Our eBook

New Faculty Guide to Competing for Research Funding is an invaluable tool for faculty writing research grants, or for use by research offices developing grantwriting workshops to help faculty write more competitive proposals. **Table of Contents.**

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**Strategies for Planning, Developing, and Writing Large Team Grants**

What faculty and research professionals need to know about writing center-level proposals in a team environment.

This book is a step by step guide for faculty transitioning to center-level grants: Introduction to Team Grants; Strategic Planning; Proposal Planning and Production; Writing the Project Description; Writing Key Narrative Sections; Characteristics of Successful Narratives; Red Teaming and Writing for Reviewers; and Other Key Documents.

**Look for purchase information in the November newsletter.**

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More Topics of Interest

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The newly released Common Guidelines for Education Research and Development, A Report from the Institute of Education Sciences, U.S. Department of Education and the National Science Foundation, August 2013, offers a gold mine of insights for those seeking to write more successful education research proposals to these agencies. This 53-page report is particularly useful for those whose research domain shares common ground and complementary program funding with each of these two federal agencies. As the below NSF pie charts illustrate, NSF and ED fund two-thirds of the total federal agency investment in STEM education ($3.44 billion), often including complementary programs.
Moreover, for the six key educational research domains addressed in this document, extensive tables offer detailed agency (NSF and/or ED) expectations researchers will have to meet to submit competitive proposals. These include, for example,

- the theoretical and empirical justifications required for conducting the proposed type of research;
- expectations for research design and expected products of the research, such as exploratory analysis, impact estimates, or a well-elaborated theory of action; and
- expectations for review of the products from each type of research.

If you are thinking of submitting an education research proposal to either NSF or ED, or an interagency proposal, a very close and detailed reading of the tables contained in this document will be essential to your success. In addition, the education research expectations addressed in this document will also be helpful for those submitting education research proposals to other federal agencies and foundations.

Importantly, the document helps identify where education research is primarily addressed within each agency, noting that education research and development programs at NSF are distributed throughout its science and engineering directorates but are located primarily in its Directorate for Education and Human Resources (EHR). EHR’s purview, the report states, includes K-12 education, postsecondary education, and after-school and informal learning environments, as well as the study of science and engineering innovations that emerge from other directorates (see more at About NSF’s Education and Human Resources).

However, ED’s research, development, and evaluation programs are located primarily in the Institute of Education Sciences (IES) but also are represented in the Policy and Program Studies Service (PPSS), the Office of Innovation and Improvement (OII), and the National Institute on Disability and Rehabilitation Research (NIDRR). Moreover, IES maintains an excellent website (here) that includes extensive video presentations on how to write a successful education research proposal to that agency as well as how to find current funding opportunities.

Though complementary, as the report notes, the agencies’ focus areas in education research differ in ways that correspond to their respective roles in government and society. This is an important distinction to be made, particularly to those who may submit proposals to both agencies. Proposers need to understand the nuances of the mission, culture, and investment priorities of each. NSF, the document notes, is charged with increasing the quality and amount of science and engineering research in a variety of contexts. It has, therefore, emphasized basic research on STEM learning, cognition, and development of instructional approaches, technologies, and materials in both formal and informal settings.

In contrast, ED concentrates its investments on developing and testing the effectiveness of well-defined curricula, programs, and practices that could be implemented by schools. The complementary missions of the agencies, along with the continuing urgency of improving American students’ STEM knowledge and skills, form the backdrop for the evidence guidelines and study types described in this document. This becomes evident in the very detailed appendices offering specificity and detail about the distinctions of the complementary missions of the two agencies.
The six types of research described in this document form a “pipeline” of evidence that begins with basic and exploratory research, moves to design and development of interventions or strategies, and, for interventions or strategies with initial promise, results in an examination of the effectiveness for improving learning or another related education outcome. As described below, the report provide a basic description of the purpose of each of the six types of research:

**Foundational Research and Early-Stage or Exploratory Research** contributes to core knowledge in education. Core knowledge includes basic understandings of teaching and learning, such as cognition; components and processes involved in learning and instruction; the operation of educational systems; and models of systems and processes. The purpose of Foundational Research, the document states, is to advance the frontiers of education and learning; develop and refine theory and methodology; and provide fundamental knowledge about teaching and/or learning.

- **Research Type #1: Foundational Research** provides the fundamental knowledge that may contribute to improved learning and other relevant education outcomes. Studies of this type seek to test, develop, or refine theories of teaching or learning and may develop innovations in methodologies and/or technologies that will influence and inform research and development in different contexts.

- **Research Type #2: Early-Stage or Exploratory Research** examines relationships among important constructs in education and learning to establish logical connections that may form the basis for future interventions or strategies to improve education outcomes. These connections are usually correlational rather than causal.

**Design and Development Research (Research Type #3)** develops solutions to achieve a goal related to education or learning, such as improving student engagement or mastery of a set of skills. Research projects of this type draw on existing theory and evidence to design and iteratively develop interventions or strategies, including testing individual components to provide feedback in the development process. These projects may include pilot tests of fully developed interventions to determine whether they achieve their intended outcomes under various conditions. Results from these studies could lead to additional work to better understand the foundational theory behind the results or could indicate that the intervention or strategy is sufficiently promising to warrant more advanced testing. The purpose of Design and Development Research, the report states, is to develop new or improved interventions or strategies to achieve well-specified learning goals or objectives, including making refinements on the basis of small-scale testing.

**Efficacy, Effectiveness, and Scale-up Research** contributes to evidence of impact, generating reliable estimates of the ability of a fully-developed intervention or strategy to achieve its intended outcomes. The three types of Impact Research share many similarities of approach, including designs that eliminate or reduce bias arising from self-selection into treatment and control conditions, clearly specified outcome measures, adequate statistical power to detect effects, and data on implementation of the intervention or strategy and the counterfactual
condition. However, these studies vary with regard to the conditions under which the intervention is implemented and the populations to which the findings generalize. The purpose of Efficacy Research, according to the report, is to determine whether an intervention or strategy can improve outcomes under what are sometimes called “ideal” conditions. For example, these conditions may include more implementation support or more highly trained personnel than would be expected under routine practice, or in contexts that include a more homogeneous sample of students, teachers, schools, and/or districts than is typical. Specifically,

- **Research Type #4: Efficacy Research** allows for testing of a strategy or intervention under “ideal” circumstances, including with a higher level of support or developer involvement than would be the case under normal circumstances. Efficacy Research studies may choose to limit the investigation to a single population of interest.

- **Research Type #5: Effectiveness Research** examines effectiveness of a strategy or intervention under circumstances that would typically prevail in the target context. The importance of “typical” circumstances means that there should not be more substantial developer support than in normal implementation, and there should not be substantial developer involvement in the evaluation of the strategy or intervention.

- **Research Type #6: Scale-up Research** examines effectiveness in a wide range of populations, contexts, and circumstances, without substantial developer involvement in implementation or evaluation. As with Effectiveness Research, Scale-up Research should be carried out with no more developer involvement than would be expected under typical implementation.

These *Common Guidelines for Education Research and Development* are expected, the authors state, to provide critical guidance to NSF, ED, and the broader education research and development community. The two agencies will draw on the Common Guidelines to communicate the goals of their supported education research projects and to *establish uniform expectations for proposals submitted in response to particular program announcements, solicitations, or other funding opportunities*. Common Guidelines referenced in program solicitations, for example, may require proposers to *address them in their application methodologies*. In addition, the Guidelines contain important considerations in planning a project, *including building the research team*.

Where research plans *align Common Guidelines with formal proposal review criteria*, the report notes, agencies must ensure expert review panels are well informed of how the guidelines should be applied when evaluating proposals. For example, these guidelines may give reviewers a tool to assess the quality of the research design, both for individual proposals and across a group of proposals, which will help ensure that agencies fund robust research and development efforts. *More generally, it is expected that researchers, developers, and evaluators will need to become familiar with the Common Guidelines to prepare successful proposals, as well as to carry out research funded by the two agencies*.

These guidelines can help practitioners develop a better understanding of the different stages of education research they should address and be expected to produce. This, in turn, can support better informed decisions based on the level of evidence provided. *Outside of NSF and ED activities*, the Common Guidelines are expected to be used by education researchers, materials developers, project and program evaluators, and others. The Common
Guidelines also may make the public more aware of the agencies' goals for investments in education research and development to achieve immediate and long-term improvement of education and learning.

Finally, these guidelines are nicely complemented by NSF’s Frequently Asked Questions (FAQs) for NSF 13-126, Common Guidelines for Education Research and Development below:

1. **Do these Guidelines apply to all education projects at NSF?**
   These Guidelines are most relevant for NSF programs and projects that undertake education research and development (R and D) activities. Some solicitations will explicitly reference the Guidelines. The Guidelines are not developed to be relevant for programs or projects that conduct outreach activities of various kinds and scholarship programs are not included.

2. **Why are these Guidelines necessary?**
   There is an interest across the federal government in increasing coherence and consistency across programs with similar goals. The education R and D programs in both NSF and the Department of Education will benefit from the use of a common framework for the projects that they fund. The Guidelines are intended to help the PI community share common language to describe key points related to relevant research literatures, outcomes and external feedback. Finally, each agency will be able to build on the investments of the other in more coherent ways.

3. **Will these Guidelines preclude projects that are at the cutting edge of innovation?**
   The Guidelines should not hurt projects that are at the cutting edge of innovation. The key point of the Guidelines is to ensure that projects are explicit about their research questions, methods and analytic approaches in their proposals. These criteria should be relevant for all types of education R and D efforts, including those that may be at the cutting edge of innovation. Further, these are guidelines intended to help PIs in their proposal preparation. They should not be viewed as a straitjacket that hinders creative thinking. Rather, PIs should review them, and make sensible use of them as they describe the education R and D activities they propose.

4. **How do the guidelines affect NSF's Merit Review criteria?**
   The Guidelines are not intended to supplant the Merit Review criteria. One element of the intellectual merit criterion for proposals is whether the project can advance knowledge and understanding. In addition, the intellectual merit criterion calls for a well-reasoned, well organized plan based on a sound rationale along with a mechanism to assure success. The Guidelines are consistent with this criterion.

