by new advances in computing, and where computational innovation is grounded in the context of sustainability problems. The CyberSEES program is one component of the National Science Foundation's Science, Engineering, and Education for Sustainability (SEES) activities, a Foundation-wide effort aimed at addressing the challenge of sustainability through support for interdisciplinary research and education. In the SEES context, a sustainable world is one where human needs are met equitably without harm to the environment or sacrificing the ability of future generations to meet their own needs. Due April 8.

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.

All responsible sources from academia, the nonprofit sector, and industry may submit proposals under this FOA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and to join others in submitting proposals. However, no portion of this FOA will be set aside for HBCU and MI participation, due to the impracticality of reserving discrete or severable items of this opportunity for exclusive competition among the entities. Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this FOA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC. Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this FOA and should not directly submit either white papers or full proposals in response to this FOA. If any such organization is interested in the program described herein, the organization should contact ONR STEM Program Office, onr_stem@navy.mil, to discuss its area of interest. As with FFRDCs, these types of Federal organizations may team with other responsible sources from academia, non-profits, and industry that are submitting proposals under this FOA. University Affiliated Research Centers (UARC) are eligible to submit proposals under this FOA unless precluded from doing so by their Department of Defense UARC contracts. Open until December 31.
URL Links to New & Open Funding Solicitations

Links verified: Monday, July 08, 2013

- American Cancer Society Index of Grants
- SAMHSA FY 2013 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 2013 Science To Achieve Results (STAR) Research Grants
- NASA Open Solicitations
- Defense Sciences Office Solicitations
- The Mathematics Education Trust
- EPA Open Funding Opportunities
- CDMRP FY 2013 Funding Announcements
- Office of Minority Health
- Department of Justice Open Solicitations
- DOE/EEERE 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

Improving Undergraduate STEM Education
NSF accepts unsolicited proposals to support projects that address immediate challenges and opportunities facing undergraduate STEM education, as well as those that anticipate new structures and functions of the undergraduate learning and teaching enterprise. In addition, NSF accepts unsolicited proposals for developing Ideas Labs in biology, engineering, and geosciences that will bring together relevant disciplinary and education research expertise to produce research agendas that address discipline-specific workforce development needs. Due February 4.

NSF EHR Core Research (ECR)
The EHR Core Research (ECR) program establishes a mechanism in the Directorate for Education and Human Resources to provide funding in foundational research areas that are broad, essential and enduring. EHR seeks proposals that will help synthesize, build and/or expand research foundations in the following core areas: STEM learning, STEM learning environments, workforce development, and broadening participation in STEM. We invite researchers to identify and conduct research on questions or issues in order to advance the improvement of STEM learning in general, or to address specific challenges of great importance. Two types of proposals are invited: Core Research Proposals (maximum 5 years, $1.5 million) that propose to study a foundational research question/issue designed to inform the transformation of STEM learning and education and Capacity Building Proposals (maximum 3 years, $300,000) intended to support groundwork necessary for advancing research within the four core areas. Due February 4.

Environmental Education Model Grants -- Solicitation Notice for 2013 EPA-EE-13-01
Under this solicitation EPA is seeking grant applications from eligible applicants to support environmental education projects that promote environmental stewardship and help develop knowledgeable and responsible students, teachers, and citizens. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques, as described in this notice, and that will serve as models that can be replicated in a variety of settings. Under this solicitation EPA expects to award environmental education grants from the 10 EPA Regional offices and from Headquarters. Due February 4.

Alliances for Graduate Education and the Professoriate (AGEP)
AGEP is committed to the national goal of increasing the numbers of underrepresented minorities (URMs), including those with disabilities, entering and completing science, technology, engineering, and mathematics (STEM) graduate education and postdoctoral
training to levels representative of the available pool. URMs include African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians and other Pacific Islanders. Increased URM participation in advanced STEM education and training is critical for supporting the development of a diverse professional STEM workforce especially a diverse STEM faculty who serve as the intellectual, professional, personal, and organizational role models that shape the expectations of future scientists and engineers. To achieve this long term goal, the AGEP program will support the development, implementation, study, and dissemination of innovative models and standards of graduate education and postdoctoral training that are designed to improve URM participation, preparation, and success. Due February 5.