5. **Does NSF intend to study the impact of the Guidelines? Are revisions to the guidelines anticipated?**
   Conversations are underway about the best approach to studying the impact of these Guidelines. One example would be to conduct portfolio analyses of education R and D projects to see how they fall into the six study types outlined in the Guidelines and to examine how the distribution changes over time. Another example would be to analyze how program solicitations change as a result of implementing the Guidelines.
After the Guidelines have been in place for a while, it is reasonable to anticipate that changes will be made as a result of what is learned through the implementation process.

6. **Do the Guidelines preclude or privilege any research methodologies?**

   The Guidelines don’t preclude or favor any research methods, but they do require that the methods be well described, justified, and appropriate to the research questions that are posed. They are consistent with such broad ranging discussion of research methods as Scientific Research in Education, (NRC, 2002). Both qualitative and quantitative approaches can be used in all of the six research genres that are described in the Guidelines. For example, a small-scale randomized trial might be used in a design and development study and a qualitative study might be embedded in an efficacy or effectiveness study.

7. **How are the guidelines intended to relate to research in emergent technologies?**

   Research in emergent technologies may be concerned with phenomena that are at scale® rather than moving to scale (e.g., MOOCs). Even so, in studying these phenomena, issues of the quality of the research must be attended to and the descriptions of the research questions, methods and analytic approaches must be clearly described.

8. **To what extent will these Guidelines represent a culture shift to NSF PIs?**

   For some NSF PIs, these Guidelines will not represent a shift. The Guidelines essentially codify what is considered to be reasonable practice for education research and development. For others, perhaps particularly for those who have been engaged primarily in development work, the Guidelines will represent more of a shift as PI teams will have to more explicitly address research questions, methods and approaches for analysis of data.

9. **How will reviewers be informed about the Guidelines?**

   Reviewers will be informed of the Guidelines through multiple approaches: the Guidelines will be posted on the NSF website, referred to in program solicitations, discussed in reviewer webinars and orientations, and presented at PI and other professional meetings.

10. **What are the implications of the Guidelines for external evaluation of projects?**

    The Guidelines include recommendations for all types of studies that call for external feedback on the work being proposed. However, they are more expansive than requiring a third-party evaluation. External feedback can include a number of approaches including third party evaluation, program officer evaluation, and/or regular feedback from advisory groups. It will be up to the proposer to argue for whatever kind of external feedback they identify as appropriate, aligned with program requirements.

11. **What was the input from the field for these guidelines?**

    The Guidelines were sent out for external review to five experts through a process organized by the Department of Education's Institute for Education Sciences. In addition, a Presidential Invited session on the Guidelines was held at the 2013 American Education Research Association (AERA) annual meeting in San Francisco. At that session, there were round table discussions about the implications and implementation of the Guidelines.
12. **What are the plans for future input from the field?**

We anticipate that sessions that include discussion of the Guidelines will occur at 2014 professional meetings of organizations such as the American Education Research Association (AERA), National Association for Research on Science Teaching (NARST), National Council on Teachers of Mathematics (NCTM) and the Society for Research on Educational Effectiveness (SREE), among others. The Guidelines will also be discussed at relevant PI meetings.

13. **Do the Guidelines have implications for the inclusion of education research expertise on education development proposals?**

Proposals that focus on education development activities should be certain to include personnel with appropriate expertise in research design and methods as key personnel or advisors.

14. **How might these Guidelines help community building among research, policy and practice community?**

Proposers should anticipate the policy and/or practice significance of the projects they propose in any of the six research genres. Even if the implications for policy or practice are distal, projects should describe their potential relevance to policy or practice. In addition, the Guidelines can help practitioners and policymakers develop a better understanding of what various types of education research should be expected to produce. The Guidelines are intended to support better-informed decisions based on the levels of evidence provided.

15. **Will the use of the Guidelines lead to cookie cutter approaches in terms of projects that are funded?**

We do not anticipate that the use of the Guidelines will lead to cookie cutter approaches in terms of the research and development projects that are funded. The Guidelines outline six different genres of research that call for different kinds of evidence. In addition, the Guidelines recommend supporting projects that span the genres. These Guidelines will not restrict new or original approaches.

16. **Do the Guidelines apply to PROGRAMS as well as proposals in both agencies?**

The Guidelines were developed to apply to education research and development proposals in order to help the agencies make more strategic decisions on individual projects. They were not designed to apply to programs. It might be possible to build on the ideas in the Guidelines to develop a comparable document for program evaluation, but that would entail undertaking a separate and different set of activities. We caution others from using the Guidelines for purposes beyond what is intended.
Too often research development and grant writing support for new faculty in the humanities and humanities related social sciences, particularly in the form of grant writing workshops and seminars, does not clearly differentiate between pursuing funding in the humanities and seeking funding in the scientific and technical disciplines, i.e., the ubiquitous STEM disciplines. While it is true that many of the competitive strategies that will guide faculty to success are generic rather than discipline or agency specific, it is nonetheless the case that the typically STEM-focused grant writing workshop is less than optimal for introducing new humanities and humanities related social science faculty to the world of academic research grant writing.

Some of the differences in focus for writing research grants in the humanities as opposed to the STEM (including social and behavioral sciences) are clear and others are more subtle. The most obvious difference in the former case is that funding in the STEM disciplines dwarfs that available to the humanities by many orders of magnitude, and hence the size of awards reflects that disparity. In addition, a much larger number of federal agencies and foundations fund STEM as opposed to the relatively few that fund the humanities. By comparison, numerous but relatively small grants in the humanities are made by museums, libraries, endowed collections, scholarly associations, learned societies, academies, and centers, among others. These various funding sources may be further distinguished depending upon the merit each award is assigned at tenure and promotion time within the humanities and social science professions.

For example, a new faculty member in chemistry may require a significant startup package for equipment and instrumentation, and may therefore operate under enhanced departmental and college expectations for near-term success in obtaining external funding, perhaps even including an NSF CAREER award. In this case, funding success benefits the faculty member directly, but also includes the significant benefit that indirect return brings to the university, college, department, and PIs by some agreed upon, and hopefully collegial, distribution formula. However, faculty members in the humanities will have different research expectations for promotion and tenure, typically related to a focus on scholarly publications and the reputation of the journal or press bringing that publication to print. Therefore, they may look for external funding to support that scholarly activity, perhaps by funding a one-month research residency at a humanities center, but with no expectation that the funding amounts will be large or that indirect costs will even be allowed.

Consequently, these disciplinary differences in research expectations should then manifest themselves in grant writing workshops where an experienced presenter encourages questions and interactive engagement by the audience during the workshop. Almost always, STEM disciplines will be heavily represented and so continuous questions from the predominately STEM audience will push the presentation in certain directions, e.g., the
presenter may use examples from the Department of Energy rather than examples from National Endowment for the Humanities. Important distinctions made in the presentation about the need for STEM faculty to clearly define where their research falls on the spectrum of basic, applied, or applications research, or the importance of addressing technology transfer, commercialization, and innovation in proposals to many federal agencies will likely be of little relevance to faculty in the humanities.

Given the disparate interests of these two groups, universities need to address how best to offer new faculty in the humanities and humanities related social sciences support beyond or in addition to the help offered by the typical research grant writing workshop that often favors the STEM disciplines at the expense of the humanities.

One simple way to achieve this more ideal result is to take the core generic strategies and grant writing techniques that have proven successful over time and better contextualize them to the promotion and tenure expectations and funding interests of humanities faculty. While generic grant writing strategies are the fundamental key to success, those strategies benefit significantly by the contextually relevant specificity, detail, and examples that come with the practice of grant writing, something too often lacking for humanities faculty attending grant writing workshops.

Either through a breakout session at a grant writing workshop, or through research offices offering support to humanities faculty, the first step would be to take the generic questions every successful grant writer must answer and place them in a context more relevant to a new faculty member in the humanities. For example, below are common questions the grant writer must answer for program officers and reviewers, regardless of agency or discipline:

- What research do I propose to do?
- Why is my research important /significant?
- Why is my research new and exciting?
- How will my research advance the field, or impact other fields?
- How does my prior research support the proposed research?
- Will my research plan convince reviewers my proposed research will be successful?

These core questions must be framed to addresses other factors that will impact the competitiveness of the grant, for example:

- How well does my proposed research address the research goals of the funder?
- How well does my proposal address those who will review my grant for funding?
- How well written is my proposal?
- Have I asked a colleague(s) to read the funding guidelines and my proposal and offer a critique?

Of course one of the first questions new faculty in the humanities may have is where to find funding for their research, although some may have gained some insight into this question through graduate training or in cases where they were awarded a non-university funded graduate fellowship or doctoral dissertation grant while earning the PhD. It is a question easily answered; however, it is best answered in several parts.
First, there is federal agency funding available for faculty in the humanities and humanities related social sciences. The most obvious form of that funding, of course, comes from the National Endowment for the Humanities and the National Endowment for the Arts. The Fulbright Scholar Program, for example, sends 800 U.S. faculty and professionals abroad each year. Other federal agencies, including NSF and the U.S. Department of Education, fund comparatively few programs of interest to humanities researchers. For instance, NSF has funded digital humanities research, but this funding has tended to involve small amounts of support and relatively few awardees.

More funding opportunities exist for humanities research outside of federal agencies than within them, and making sure to compile a comprehensive list of these opportunities can be invaluable to humanities faculty. For example, the American Council of Learned Societies (ACLS), a federation of 71 national scholarly organizations, is a preeminent representative of American scholarship in the humanities and related social sciences. ACLS advances scholarship by awarding fellowships and strengthening relations among learned societies. Other activities include support for scholarly conferences, reference works, and scholarly communication innovations.

Many humanities research centers and colleges maintain exhaustive listings of funding opportunities in the humanities and social sciences. For example, the Hall Center for the Humanities at the University of Kansas has an excellent list of funding opportunities for humanities faculty, including a downloadable 42-page Humanities and Social Sciences Opportunities List for Faculty. The Office of Research Support at Duke University maintain a long-standing funding opportunities site that is updated continuously. The Vanderbilt College of Arts and Sciences maintains a URL listing of grant opportunities for faculty in the humanities as well. Also, in the spirit of digital humanities, a simple Google search on ‘humanities research centers’ or ‘research funding in the humanities’ will result in a cascade of links to follow to find your favorite websites that can be bookmarked for keeping track of research funding opportunities in the humanities.