DoD FY13 CRMRP VRP Hypothesis Development Award
The FY13 VRP Hypothesis Development Award (HDA) mechanism supports conceptually innovative, high-risk/high-reward research that could ultimately lead to critical discoveries or major advancements that will drive the field of vision research forward. Research projects should include a testable hypothesis based on a strong scientific rationale. This award is not intended to support the continuation of existing studies or the next logical extension and/or incremental step. The HDA is designed to support innovative ideas with the potential to yield impactful data and new avenues of investigation. Important aspects of the HDA are as follows: Impact: The proposed research is expected to make an important and original contribution to advancing the understanding of visual dysfunction and lead ultimately to improved outcomes for patients. Due Feb. 6.

2014-NIST-SURF-01, Summer Undergraduate Research Fellowship (SURF) Program
NIST is soliciting applications from eligible colleges and universities in the U.S. and its territories, nominating undergraduate students to participate in the Summer Undergraduate Research Fellowship (SURF) Program (SURF Program). The SURF Program will provide research opportunities for undergraduate students to work with internationally known NIST scientists, to expose them to cutting-edge research, and to promote the pursuit of graduate degrees in science and engineering. Due February 14.

Global Nuclear Security Engagement Activities, Department of State ISN-14-003
The Department of State’s Office of Cooperative Threat Reduction (ISN/CTR) is pleased to announce an open competition for assistance awards through this Request for Proposals (RFP). ISN/CTR invites non-profit/non-governmental organizations and educational institutions to submit proposals for projects that will advance the mission of the Department’s Partnership for Nuclear Security (PNS). ISN/CTR has approximately $7,000,000 available in the current fiscal year to award multiple cooperative agreements in this field. ISN/CTR prefers projects that cost less than $250,000, though awards may involve multiple projects that cumulatively exceed $250,000. Due February 14.

Global Biosecurity Engagement Activities, Department of State ISN-14-001
The Department of State’s Office of Cooperative Threat Reduction (ISN/CTR) is pleased to announce an open competition for assistance awards through this Request for Proposals (RFP).
ISN/CTR invites non-profit/non-governmental organizations and educational institutions to submit proposals for projects that will advance the mission of the Department’s Biosecurity Engagement Program (BEP). ISN/CTR has approximately $20,000,000 available in the current fiscal year to award multiple grants and cooperative agreements in this field. ISN/CTR prefers projects that cost less than $500,000, though awards may involve multiple projects that cumulatively exceed $500,000. **Due February 14.**

**Minerva Research Initiative Office of Naval Research**
The Office of Naval Research (ONR) is interested in receiving proposals for the Minerva Research Initiative (http://minerva.dtic.mil), a DoD-sponsored, university-based social science research program initiated by the Secretary of Defense. This program is a multi-service effort. Ultimately, however, funding decisions will be made by OSD personnel, with technical inputs from the Services. The program focuses on areas of strategic importance to U.S. national security policy. It seeks to increase the Department’s intellectual capital in the social sciences and improve its ability to address future challenges and build bridges between the Department and the social science community. Minerva brings together universities, research institutions, and individual scholars and supports multidisciplinary and cross-institutional projects addressing specific topic areas determined by the Department of Defense. The Minerva Research Initiative aims to promote research in specific areas of social science and to promote a candid and constructive relationship between DoD and the social science academic community. **Due February 14.**

**EJ Collaborative Problem-Solving Cooperative Agreements Program**
The Environmental Justice Collaborative Problem-Solving (CPS) Cooperative Agreement Program provides funding for eligible applicants for projects that address local environmental and public health issues within an affected community. The CPS Program is designed to help communities understand and address exposure to multiple environmental harms and risks. **Due February 18.**

**Solid State Lighting Advanced Technology Research & Development – 2014, National Energy Technology Laboratory DE-FOA-0000973**
Through research and development of solid-state lighting (SSL), including both light-emitting diode (LED) and organic light emitting diode (OLED) technologies, the objectives of this opportunity are to: maximize the energy-efficiency of SSL products in the marketplace; remove market barriers through improvements to lifetime, color quality, and lighting system performance; reduce costs of SSL sources and luminaires; improve product consistency while maintaining high quality products; and encourage the growth, leadership, and sustainability of domestic U.S. manufacturing within the SSL industry. The Topic Areas of Interest for this Announcement include topics for LED and OLED technologies: Topic Area 1: LED Core Technology Research; Topic Area 2: OLED Core Technology Research; Topic Area 3: LED Product Development; Topic Area 4: LED Product Development Novel LED Luminaire Systems; Topic Area 5: OLED Product Development; Topic Area 6: LED Manufacturing Research & Development; and Topic Area 7: OLED Manufacturing Research & Development. For additional
information regarding Solid-State Lighting Research and Development, please see the program roadmap documents: Solid-State Lighting Research and Development: Multi-Year Program Plan at (http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_mypp2013_web.pdf) and Solid-State Lighting Research and Development: Manufacturing Roadmap at(http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_manuf-roadmap_sept2013.pdf). The full Funding Opportunity Announcement(FOA) is posted on the EERE eXCHANGE website at https://eere-exchange.energy.gov. Applications must be submitted through the EERE eXCHANGE website to be considered for award. The applicant must first register and create an account on the EERE eXCHANGE website. A User Guide for the EERE eXCHANGE can be found on the EERE website https://eere-exchange.energy.gov/Manuals.aspx after logging in to the system. Information on where to submit questions regarding the content of the announcement and where to submit questions regarding submission of applications is found in the full FOA posted on the EERE eXCHANGE website. Due February 24.

**Plant Feedstock Genomics for Bioenergy: A Joint Research Funding Opportunity Announcement USDA, DOE DE-FOA-0001034**

All types of applicants are eligible to apply, except Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

DOE Eligibility Criteria: Applicants from U.S. Colleges and universities, non-profit organizations, for-profit commercial organizations, state and local governments, and unaffiliated individuals are eligible to apply, except as described in the preceding paragraph. Researchers from other Federal agencies are encouraged to submit a pre-application referencing DE-FOA-0001034; if a formal application is encouraged, additional submission information will be provided. USDA Eligibility Criteria: The Secretary may award grants to State agricultural experiment stations; colleges and universities; university research foundations; other research institutions and organizations; Federal agencies; research centers; public and private organizations; individuals; or any group consisting of two or more of the aforementioned entities. Applications from scientists at non-U.S. organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply, provided such organizations are necessary for the conduct of the project. Due February 25.

**Plant Feedstock Genomics for Bioenergy: Joint Research FOA by USDA, DOE**

The U.S. Department of Energy's Office of Science, Office of Biological and Environmental Research (OBER), and the U.S. Department of Agriculture (USDA), National Institute of Food and Agriculture (NIFA), hereby announce their interest in receiving applications for genomics based research that will lead to the improved use of biomass and plant feedstocks for the production of fuels such as ethanol or renewable chemical feedstocks. Specifically, applications are sought for research on plants that will improve biomass and oil seed characteristics, yield, or sustainability. Research to overcome the biological barriers to the low-cost, high-quality, scalable and sustainable production of bioenergy feedstocks using the tools of genetics and genomics are encouraged. Due February 25.
Climate and Earth System Modeling: SciDAC and Climate Variability and Change  
DE-FOA-0001036
The Climate and Earth System Modeling programs seek to develop and analyze high fidelity community models representing Earth and climate system variability and change, with a significant focus on the response of systems to natural and anthropogenic forcing. As the first of two programs in Climate and Earth System Modeling that participate in this FOA, the Earth System Modeling (ESM) Program seeks to advance computational, dynamical, and biogeophysical representations of the Earth system and its components, and to calibrate, test and assess predictive capabilities using uncertainty quantification methodologies. The second program participating in this FOA, the Regional and Global Climate Modeling (RGCM) Program, seeks to enhance the predictive understanding of the Earth system by analyzing the natural and anthropogenic components of global and regional Earth system models. The use of model simulations in combination with observations enables a deeper understanding of climate variability and change. The ESM and RGCM programs are thus complementary, with ESM focused mainly on climate model development, and RGCM focused mainly on climate system analysis. Both modeling programs collaborate and coordinate with the Terrestrial Ecosystem Science (TES) and Atmospheric System Research (ASR) programs, by utilizing TES and ASR process research activities to inform model development, and by using model simulations to identify where further process research is required in atmospheric and terrestrial systems. Due March 3.