Of course, finding funding is the easy part. Writing a successful proposal is the hard part. Help in this task is available both from ACLS and NEH. The excellent article Writing Proposals for ACLS Fellowship Competitions by Christina M. Gillis remains one of the best starting points for writing successful proposals in the humanities since it was first published. For 16 years, Gillis served as Associate Director of the Townsend Center for the Humanities at the University of California, Berkeley. Prior to joining the Townsend Center, Gillis was a program officer at ACLS, where she was responsible for the fellowship programs.

Moreover, the NEH website is a gold mine for faculty new to writing research grants in the humanities because it answers in a very clear and comprehensive way two of the most important questions that must be answered if you are to be successful in grant writing: (1) What characterizes a successful proposal in the humanities?; and (2) How will my proposal be reviewed? While this information is specific to NEH, it remains generic and relevant to the humanities overall because it puts the generic advice in the context of humanities research.

NEH has a really great system of joining funding opportunity solicitations with a sidebar column of helpful information that can be used by the applicant to write a successful proposal, include URL links to all application materials, frequently asked questions about the solicitation,
sample award projects, NEH Grants.gov Resources, and most importantly Sample Application Narratives. How neat is that!

NEH makes clear that their intent is to give you a better understanding of what characterizes a successful NEH proposal, specifically stating: “The attached document contains the grant narrative and selected portions of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the Research Programs application guidelines at the appropriate resource page for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Research Programs staff well before a grant deadline.”

But what if I am not seeking funding from NEH, you may ask. No matter, examples of successfully funded proposals, particularly to an agency as competitive as NEH, will offer invaluable insight into submitting a well written proposal in humanities research to other agencies as well. Take the time to look for an NEH research topic area generally of interest to you and read through several examples of successful proposals. You will start to see a pattern emerge. That pattern will be the common characteristics of the successful proposal. Get to know what a successful proposal looks like, then apply that knowledge to reviewing your own proposal as you write it.

Moreover, NEH’s Application Review Process offers an excellent flow chart of how proposals are reviewed at that agency, but here again, it clearly offers generic insight into the merit review process at other humanities funders as well. NEH’s review process has four distinct but fully integrated levels. First, knowledgeable persons independent of the agency read each application and advise the agency about its merits; second, NEH’s staff synthesizes the results of the outside review and prepares a slate of recommendations for the National Council on the Humanities; third, the National Council meets in Washington, DC, to advise the Endowment’s chairman on applications and matters of policy; and fourth, the chairman considers the advice he or she has received and makes the final funding decisions. All levels of the review process prior to the chairman’s decision are advisory.

Finally, additional advice on writing humanities research grants is often posted to the websites of humanities research centers, for example, How to Write Grants in the Arts and Humanities, by the Center for Humanities and the Arts at the University of Colorado, Boulder. Writing Effective Grant Proposals for Individual Fellowships in the Humanities and Social Sciences by Susan Stanford Friedman, University of Wisconsin-Madison, is another good article on the topic.
Team Science and the Energy Frontier Research Centers

The Department of Energy issued a 65-page solicitation (DE-FOA-0001010) September 30 under the Energy Frontier Research Centers (EFRCs) program, first established in 2009. Required letters of intent are due November 13 and full proposals are due January 9. DOE expects to make multiple EFRC awards for a period of up to 5 years under this new solicitation. Total funding of $100,000,000 annually is expected to be available, subject to appropriation of funds by the Congress, a caveat with more than usual significance currently. DOE anticipates that award sizes will range from $2,000,000 per year to $4,000,000 per year over a 5-year funding period. DOE anticipates notifying the applicants selected for award in June 2014 and making awards by September 2014.

When considering whether to apply for this program, keep in mind that DOE is a mission agency; therefore, the award selection process, as addressed at the end of this article, includes consideration of the Merit Review Panel recommendations as well as consideration of seven additional “program policy factors” DOE will use in making an EFRC award. Make sure you review these additional program factors as part of your EFRC planning, so that they do not come as a surprise later in your application process.

An enormous amount of important detail in this solicitation needs to be mastered by any potential applicant (e.g., key elements of the project narrative, details of the merit review criteria), but two key points jump out when reading the solicitation that need to be quickly factored into a strategic plan for planning, developing, and writing an EFRC. These two key points need to be addressed sufficiently early, i.e., right away, to allow them to guide all subsequent EFRC planning and development discussions.

The first, as stated in the solicitation, relates to team science: “The EFRCs should bring together world-class scientists from different disciplines to tackle challenging problems in new ways; to provide an environment that encourages high-risk, high-reward research that would not be done otherwise; to integrate synthesis, characterization, theory, and computation to accelerate the rate of scientific progress; to develop new, innovative experimental and theoretical tools that illuminate fundamental processes in unprecedented detail; and to create an enthusiastic, inter-disciplinary community of energy-focused scientists. Successful EFRCs will fully exploit this “team science” model, working closely together in an integrated, centrally managed center to address a clearly defined set of scientific challenges with a clear focus and well-defined 5-year scientific research goals.”

Moreover, the EFRC review criteria include key questions related to the DOE referenced team science model that reviewers will consider when they evaluate your proposal for funding, specifically Synergy Among the PIs, Including Cohesion and Integration of the Research Activities:

- Does the application describe a well-integrated team-based approach to addressing the scientific goals?
• Is the proposed team of researchers likely to work together in a cohesive and integrated manner? Have they demonstrated their ability to do so in the past?
• Have the applicants defined scientific problems that are likely to be addressed only through close collaboration among the researchers on the application?
• Are the elements of the proposed research appropriately integrated, coordinated, and synergistic?

A second key point, as enumerated in the solicitation, is the requirement that 5 of the 11 subsections that must be addressed in section 2, the critical Proposed Research section, in the 40-page Project Narrative, describe how your proposed research maps to 5 major DOE reports and 2 offices, as listed below. Richard Feynman and John Wheeler once similarly observed that “if you are not completely confused by quantum mechanics, you do not understand it.” A similar observation here might be that “if you are not completely panicked by the below narrative requirements, you do not understand them.” Moreover, a January 9 due date for a large team grant such as this is not much time at all. In fact, it is painfully little time, especially when you factor in the abbreviated academic calendar from late November until after the New Year when team members may be more dispersed globally than usual. In fact, the time line of the EFRC proposal might have been what Samuel Johnson was referring to in his oft quoted comment, “nothing so focuses the mind as the prospect of being hung in a fortnight.”

So what to do? Well, there are a lot of things, but regardless of whether you have an EFRC team already in place, somewhere in place, or are counting on an epiphany to suggest a competitive team to you, some number of team members need to do the heavy lifting of reading these referenced documents RIGHT NOW. They must be read in sufficient detail to allow a fully responsive research narrative to address them convincingly. Further, they must be read with a mind to guiding the team members’ proposal planning and development discussions concerning the proposed vision, goals, objectives, rationale/technical approach, and outcomes/impacts of your proposed EFRC. (Also see Reports by the Department of Energy, Office of Basic Energy Sciences for additional background).

Answering these key questions will not be a trivial task. It will require significant discussion among research team members to describe how your proposed EFRC research fits within the research context DOE describes in these core reports. That informed discussion must take place after your team members have learned to address the significance and impact of your proposed research in relation to each of the below:

• Describe how the research proposed for the EFRC is at the scientific forefront of one or more of the “grand challenges” described in the BESAC report Directing Matter and Energy: Five Challenges for Science and the Imagination;
• Describe how the research proposed for the EFRC addresses one or more of the energy challenges described in the Basic Research Needs report series;
• If applicable, describe how the proposed research embodies the scientific approaches detailed in the following reports: Computational Materials Science and Chemistry: Accelerating Discovery and Innovation through Simulation-Based Engineering and Science and From Quanta to the Continuum: Opportunities for Mesoscale Science;
Discuss how the **proposed research is aligned with the core research activities and priorities** within the BES Materials Sciences and Engineering Division and the BES Chemical Sciences, Geosciences, and Biosciences Division;

If applicable, describe how the **proposed research relates to and is clearly distinguishable from activities within the DOE Energy Innovations Hubs**, particularly the Joint Center for Artificial Photosynthesis and the Joint Center for Energy Storage Research.

Moreover, how well you respond to the above questions will be a major factor in how DOE asks reviewers to judge the scientific and/or technical merit of your proposed research. For example, here again from the solicitation, reviewers will be asked to determine:

- Does the research proposed for the EFRC lie at the scientific forefront of one or more of the “grand challenges” described in the BESAC report **Directing Matter and Energy: Five Challenges for Science and the Imagination**?
- Does the research proposed for the EFRC address one or more of the energy challenges described in the BES workshop reports in the Basic Research Needs series in an effective and impactful manner?
- If applicable, does the proposed research embody the scientific approaches detailed in the following reports: **Computational Materials Science and Chemistry**: Accelerating Discovery and Innovation through Simulation-Based Engineering and **Science From Quanta to the Continuum: Opportunities for Mesoscale Science**?

Briefly, the LOI is to help in planning the review and the selection of potential reviewers for the application and does not function as a gate to an invitation to submit a full proposal. The cover page must be followed by a **clear and concise description of the goals, objectives, and technical approaches of the proposed research**. The description of the proposed research **may not exceed two pages** when printed on 8.5 X 11 inch paper, with a minimum text font size no smaller than Times New Roman 12 point and margins no smaller than one inch on all sides. The required header information and any figures and references, if included, must fit within the 2-page limit. A pre-application is not required or invited.

The **project summary/abstract is a summary** of the proposed activity suitable for distribution to the public and sufficient to permit potential reviewers to identify conflicts of interest. **It must be a self-contained document** that includes the EFRC title, the EFRC Director name and institutional affiliation, other Principal Investigators and senior/key personnel and their institutional affiliations, the objectives of the project, a description of the project, including methods to be employed, and the potential impact of the project (i.e., benefits, outcomes). The project summary must not exceed 1 page when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left and right) with font not smaller than Times New Roman 12 point.

The **Project Narrative must not exceed 40 pages** of technical information, including charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right). The font must not be smaller than Times New Roman 12 point.
The contents of the Project Narrative are specified in order to ensure that the merit reviewers have the necessary information to conduct proper evaluations. All Project Narratives must include the following sections:

I. Introduction, Background, and Progress. This section should place the proposed EFRC in the context of the scientific field in which it would operate.

II. Proposed Research. Applicants must provide detailed information regarding the research proposed for the EFRC. This section should demonstrate the close integration of the proposed research activities aimed at meeting the 5-year scientific goals. This section, which may be organized in subtasks, must clearly describe the proposed research.

III. EFRC Management Plan. This section must provide a clear, substantive overview of the vision, management, and organization of the proposed EFRC.

IV. Project Performance Site(s) Identify and describe the site(s) where the work will be performed. For research proposed by a team, work sites at all partner institutions should be briefly described. Appendix 4 should include detailed information about facilities, equipment, and capabilities available for the research.

Questions regarding the content of the FOA must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available on the FedConnect website.

Initial Review Criteria
Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for the award; (2) the information required by the FOA has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement. In particular, to be responsive to the objectives of this FOA, the research proposed in the EFRC application must: (1) address one or more of the “grand challenges” described in the BESAC report *Directing Matter and Energy: Five Challenges for Science and the Imagination*; and (2) address one or more of the energy challenges described in the *BES Basic Research Needs workshop report series*.

Merit Review Criteria
Applications will be subjected to scientific merit review (peer review) and will be evaluated by Merit Review Panels against seven criteria, the first five of which will be weighted more heavily than the final two (reference the solicitation for the full list of review criteria):

Award Selection Factors
The Selection Official will consider the findings of the Merit Review Panels and the recommendations of Federal officials, as well as the following program policy factors:
• Delineation of the scope of the proposed EFRC research from other research activities in which the principal investigators are involved, particularly those supported by DOE and by other federal agencies;
• Relevance of the proposed activity to Office of Basic Energy Sciences (BES) priorities;
• Appropriate balance of activities within BES programs;
• Diversity of research activities that will address the scientific grand challenges and use-inspired basic research as articulated in the BESAC and BES workshop reports;
• Relationship of the proposed EFRC to other research and development programs in DOE, including but not limited to the Energy Innovation Hubs and the core research activities within the BES Materials Sciences and Engineering Division and Chemical Sciences, Geosciences, and Biosciences Division;
• Potential for developing synergies between the proposed EFRC and other EFRCs or other ongoing BES research activities; and
• For renewal applications, progress made by the EFRC during the preceding project period and the impact of the research.

The foregoing additional “program factors” used in the award selection process by DOE are important to keep in mind when planning, developing, and writing the project narrative to ensure your proposal’s competitiveness.
A well written proposal opens with a statement that tells reviewers and program officers what you are going to do, why you are going to do it, why it is important to do it, why you have the capacity to do it, and how, once completed, it will influence the field and the research mission of the funding agency. These questions all must be answered in a specific context and in a way that contrasts your proposed research to the current state of the field at various scales. For example, demonstrate how it will impact the agency program area, the agency wide mission, and the national state of knowledge on the topic.

To illustrate further, a companion article in this newsletter (Team Science: Energy Frontier Research Centers) explains that applicants for DOE funds must describe how their research positions them “at the scientific forefront of energy ‘grand challenge’ research areas” and how the “proposed research is aligned with the core research activities and priorities” of DOE. Similar requirements are common, regardless of funding agency or the scale and scope of the research project. They can be particularly challenging in large team grants and center-level grants that require applicants to answer these “set the stage” background and context questions. Agencies use these statements to place the proposed research in a larger research context and thereby help reviewers and program officers to better understand how the research fits in a disciplinary field(s) and its value for advancing the field(s), or an agency’s mission objectives.

This “setting of the stage” is typically done in an “Introduction and Background” or “Introduction and Overview” section of the Research Project Description, although different authors and agencies may denote the section in different ways, depending on preference. But basically it comprises the first section of the research narrative in which you introduce your research by answering the above questions, or similar questions posed in the funding solicitation.

It is a challenging task simply to distill the core significance of your research into a concise, clear, and easily understood description that will convince reviewers and program officers to fund your project over others. However, describing the impact of your research in the context of the field and/or agency mission— at a program level, agency level, and national level—is more challenging yet. This crucial context that illuminates the importance of your research for reviewers and program officers is challenging to write effectively, particularly with respect to achieving a suitable proportion of primary to secondary information and of excessive to minimal information.

As is the case in all sections of a well written research narrative, you must define a hierarchical narrative structure reflecting the relative (weighted) importance and order of the information you choose to provide reviewers and program officers within the page and section limits of the proposal. Moreover, while the possible information you could present to reviewers is open ended, agency constraints in the form of questions that must be answered
will require significant information triage and culling to achieve an effective response within the proposal’s page limits. This “what to say and what not to say” dilemma is the persistent challenge for anyone writing grants. However, it is particularly demanding when writing some variant of the generic “Introduction and Background” section of the research narrative.

For example, the background section must not be written as the history of the discipline starting with the ancient Greeks and culminating with your current proposed research. In this case, take to heart the poet William Blake’s observation that “You never know what is enough unless you know what is more than enough.” If your narrative “starts back too far,” it will need some serious culling, or you should consider a career authoring books on the history of science.

While this example is extreme, it nonetheless points to a flaw, although on a much smaller scale, common to many background sections used to introduce reviewers to your “setting the stage” statement. Remember, the background section sets the context, or sets the stage, for your research idea. Your research idea is the lead character on this stage and all other information serves as the illuminating backdrop to your proposed research.

Moreover, many center-level grants are fairly open ended within multiple disciplinary domains, giving the applicant freedom to select the core research topic areas, e.g., the NSF Engineering Research Centers or Science and Technology Centers, while other grants are more focused on addressing a specific research objective of the agency, often a mission agency. In this latter case, all proposals submitted will fall within a more narrow and common research area. In this case, writing the background section presents the additional challenge of avoiding a statement numbingly similar to those written by other applicants and thereby either annoying or boring the reviewers. In effect, the more narrow the research objectives of the funding solicitation, the more likely that the background sections of all the proposals will overlap, presenting another challenge to writing a persuasive statement.

In other cases, background information may be included in the narrative in a misguided attempt to convince reviewers of the importance of addressing the specific objectives detailed in the solicitation. Reviewers have already agreed on that point. After all, that is why the agency is funding the research. Don’t squander valuable space belaboring the obvious. For example, if you are writing a proposal to an agency funding a program on climate change and water sustainability, you do not have to write a background section to convince reviewers and program officers that climate change is a fact and that it impacts water sustainability before addressing the specific research you propose to do and its importance. Similarly, if you are writing a major institutional proposal in response to a solicitation to form multiuniversity alliances that transition traditionally underrepresented groups to the STEM doctorate and the professoriate, you needn’t write a background section convincing reviewers that diversity is important. They know that. That is why the program is being funded.

Of course, one reason poorly written background sections are written is that it is easy to write generic background information. This, in turn, gives you the illusion of making narrative progress when in fact you are struggling to generate narrative text that describes the importance of your research. No one who has written grants will deny that some panic can set in when staring at the initial blank page of a new project narrative. Nor can any author be blamed for beginning a project narrative writing text that clearly will be deleted in future drafts but at least gets the narrative started. That said, once the project narrative starts to come to
life, it is time to go back and cut and shape the background section to ensure that it does only what it needs to do and not more: to demonstrate the importance of the proposed research to advancing a field described carefully enough to give reviewers a sense of how it compares to current practice and to judge the value-added benefits it brings to the field or agency mission.

Finally, a poorly structured background section will put reviewers to sleep. Do not introduce reviewers to your research by boring them with irrelevant, excessive, or generally known information. *Opening a proposal with irrelevant and redundant information does not bode well for the attention reviewers will bring to the rest of your project narrative.*
**NSF’s iCorps Program**

This relatively new NSF program can provide valuable training and mentoring for entrepreneurial faculty and students who are considering establishing a start-up company based on their research.

In September, I attended a workshop at the University of Houston on the NSF I-Corps program. The goal of the workshop was to make more faculty, students and local entrepreneurs aware of I-Corps and encourage participation. NSF I-Corps Program Director Rathindra (Babu) dasGupta gave a very informative presentation on the program, as did trainers and participants in the program. I-Corps is very different from most NSF programs, so not surprisingly, those PIs who have heard about it are often puzzled about how it works and why they should participate. Below is an overview of the program based on the material presented at the workshop.

**I-Corps Program Motivation and Goals**

This program, which started in July 2011, is a bit of an experiment by NSF and was intended as way to help faculty and students transition innovations stemming from NSF-funded research to the marketplace. The program is intended to help researchers get past what NSF terms the “Ditch of Death” which comes before the well-known “Valley of Death” as researchers face the challenges of establishing a start-up business to commercialize their research outcomes. The Ditch of Death is the gap between where I/UCRC funding stops and SBIR/STTR funding starts (see Fig. 1 from Dr. dasGupta’s slides).

As part of its strategy, NSF aims to create a national network of scientists, engineers, innovators, business leaders, and entrepreneurs to support I-Corps teams composed of: 1) a researcher who has been funded by NSF, 2) a student (postdoc, or senior grad student who is finished with classes) who is interested in becoming an entrepreneur, and 3) an industry mentor with entrepreneurship experience. Each team is focused around a particular innovation that they want to commercialize. The big difference between I-Corps and standard NSF programs is that these teams do not apply for funding to support a project; instead, they are applying to participate in an intensive, highly structured skill-building experience in which they are guided through the steps necessary to assess the feasibility and next steps required to establish a startup company based on their invention, focusing particularly on assessing the potential market for their proposed product. Only a small amount of funding is awarded, and considerable commitment is expected from I-Corps team members.

![I-Corps “Home”](image)

Figure 1. I-Corps aims to help researchers who are also aspiring entrepreneurs transcend the “ditch of death” between university research and establishing small business.
Needless to say, faculty researchers are often puzzled about why they should pursue a grant in which little money, but a lot of work, is involved. The answer to that question is that this program is meant to assist faculty and students who are already passionate about pursuing an entrepreneurial path. Taken in this light, an I-Corps grant is a great deal, providing free intensive training and mentoring, along with some funds to defray expenses, to help entrepreneurial teams be successful.