NEH Landmarks of American History and Culture: Workshops for School Teachers
The Landmarks of American History and Culture program supports a series of one-week residence-based workshops for a national audience of K-12 educators. NEH Landmarks of American History and Culture Workshops use historic sites to address central themes and issues in American history, government, literature, art, music, and related subjects in the humanities. Each workshop is offered twice during the summer. Workshops accommodate forty school teachers (NEH Summer Scholars) at each one-week session. Due March 4.

NEH Summer Seminars and Institutes
These grants support faculty development programs in the humanities for school teachers and for college and university teachers. NEH Summer Seminars and Institutes may be as short as two weeks or as long as five weeks. Due March 4.

2014-NIST Summer Institute for Middle School Science Teachers
NIST is soliciting applications from eligible public school districts and accredited private educational institutions in the U.S. and its territories nominating middle school science teachers to participate in the NIST Summer Institute Program. The NIST Summer Institute Program will provide selected teachers hands-on activities, lectures, tours, and visits with NIST scientists and engineers at the NIST Campus in Gaithersburg, Maryland. The NIST Summer Institute Program will be held at the NIST Campus in Gaithersburg, Maryland on July 7-18, 2014. Due March 12.

Sunshot Incubator Program Round 9 Golden Field Office DE-FOA-0000923
The Department of Energy is supporting the development of tools and approaches that will significantly reduce the costs for solar energy systems across all technology areas (i.e. photovoltaics, concentrating solar power, power electronics, balance of system and non-hardware cost such as customer acquisition permitting, financing, interconnection, and inspection.) As part of the SunShot Incubator program, this funding opportunity is designed to help startup businesses and entrepreneurs develop technologies, innovative programs, and streamlined processes that will make solar more accessible for consumers in the U.S. The SunShot Incubator Program is an aggressive pay for performance program focused on helping solar startups rapidly refine and commercialize promising, proven technologies and ideas. The program seeks to accelerate the commercialization of solar energy products and solutions that dramatically lower the cost of solar power. This round of the SunShot Incubator Program is for both hardware and non-hardware solutions that reduce the cost of systems that convert solar energy into electric potential. Due March 13.

**Next Generation Photovoltaic Technologies III Golden Field Office DE-FOA-0000990**
The Next Generation Photovoltaic Technologies III program seeks to support research that applies basic science towards the realization of devices that demonstrate photovoltaic (PV) effect. Specifically, this Funding Opportunity Announcement (FOA) solicits proposals that apply promising basic materials science that has been proven at the materials properties level to demonstrate photovoltaic conversion improvements that address or exceed SunShot goals. The full Funding Opportunity Announcement (FOA) is posted on the EERE eXCHANGE website at [https://eere-exchange.energy.gov](https://eere-exchange.energy.gov). To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange at [https://eere-Exchange.energy.gov](https://eere-Exchange.energy.gov), EERE’s online application portal. Frequently asked questions for this FOA and the EERE Application process can be found at [https://eere-exchange.energy.gov/FAQ.aspx](https://eere-exchange.energy.gov/FAQ.aspx). Applicants must submit a Concept Paper by 01/03/2014 to be eligible to submit a Full Application. Due March 24.