The I-Corps Strategy

As part of I-Corps, NSF funds a suite of programs to build what they call an I-Corps “fabric” composed of:

- **I-Corps Teams** – composed of a current or former NSF PI, a student (called the “entrepreneurial lead,”) and a mentor, as described above
- **I-Corps Mentors** – experienced entrepreneurs who participate in those teams
- **I-Corps Sites** – at academic institutions with existing entrepreneurship/innovation units that help to form and provide support for local I-Corps teams, leverage intellectual assets at the university, and instill a culture of entrepreneurship; funded at up to $100K/yr for up to 3 years
- **I-Corps Nodes** – that, variously, provide on-site training for I-Corps teams [level 1], develop tools and resources to support entrepreneurship [level 2], and conduct “Blue Sky” research on entrepreneurship and commercialization [level 3].

Clearly having an I-Corps Site at your institution could provide valuable infrastructure for a number of larger NSF grants that require innovation, entrepreneurship or commercialization components (e.g., Engineering Research Centers).

I-Corps teams are funded at up to $50K, but this money is not meant for fundamental research; instead, it supports efforts to explore whether there is a market for a potential product resulting from previous NSF research (while a potential product may have resulted from a number of different projects funded by various sponsors, some NSF lineage in the form of one or more award numbers is required). A special challenge that the program attempts to address is a culture within academia that is risk-averse and afraid of failure, which tends to inhibit efforts to commercialize innovations.

In addition, the team must commit to an intensive 7-week program that includes 1 week at an I-Corps Node followed by 5 weeks of extensive market research (including spending at least 15 hours per week visiting potential customers, blogging about interactions with customers, and participating in web-based lectures and presentations 1 day per week). In the last week, teams return to the Node, present their findings and make a “go/no go” decision. If a “go” decision is made, the startup is then in a good position to pursue funding, which may include an SBIR, angel investors, or just family and friends. A number of I-Corps Nodes are located around the country, including at Georgia Tech, University of Michigan, Stanford, NYU, and Virginia Tech. Teams are advised to choose a Node that is located near where potential customers are located if possible.
The I-Corps curriculum is based **hypothesis-driven business-model discovery** pioneered by Steve Blank at Stanford. The central tenet of this approach is that “startups are only temporary organizations organized to research—not execute—a ...business model.” For that reason, many startups put the cart before the horse by first setting up extensive organizations and pursuing funding before they do enough research to determine if their potential product has a viable market. Extensive, rigorous market analysis is the focus of much of the I-Corps training. In fact, as part of the training, teams are required to interview at least 100 potential customers. The reasoning behind that number is that by the time teams have interviewed 30 or 40 customers, they’ve exhausted their store of friends, family and colleagues who will be encouraging and complimentary just because of those relationships. The teams can then find out the hard truth of whether there really is a market for their product, and what that market actually wants.

Team participants who spoke at the workshop emphasized how exhausting and time-consuming this process was—faculty participants advised strongly that faculty should either participate during the summer or seek teaching release if they commit to do this during the semester—but they also talked about how valuable the experience was, how much they learned, and how their thinking evolved based on customer interviews. It was very common for teams to totally rethink their product, or the market they were targeting, based on this experience.

Dr. dasGupta mentioned a number of successful startups resulting from this program, including Neon Labs (software for annotating images), Anchovi Labs (algorithms for analyzing video, which was acquired by Dropbox) and Carbon Cultures (converts forestry waste to biochar soil amendment). In addition, he mentioned that startups which participated in I-Corps and then pursued NSF SBIR grants had a 60% funding rate, compared to a 15 – 18% overall NSF SBIR funding rate.

**The Proposal Process**

Like many other aspects of the I-Corps program, the proposal process is unusual for NSF. Once you’ve formed your team, you submit a Project Summary. A 15-minute screening call is then set up with NSF program personnel where you are expected to explain your technology in 30 seconds. If NSF determines after the first call that your team and technology meet the program requirements, a second phone call is scheduled. This one is much more challenging, and the NSF personnel will be listening not only for information but also for team dynamics. For example, is the entrepreneurial lead (the student or postdoc) allowed to talk, or does the faculty team member dominate the conversation? Is the relationship with the mentor constructive, etc. If the team passes this gate, they are invited to write a 5-page proposal, which is reviewed internally. Remember that all members of the team are committing to participate fully in the 7-week experience described above. Of course, if after your I-Corps experience you decide to proceed with establishing a startup and marketing your product, that will be just the start of the work (and the adventure).
Collaborative International Research - Planning for Success

F. Gray Handley is the Associate Director for International Research Affairs at the National Institute of Allergy and Infectious Diseases, NIH. He has developed, coordinated and managed bi-lateral and multi-lateral science and public health programs for over 30 years at multiple NIH Institutes and Centers, the U.S. Department of State, and overseas postings in Asia and Africa.

This article provides observations on some factors that lead to research accomplishment while fostering enduring partnerships among scientists in multiple countries. The focus, in particular, is on factors that foster successful research collaborations engaging "developed" and "developing" country scientists - where all the participants perceive mutual benefit.

Engaging effectively in collaborative international research and establishing a foundation for future collaboration often demands managerial skills and contextual understanding beyond what is associated with domestic research. Specifically, achieving sustained success in international research requires that U.S. investigators and their teams understand the (often unfamiliar) institutional and social environments of their foreign collaborators. Armed with this understanding, successful investigators use strategic planning to address the challenges inherent in many international collaborations, especially those that cross wide cultural divides. This strategic planning is most effective if it is grounded in principles (observable across many types of science) that usually underlie mutually beneficial international research. Effectiveness is also enhanced when planning is oriented toward clarifying assumptions, preventing misunderstandings between individuals and institutions, and sharing in preparation for the inevitable challenges.

Principles of Mutually Beneficial International Research

- The research should be related to the missions of all the partnering institutions.
- The research should be a shared interest among the primary researchers (basic science, improved clinical care, intervention assessment, etc.).
- The collaborating researchers, engaged institutions and study participants (or their communities) should derive some benefit.
- The research question, study design, methodology and anticipated outcomes should be based on the best available information and an understanding of the research field shared by all the collaborators.
- The research results should have the potential to be "significant."
- The research, especially studies involving humans or animals, must comply with the highest ethical and regulatory standards.

Factors that Influence International Research Success

Assuming that those principles are accepted and understood, there are a number of factors that can influence the success of international research collaboration. The degree to which these factors are present or absent may become evident only when a research team
attempts to continue collaboration after an initial venture. This is particularly true in conflict-averse cultures or institutions, where difficulties or disappointments may be masked for the duration of an active collaborative effort to avoid confrontation. Sometimes a research collaboration ends because one or more partner believes that one or more of the previously described principles was not well-followed. (MORE) (PDF file)
William T. Grant Foundation Research Grants

The next deadline for letters of inquiry for research grants is January 8, 2014. Please note that this deadline also applies to Officers’ Research Grants. For more information, review the Research Grants Application Guide.

Scientific Research in Education

Researchers, historians, and philosophers of science have debated the nature of scientific research in education for more than 100 years. Recent enthusiasm for "evidence-based" policy and practice in education now codified in the federal law that authorizes the bulk of elementary and secondary education programs have brought a new sense of urgency to understanding the ways in which the basic tenets of science manifest in the study of teaching, learning, and schooling.

Scientific Research in Education describes the similarities and differences between scientific inquiry in education and scientific inquiry in other fields and disciplines and provides a number of examples to illustrate these ideas. Its main argument is that all scientific endeavors share a common set of principles, and that each field including education research develops a specialization that accounts for the particulars of what is being studied. The book also provides suggestions for how the federal government can best support high-quality scientific research in education.

About NSF’s Education and Human Resources (EHR)

The mission of EHR is to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation.

EHR Goals

1. Prepare the next generation of STEM professionals and attract and retain more Americans to STEM careers.

2. Develop a robust research community that can conduct rigorous research and evaluation that will support excellence in STEM education and that integrates research and education.

3. Increase the technological, scientific and quantitative literacy of all Americans so that they can exercise responsible citizenship and live productive lives in an increasingly technological society.
4. Broaden participation (individuals, geographic regions, types of institutions, STEM disciplines) and close achievement gaps in all STEM fields.

Capacity-Building Strategies
1. Identify effective ways to prepare and support teachers and faculty who can inspire and challenge students in the STEM disciplines and to provide them with effective materials and strategies to promote and assess learning;

2. Invest in research on learning, facilitating the translation of research into practice, and create supportive learning environments and STEM pathways by developing models of reform/systemic change at both institutional and multi-institutional levels through networking, partnerships, alliances and collaborations.

3. Ensure that the STEM community is broadly representative of the nation’s individuals, geographic regions, types of institutions and STEM disciplines; and,

4. Identify effective ways (formal and informal) to address the STEM knowledge requirements of adults so that they can be productive members of the workforce and informed and active citizens.

2012 National Survey of Science and Mathematics Education: Status of High School Mathematics
This report describes the status of high school (grades 9-12) mathematics instruction based on the responses of 1,822 high school mathematics teachers.1 For comparison purposes, many of the tables organize these data into three groups based upon the type of a randomly selected class: informal review (i.e., non-college prep mathematics), formal required (e.g., Algebra I, Algebra II), or formal advanced mathematics (e.g., pre-calculus).

2012 National Survey of Science and Mathematics Education Status of High School Physics
This report describes the status of high school (grades 9-12) physics instruction based on the responses of 472 physics teachers. For comparison purposes, many of the tables include data from the 1,246 respondents who do not teach physics; i.e., all other high school science teachers. These data include responses from high school biology, chemistry, Earth science, and physical science teachers.

2012 National Survey of Science and Mathematics Education: Status of High School Chemistry
This report describes the status of high school (grades 9-12) chemistry instruction based on the responses of 787 chemistry teachers. For comparison purposes, many of the tables include data from the 931 respondents who do not teach chemistry; i.e., all other high school science teachers. These data include responses from high school biology, Earth science, physics, and physical science teachers.

2012 National Survey of Science and Mathematics Education: Status of High School Biology
This report describes the status of high school (grades 9-12) biology instruction based on the responses of 695 biology teachers.1 For comparison purposes, many of the tables include data from the 1,023 respondents who do not teach biology; i.e., all other high school science teachers. These data include responses from high school chemistry, Earth science, physics, and physical science teachers.
Research Scholarships and Fellowships

**UNCF/Merck Undergraduate Science Research Scholarship Awards** are intended to help African American undergraduate students who are interested in science to further their science education and potentially pursue science and engineering careers. The UNCF-Merck awards provide tuition support and opportunities for research experience in a state-of-the-art research facility.

**UNCF /Merck Graduate Science Research Dissertation Fellowships** will help African American graduate students complete coursework, conduct research, and prepare the dissertation required for a doctoral degree in the biomedically relevant life or physical sciences and engineering.

**UNCF /Merck Postdoctoral Science Research Fellowships** are intended to provide support to African American post-graduate students to obtain postdoctoral training and to prepare for a career in biomedical research.

**NIH Availability of a Test (Beta) Version of the Science Experts Network (SciENcv)**

This Notice announces the availability of a test or beta version of the Science Experts Network (SciENcv). This new electronic system will enable researchers to easily assemble the information (including expertise, employment, education and professional accomplishments) to populate an NIH biographical sketch (biosketch). Initially, the goal of SciENcv is to reduce the burden associated with creating and maintaining federal biosketches while accommodating the need to describe scientific contributions.

SciENcv is a cooperative project requested by the Federal Demonstration Partnership, a coalition of research institutions and federal agencies. Seven federal science agencies, including DoD, DoE, ERA, NIH, NSF, the Smithsonian, and USDA, formed an interagency workgroup to develop the concept. SciENcv is being built by NIH’s National Center for Biotechnology Information (NCBI) under the direction of the workgroup, which operates under the aegis of the National Science and Technology Council’s Research Business Models and Science of Science Policy Committees.

The interagency workgroup invites users to test the beta version that was released on September 9, 2013. The beta version will help researchers assemble an NIH biosketch by extracting information from NIH eRA Commons and PubMed. In addition, SciENcv will permit users to link their data to a persistent, unique identifier offered by ORCID. Users can get to SciENcv by going to the NCBI sign-in page at https://www.ncbi.nlm.nih.gov/account/. Users have the option to sign in using third-party accounts (for example, an eRA Commons account, a local institutional account through InCommon, or a Google account). Full documentation on how to use My NCBI is located at

The beta version of SciENcv will allow users to explore the system and create an NIH biosketch. Users also are invited to identify features that need to improved or added to fully serve the needs of the research community. Suggestions can be entered using the utility provided at [info@ncbi.nlm.nih.gov](mailto:info@ncbi.nlm.nih.gov). A number of enhancements are already planned for future versions of SciENcv including the ability to generate biosketches for other federal agencies as well as other functionality listed below:

- Generate and maintain multiple biosketches including those for NSF and other federal science agencies
- Describe the scientific impact of past discoveries
- Ingest data from additional external systems
- Control data exposure
- Transfer data to other systems
- Allow delegates to manage data

Practical Guidance on Science and Engineering Ethics Education for Instructors and Administrators is the summary of a workshop convened in December 2012 to consider best practices for ethics education programs in science and engineering. The workshop focused on four key areas: goals and objectives for ethics instruction, instructional assessment, institutional and research cultures, and development of guidance checklists for instructors and administrators. Leading experts summarized and presented papers on current research knowledge in these areas. This report presents the edited papers and a summary of the discussions at the workshop.


India-United States Cooperation on Global Security is the summary of a workshop held by the U.S. National Academy of Sciences (NAS) together with its partner of more than 15 years, the National Institute for Advanced Studies (NIAS) in Bangalore, India. The workshop identified and examined potential areas for substantive scientific and technical cooperation between the two countries on issues related to nuclear material security. Technical experts from India and the United States focused on topics of nuclear material security and promising opportunities for India and the United States to learn from each other and cooperate. This report discusses nuclear materials management issues such as nuclear materials accounting, cyber security, physical security, and nuclear forensics.

Preparing the Next Generation of Earth Scientists: An Examination of Federal Education and Training Programs (2013)

Earth science, which in this context does not include oceanic, atmospheric, and space sciences, is vital to the wellbeing of the United States and many of its issues, such as water resources, are expected to grow in importance. An earth science workforce will be needed to deal with this issues and it’s important that this workforce draw on the talents of all citizens. Thus, federal education programs can be implemented to help attract and retain students on an earth science pathway; however, tight funding means agencies need to invest in programs that actually work.

As a result, the U.S. Geological Survey (USGS) Office of Science Quality and Integrity asked the National Research Council (NRC) to establish a committee to carry out a study, organized around a workshop, to address several tasks including: examining recent earth science education programs with a research or training component, both formal and informal, in these federal agencies; indentifying criteria and the results of previous federal program
evaluations, and summarizing the knowledge and skills identified in recent NRC workforce reports that are needed by earth scientists in their careers.

Preparing the Next Generation of Earth Scientists: An Examination of Federal Education and Training Programs presents the committee's finding. The investigation was completed through information provided by federal agency managers and published articles and reports. A 2-day workshop was also held to examine federal earth science education programs and efforts to leverage resources. The report includes the workshop agenda, a glossary of abbreviated terms, and more.
New Funding Opportunities

New Funding Solicitations Posted Since September 15 Newsletter

Note: Federal Agency Shutdown May Affect Some URL Links

FY2014 Marine Sensor and Other Advanced Observing Technologies Transition Project
The U.S. IOOS Program and the NOAA Ocean Acidification Program (Programs) are seeking to jointly fund projects, subject to the availability of funds, which advance new or existing marine sensors and other observing technologies that address long standing and emerging coastal observing challenges. The projects will be focused on those sensors and other observing technologies for which there are demonstrated operational end-users who commit to integrated, long term use of those technologies and open data sharing. Funding will be targeted to marine sensors and other observing technologies that are beyond their research phase, with specific emphasis on transition and life cycle costs, including data management, overall operations, and maintenance expenses. **LOI November 1; full February 21.**

Energy Frontier Research Centers  (Search on: DE-FOA-0001010)
The Department of Energy, Office of Basic Energy Sciences (BES), is seeking new and renewal applications for Energy Frontier Research Centers (EFRCs) to conduct fundamental research focused on one or more grand challenges and use-inspired basic research needs identified in major strategic planning efforts by BES and the scientific community. The mission of the BES program is to support fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels in order to provide the foundations for new energy technologies and to support DOE?s mission emphases in energy, the environment, and national security. EFRCs are intended to bring together the skills and talents of multiple investigators to enable fundamental research to enhance U.S. energy security and to meet the global need for abundant, clean, and economical energy. **The full text of the Funding Opportunity Announcement (FOA) is located on FedConnect.** Instructions for completing the Grant Application Package are contained in the full text of the FOA, which can be obtained at [https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0001010&agency=DOE](https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0001010&agency=DOE)

LOI due November 11; full proposal January 9.

Rural Health Network Development (RHND) Grant Program
This announcement solicits applications for the Rural Health Network Development (RHND) Program. The purpose of this program is to support rural integrated health care networks that
have combined the functions of the entities participating in the network. The RHND Program supports established health oriented networks with a history of collaboration to develop and maintain collaborative relationships to integrate systems of care administratively, clinically and financially. Networks must consist of at least three health care providers that are separately owned entities. Each member of the network must sign a memorandum of agreement or similar formal collaborative agreement. For purposes of this grant program, a rural health network is defined as a formal organizational arrangement among at least three separately owned health providers that come together to develop strategies for improving health services delivery systems in a rural community. A network in this context is not a large health system whereby multiple health care providers or organizations are owned and/or created by the same overarching entity to collaborate and achieve a particular goal. Due November 22.

FY2014 Demonstration of a U.S. Marine Biodiversity Observation Network

Grants.gov Key Word Search: “NOAA-NOS-IIOOS-2014-2003803” to download full announcement. This funding opportunity invites proposals for projects that demonstrate how an operational Marine Biodiversity Observation Network (Marine BON) could be developed for the nation by establishing one or more prototype networks in U.S. coastal waters, the Great Lakes, and the EEZ. Biological diversity, or biodiversity, is defined as the variety of life, encompassing variation at all levels of complexity – genetic, species, ecosystems, and biomes – and including functional diversity and diversity across ecosystems. A growing body of research demonstrates that 1) the maintenance of marine biodiversity (including coastal biodiversity) is critical to sustained ecosystem and human health and resilience in a globally changing environment, and 2) the condition of marine biodiversity offers a proxy for the status of ocean and coastal ecosystem health and ability to provide ecosystem services. Thus, managing our marine resources in a way that conserves existing marine biodiversity would help address other ocean management objectives (Palumbi et al. 2009). For example, it would provide information to enhance biosecurity against threats such as invasive species and infectious agents, enable predictive modeling, better inform decision making, and allow for adaptive monitoring and Ecosystem-Based Management. As stated in the final recommendations of the Interagency Ocean Policy Task Force, it is the policy of the United States to protect, maintain, and restore the health and biological diversity of ocean, coastal, and Great Lakes ecosystems and resources (http://www.whitehouse.gov/files/documents/OPTF_FinalRecs.pdf). The Census of Marine Life, which concluded in 2010, greatly enhanced our understanding of the status of marine biodiversity. It also made clear the importance of clear-cut, systematic and sustainable approaches to observing and monitoring biodiversity across different levels and at a national scale. In May 2010, the Biodiversity Ad Hoc Group under the Interagency Working Group on Ocean Partnerships convened a workshop of experts to develop a plan and recommendations for attaining an operational marine biodiversity observation network (Marine BON) for the nation. The full workshop report can be found online: http://www.nopp.org/wp-content/uploads/2010/03/BON_SynthesisReport.pdf. In May 2013, workshop steering committee members published a paper in BioScience on the feasibility of establishing a Marine BON (http://www.jstor.org/stable/pdfplus/10.1525/bio.2013.63.5.8.pdf). On behalf of the National Oceanographic Partnership Program (N OPP), NOAA and several of its partner agencies,
including the National Aeronautics and Space Administration (NASA), the Bureau of Ocean Energy Management (BOEM), and the United States Geological Survey (USGS), are requesting proposals to address the recommendation from the 2010 workshop to initiate an integrated Marine BON demonstration project. The agencies are requesting proposals for one or more broadly coordinated demonstration projects in U.S. coastal waters, the Great Lakes, and the exclusive economic zone (EEZ) that demonstrate how an end-to-end marine BON can be developed. “End-to-end” refers to integration of observations and data across multiple scales of diversity (genetic to ecosystem, microbes to whales), time (instants to centuries), and space (in situ to satellite remote sensing). Special consideration will be given to proposals that demonstrate potential for establishing long-term, sustainable monitoring through partnerships. NOPP anticipates making one or more awards, subject to the availability of funds, in amounts ranging from $500,000 to $2,000,000 per year for up to five years. **Due December 2.**