**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.

**FY2014 Consolidated Innovative Nuclear Research Idaho Field Office — Department of Energy DE-FOA-0000998**

DOE is seeking applications from U.S. universities, national laboratories and industry to conduct Program Supporting, Mission Supporting and Program Directed nuclear energy-related research in support of the major NE-funded research programs. Additionally, DOE has interest in leveraging multiple needs to the extent possible. Appendix D provides a description of key data needs for validating advanced modeling and simulation tools being developed by NE. Researchers should evaluate their applications in light of these data needs and highlight any potential for capturing key data. **Due April 3.**

**DARPA 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. **Open to April 9, 2014.**

**DARPA Defense Sciences Research and Technology**

DARPA is soliciting innovative research proposals of interest to the Defense Sciences Office. Proposed research should investigate innovative approaches that enable revolutionary advances in science and technology. Specifically excluded is research that results primarily in evolutionary improvements to the existing state of the art. **Open to May 22, 2014.**

**Climate Change Adaptation Program (GPAP)**

One important effect of global climate change is the reduction in naturally stored water resources which, for Peru, means melting glaciers and a decrease in the size of highland wetlands (paramos). The loss of these areas decreases water availability for upland and lowland communities and increases the potential for Glacial Lake Outburst Floods (GLOFs). This APS seeks to stimulate adaptation projects that assist indigenous mountain communities, rural and urban areas, and local and regional governments potentially affected by GLOFs or changes in water availability. General project outcomes will be long-term, sustainable approaches that help reduce the impact of climate change on glaciated and highland wetland ecosystems and on those that depend on these ecosystems' services. **Open to June 6, 2014.**

**DARPA Strategic Technology Office (STO) Broad Agency Announcement (BAA)**
DARPA is seeking innovative ideas and disruptive technologies that offer the potential for significant capability improvement across the Strategic Technology Office (STO) focus areas. This includes system and technology development related to Battle Management (BM), Command and Control (C2), Communications, Intelligence, Surveillance, and Reconnaissance (ISR), Electronic Warfare (EW), and Positioning, Navigation and Timing (PNT). Technologies of particular interest would address challenges of operating in contested, denied, and/or austere environments. **Open until June 18, 2014.**

**DARPA-BAA-13-32: Information Innovation Office (I2O) Office-Wide BAA**

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals of interest to the Information Innovation Office (I2O). Proposed research should investigate innovative approaches that enable revolutionary advances in science, devices, or systems. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of the art. I2O seeks unconventional approaches that are outside the mainstream, undertaking directions that challenge assumptions and have the potential to radically change established practice. See Full Announcement, DARPA-BAA-13-32 (I2O Office Wide) pdf for further details. **Open until June 25, 2014.**

**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.**

**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](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 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.

Army Engineer Research and Development Center BAA
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. This research is conducted by Government personnel and by contract with educational institutions, non-profit organizations and private industries. 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 Allison Hudson at 601-634-5233 or via email at Allison.B.Hudson@usace.army.mil. For questions concerning proposals to CERL, contact Jim Dowling at 217-373-4479 or via email at james.p.dowling@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, 2014.
Science, Technology, Engineering & Mathematics BAA
ERDC solicits basic research proposals in the general DoD STEM Education and Outreach Program from colleges, universities, and non-profit organizations. Depending upon the availability of appropriated funds, ERDC may: (1) Make multiple awards under this BAA; and (2) Consider options exercisable for multi-year performance. Area of performance for proposals may be limited to one of the selected locations listed above or may address multiple locations. Funding is limited and proposals are primarily sought in the not-to-exceed $30,000 range; however, larger awards may be considered when appropriate. Geographically targeted. Open to January 31, 2014.

Small University Grants Open 5-Year Broad Agency Announcement
Open to August 26, 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.**

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) Soldier/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.**

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.
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.

([View Index of Articles])

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