**NEH Collaborative Research Grants**
Collaborative Research Grants support interpretive humanities research undertaken by a team of two or more scholars, for full-time or part-time activities for periods of a minimum of one year up to a maximum of three years. Support is available for various combinations of scholars, consultants, and research assistants; project-related travel; field work; applications of information technology; and technical support and services. All grantees are expected to communicate the results of their work to the appropriate scholarly and public audiences. **Due December 5.**

**Ocean Exploration 2014 Funding Opportunity**
OER is seeking pre-proposals and, ultimately, full proposals to support its mission, consistent with NOAA’s Next Generation Strategic Plan (http://www.ppi.noaa.gov/wp-content/uploads/noaa), to search, investigate, and document poorly-known and unknown ocean areas through interdisciplinary exploration, and to advance and disseminate knowledge of the ocean environment and its physical, chemical, archaeological, and biological resources. The office priorities for this opportunity support NOAA’s mission goals of: Healthy Oceans, Climate Adaptation and Mitigation, and Resilient Coastal Communities and Economies, as well as many of the elements of the President’s National Ocean Policy. Competitive ocean exploration proposals will be bold, innovative and interdisciplinary in their approach. NOAA OER anticipates a total of approximately $3,000,000 including costs for ship and submersible assets will be available through this announcement. Only exploration proposals will be considered for funding, any other type of proposed project will not be reviewed. See Section I.B. for thematic priorities. To familiarize themselves with past and present OER-funded activities, applicants are encouraged to visit the Ocean Explorer Website http://oceanexplorer.noaa.gov. Background on how to apply and the required proposal coversheets are accessible through the OER Office Website at http://explore.noaa.gov. Pre-proposal submissions by non-Federal or Federal applicants are to be e-mailed to oer.ffo2014@noaa.gov. Please put your last name in the subject heading along with the words OER Pre-proposal, e.g., "Jones OER Pre-proposal." Adobe PDF format is preferred. If an eligible applicant can prove he/she does not have internet access, contact the Agency Contact listed in
section VII for submission instructions. Full proposal submissions from non-Federal applicants must be submitted through Grants.gov. If an eligible applicant can prove he/she does not have internet access, contact the Agency Contact listed in section VII for submission instructions. No e-mail or facsimile full proposal submissions will be accepted from non-Federal applicants. Full proposal submissions from Federal applicants are to be submitted by e-mail to oer.ffo2014@noaa.gov. No facsimile full proposal submissions will be accepted from Federal applicants. For questions send messages to oer.ffo2014@noaa.gov. Questions and responses will be posted at http://explore.noaa.gov. Due December 22.

**NEA Our Town Application, FY 2014**
The Arts Endowment's support of a project may start on or after September 1, 2014."Grant Program Description Art works to improve the lives of America’s citizens in many ways. Communities across our nation are leveraging the arts and engaging design to make their communities more livable with enhanced quality of life, increased creative activity, a distinct sense of place, and vibrant local economies that together capitalize on their existing assets. The NEA defines these efforts as the process of Creative Placemaking:"In creative placemaking, partners from public, private, nonprofit, and community sectors strategically shape the physical and social character of a neighborhood, town, tribe, city, or region around arts and cultural activities. Creative placemaking animates public and private spaces, rejuvenates structures and streetscapes, improves local business viability and public safety, and brings diverse people together to celebrate, inspire, and be inspired. Due January 13.

**Organotypic Culture Models for Predictive Toxicology Center**
Grants.gov Key Word Search: “NOAA-OAR-OER-2014-2003874” to download full announcement. The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications for research centers to investigate toxic effects of chemical substances in three-dimensional (3D) in vitro models, hereafter referred to as ‘organotypic culture models’ (OCMs). OCMs are tissue culture models that mimic in vivo tissue architecture through interactions of heterotypic cell types (e.g., epithelium-stroma) and extracellular matrices (ECM). They can be established from isolated cells or from tissue fragments harvested in vivo, and will bridge the gap between conventional monolayer cell cultures and whole-animal systems. EPA is interested in the potential application of OCMs that mimic complex cell arrangements and physiologies, scalable from mid to higher throughput screening (HTS), and high-content screening (HCS) approaches. This solicitation seeks the formation of research centers that will guide the development and evaluation of OCMs that will accelerate translational research in predictive toxicology. Three dimensional tissue models may, for example, utilize animal cells combined with mechanical scaffolds or microfluidics devices. Under this solicitation, the successful applicant will lead a Center to craft OCMs that can recapitulate critical features of in vivo cellular organization and communication, cell-matrix interplay, morphogenetic processes and differentiation, physiology and chemical metabolism. Measures of success or progress should be described toward the application of OCMs for computational toxicology and reconstructing in vivo responses to environmental chemicals and nanomaterials to improve environmental health protection. As such, the OCMs should be
scalable in support of medium to high throughput strategies or high-dimensional quantitative data collection, such as high content imaging, that respond to questions relevant to chemical risk assessment and management. For applications using human cells, it is preferred that the cells are already available or derive from available cell lines. Due January 23.

Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology 14-001 ONRBAAN14-001
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 ONRBAAN13-007, which may be found at the ONR Broad Agency Announcement (BAA) webpage-

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
Collaborative Science, Technology, and Applied Research (CSTAR) Program
The CSTAR Program represents an NOAA/NWS effort to create a cost-effective transition from basic and applied research to operations and services through collaborative research between operational forecasters and academic institutions which have expertise in the environmental sciences. These activities will engage researchers and students in applied research of interest to the operational meteorological community and will improve the accuracy of forecasts and warnings of environmental hazards by applying scientific knowledge and information to operational products and services. The CSTAR Program addresses NOAA's Mission Goal 3--Weather Ready Nation. Due October 31.

NIH Bridges to the Doctorate (R25)
This Funding Opportunity Announcement encourages Research Education Grant (R25) applications from institutions that propose to enhance the pool of master’s degree students from underrepresented backgrounds who are trained and available to participate in NIH-funded research. This initiative promotes partnerships/consortia between colleges or universities granting a terminal master’s degree with institutions that offer the doctorate degree. The program expects that the joint efforts of doctorate degree-granting and master’s degree-granting institutions will foster the development of a well-integrated institutional program that will provide students with the necessary academic preparation and skills to enable their
transition and successful completion of the Ph.D. degree in biomedical and behavioral sciences.  Due November 1.

**National Academy of Education/Spencer Postdoctoral Fellowship Program**  
The National Academy of Education/Spencer Postdoctoral Fellowship Program supports early career scholars working in critical areas of education research. This nonresidential postdoctoral fellowship funds proposals that make significant scholarly contributions to the field of education. The program also develops the careers of its recipients through professional development activities involving National Academy of Education members.  Due November 1.

**NSF Graduate Research Fellowship Program**  
The purpose of the NSF Graduate Research Fellowship Program is to help ensure the vitality and diversity of the scientific and engineering workforce of the United States. The program recognizes and supports outstanding graduate students who are pursuing research-based master’s and doctoral degrees in fields within NSF’s mission. The GRFP provides three years of support for the graduate education of individuals who have demonstrated their potential for significant achievements in science and engineering research.  Due Dates Nov. 4-8.

**International Dissertation Research Fellowship (IDRF)**  
The Mellon International Dissertation Research Fellowship (IDRF) offers nine to twelve months of support to graduate students in the humanities and humanistic social sciences who are enrolled in PhD programs in the United States and conducting dissertation research on non-US topics. Eighty fellowships are awarded annually. Fellowship amounts vary depending on the research plan, with a per-fellowship average of $20,000. The fellowship includes participation in an SSRC-funded interdisciplinary workshop upon the completion of IDRF-funded research.  Accepting applications beginning August 12th 2013. Applications must be complete and submitted online before 9:00pm (EST) on November 7, 2012.

**Fellowships at The Huntington 2014-2015**  
The Huntington will award to scholars over 150 fellowships for the academic year 2014-2015. These fellowships derive from a variety of funding sources and have different terms. Recipients of all fellowships are expected to be in continuous residence at the Huntington and to participate in and make a contribution to its intellectual life.  Due by Nov. 15.

**2014 Ford Foundation Post Doctoral Fellowships**, Application Due by November 15.


**Partnerships for Innovation: Building Innovation Capacity (PFI: BIC)**  
The Partnerships for Innovation: Building Innovation Capacity (PFI:BIC) program supports academe-industry partnerships, which are led by an interdisciplinary academic research team with a least one industry partner, to collaborate in building technological and human innovation capacity. This innovation capacity is intended to endure beyond the initial award. Partnerships that build the capacity to innovate are expected to be effective at innovating and able to
continue to innovate. They are highly intentional about creating an environment that fosters innovation. These partnerships not only develop new technology but also foster the development of human capital that embraces a culture of change, nurtures the generation of new ideas, and considers feedback an integral part of the innovation processes. Partnership members are diverse, representing a spectrum of backgrounds, perspectives, and skills. Partnership activities that drive sustained innovation include the targeted allocation of resources such as capital, time, facilities; and sharing of knowledge in a cross-organizational and interdisciplinary context. **LOI required Nov. 18; full January 27.**


**NSF/NIH/USDA Ecology and Evolution of Infectious Diseases (EEID)**
The Ecology and Evolution of Infectious Diseases program supports research on the ecological, evolutionary, and socio-ecological principles and processes that influence the transmission dynamics of infectious diseases. The central theme of submitted projects must be quantitative or computational understanding of pathogen transmission dynamics. The intent is discovery of principles of infectious disease transmission and testing mathematical or computational models that elucidate infectious disease systems. Projects should be broad, interdisciplinary efforts that go beyond the scope of typical studies. They should focus on the determinants and interactions of transmission among humans, non-human animals, and/or plants. This includes, for example, the spread of pathogens; the influence of environmental factors such as climate; the population dynamics and genetics of reservoir species or hosts; or the cultural, social, behavioral, and economic dimensions of disease transmission. **Due November 20.**

**East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI)**
NSF and selected foreign counterpart science and technology agencies sponsor international research institutes for U.S. graduate students in seven East Asia and Pacific locations at times set by the counterpart agencies between June and August each year. The Summer Institutes (EAPSI) operate similarly and the research visits to a particular location take place at the same time. Although applicants apply individually to participate in a Summer Institute, awardees become part of the cohort for each location. Applicants must propose a location, host scientist, and research project that is appropriate for the host site and duration of the international visit. **Due November 25.**

**NSF Science, Engineering and Education for Sustainability Fellows (SEES Fellows)**
Through the SEES Fellows Program, NSF seeks to advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and human well-being while creating the necessary workforce to address these challenges. The Program's emphasis is to facilitate investigations that cross traditional disciplinary boundaries and address issues of sustainability through a systems approach, building bridges between academic inquiry, economic growth, and societal needs. The Fellow's proposed investigation must be interdisciplinary and allow him/her to obtain research experiences beyond his/her current core disciplinary expertise. Fellows are required to develop a research partnership(s)
that will advance and broaden the impact/scope of the proposed research, and present a plan for their own professional development in the area of sustainability science and engineering. Proposals with a primary focus on topics covered by the Directorate for Engineering (ENG) are considered "out of scope" for this revised solicitation; however, proposals may include such topics as a secondary (or tertiary) focus. **Due November 26.**

**NSF/DOE Partnership in Basic Plasma Science and Engineering**
The Directorates for Engineering (Division of Chemical, Bioengineering, Environmental &amp; Transport Systems), Geosciences (Division of Atmospheric and Geospace Sciences) and Mathematical and Physical Sciences (Divisions of Astronomical Sciences and Physics) of the National Science Foundation (NSF) and the Office of Science/Office of Fusion Energy Sciences (SC/FES) of the Department of Energy (DOE) are continuing in FY2014 the joint Partnership in Basic Plasma Science and Engineering begun in FY1997 and continued in FY2000, FY2003, FY2006 and FY2009. As stated in the original solicitations (NSF 97-39, NSF 99-159, NSF 02-84, NSF 05-619, NSF 09-596), which are superseded by the present solicitation, the goal of the initiative is to enhance plasma research and education in this broad, multidisciplinary field by coordinating efforts and combining resources of the two agencies. The current solicitation also encourages submission of proposals to perform basic plasma experiments on the Large Aperture Plasma Device (LAPD) at the University of California, Los Angeles (UCLA), a unique user facility designed to serve the needs of the broader plasma community. **Due November 26.**

**NSF Science, Engineering and Education for Sustainability Fellows**
Through the SEES Fellows Program, NSF seeks to advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and human well-being while creating the necessary workforce to address these challenges. The Program's emphasis is to facilitate investigations that cross traditional disciplinary boundaries and address issues of sustainability through a systems approach, building bridges between academic inquiry, economic growth, and societal needs. The Fellow's proposed investigation must be interdisciplinary and allow him/her to obtain research experiences beyond his/her current core disciplinary expertise. Fellows are required to develop a research partnership(s) that will advance and broaden the impact/scope of the proposed research, and present a plan for their own professional development in the area of sustainability science and engineering. Proposals with a primary focus on topics covered by the Directorate for Engineering (ENG) are considered out of scope; for this revised solicitation; however, proposals may include such topics as a secondary (or tertiary) focus. **Due November 26.**

**FY2014 Demonstration of a U.S. Marine Biodiversity Observation Network (Marine BON)**
This funding opportunity (NOAA-NOS-IOOS-2014-2003803) invites proposals for projects that demonstrate how an operational Marine Biodiversity Observation Network (Marine BON) could be developed for the nation by establishing one or more prototype networks in U.S. coastal waters, the Great Lakes, and the EEZ. Biological diversity, or biodiversity, is defined as the variety of life, encompassing variation at all levels of complexity – genetic, species, ecosystems, and biomes – and including functional diversity and diversity across ecosystems. A growing
body of research demonstrates that 1) the maintenance of marine biodiversity (including coastal biodiversity) is critical to sustained ecosystem and human health and resilience in a globally changing environment, and 2) the condition of marine biodiversity offers a proxy for the status of ocean and coastal ecosystem health and ability to provide ecosystem services. Thus, managing our marine resources in a way that conserves existing marine biodiversity would help address other ocean management objectives (Palumbi et al. 2009). For example, it would provide information to enhance biosecurity against threats such as invasive species and infectious agents, enable predictive modeling, better inform decision making, and allow for adaptive monitoring and Ecosystem-Based Management. As stated in the final recommendations of the Interagency Ocean Policy Task Force, it is the policy of the United States to protect, maintain, and restore the health and biological diversity of ocean, coastal, and Great Lakes ecosystems and resources (http://www.whitehouse.gov/files/documents/OPTF_FinalRecs.pdf). The Census of Marine Life, which concluded in 2010, greatly enhanced our understanding of the status of marine biodiversity. It also made clear the importance of clear-cut, systematic and sustainable approaches to observing and monitoring biodiversity across different levels and at a national scale. In May 2010, the Biodiversity Ad Hoc Group under the Interagency Working Group on Ocean Partnerships convened a workshop of experts to develop a plan and recommendations for attaining an operational marine biodiversity observation network (Marine BON) for the nation. The full workshop report can be found online: http://www.nopp.org/wp-content/uploads/2010/03/BON_SynthesisReport.pdf. In May 2013, workshop steering committee members published a paper in BioScience on the feasibility of establishing a Marine BON (http://www.jstor.org/stable/pdfplus/10.1525/bio.2013.63.5.8.pdf). Due December 2.

NEH Sustaining Cultural Heritage Collections

Sustaining Cultural Heritage Collections (SCHC) helps cultural institutions meet the complex challenge of preserving large and diverse holdings of humanities materials for future generations by supporting preventive conservation measures that mitigate deterioration and prolong the useful life of collections. Libraries, archives, museums, and historical organizations across the country are responsible for collections of books and manuscripts, photographs, sound recordings and moving images, archaeological and ethnographic artifacts, art, and historical objects that facilitate research, strengthen teaching, and provide opportunities for life-long learning in the humanities. To preserve and ensure continued access to such collections, institutions must implement preventive conservation measures, which encompass managing relative humidity, temperature, light, and pollutants in collection spaces; providing protective storage enclosures and systems for collections; and safeguarding collections from theft and from natural and man-made disasters. As museums, libraries, archives, and other collecting institutions strive to be effective stewards of humanities collections, they must find ways to implement preventive conservation measures that are scientifically sound and sustainable. This program therefore helps cultural repositories plan and implement preservation strategies that pragmatically balance effectiveness, cost, and environmental impact. Such a balance can contribute to an institution’s financial health, reduce its use of fossil fuels, and benefit its green initiatives, while ensuring that significant collections are well cared
for and available for use in humanities programming, education, and research. Due December 3.

**Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)**
The Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) seeks to increase the number of students (U.S. citizens or permanent residents) receiving associate or baccalaureate degrees in established or emerging fields within science, technology, engineering, and mathematics (STEM). Type 1 proposals are solicited that provide for full implementation efforts at academic institutions. Type 2 proposals are solicited that support educational research projects on associate or baccalaureate degree attainment in STEM. Due December 3.

**NEH Collaborative Research Grants**
Collaborative Research Grants support interpretive humanities research undertaken by a team of two or more scholars, for full-time or part-time activities for periods of a minimum of one year up to a maximum of three years. Support is available for various combinations of scholars, consultants, and research assistants; project-related travel; field work; applications of information technology; and technical support and services. All grantees are expected to communicate the results of their work to the appropriate scholarly and public audiences. Due December 5.

**NEH Scholarly Editions and Translations Grants**
Scholarly Editions and Translations grants support the preparation of editions and translations of pre-existing texts and documents of value to the humanities that are currently inaccessible or available in inadequate editions. These grants support full-time or part-time activities for periods of a minimum of one year up to a maximum of three years. Projects must be undertaken by a team of at least one editor or translator and one other staff member. Grants typically support editions and translations of significant literary, philosophical, and historical materials, but other types of work, such as musical notation, are also eligible. Due December 5.

**Discovery Research K-12 (DRK-12)**
The Discovery Research K-12 program (DRK-12) seeks to significantly enhance the learning and teaching of science, technology, engineering and mathematics (STEM) by preK-12 students and teachers, through research and development of innovative resources, models and tools (RMTs). Projects in the DRK-12 program build on fundamental research in STEM education and prior research and development efforts that provide theoretical and empirical justification for proposed projects. Teachers and students who participate in DRK-12 studies are expected to enhance their understanding and use of STEM content, practices and skills. DRK-12 invites proposals that address immediate challenges that are facing preK-12 STEM education as well as those that anticipate radically different structures and functions of pre-K 12 teaching and learning. The DRK-12 program has four major research and development strands: (1) Assessment; (2) Learning; (3) Teaching; and (4) Implementation Research. The program recognizes that there is some overlap among the strands. Proposals may address more than
one strand. For example, projects in the Learning Strand may also include assessments of student learning, and/or support for teachers and plans for larger dissemination and use. Likewise, the Teaching Strand has a specific focus on RMTs for teacher education and professional development, but these are often based on a particular curriculum or set of instructional materials or tools. The Implementation Research strand that replaces the Scale-up strand in the previous solicitation might potentially address any or a combination of the other three strands. The program supports three types of projects: (1) Exploratory, (2) Full Design and Development, and (3) Conferences, Workshops, and Syntheses. All three types of projects apply to each of the four DRK-12 strands. **Due December 6.**

**ONRBA13-021: Basic Research in Spatial Sensing Scene Characterization Technology**
The Office of Naval Research (ONR) is interested in receiving proposals for efforts that will advance and demonstrate science and technology for the next generation electronics and devices under the following focus area: Electronics technology enablers for wideband Simultaneous Transmit and Receive (STAR) capabilities

**Background**
The need for concurrent military antenna operations across wide spectral ranges in heavily congested electromagnetic environments continues to expand. Steady advances in RF and mixed-signal electronics technology continue to fuel increased system performance capabilities through the use of higher operating frequencies and broader bandwidths. Higher resolution for active sensors/imagers, higher data rate terrestrial and satellite communications links, and more effective electronic warfare (EW) and Information Operations (IO) are a few of the advances that high-speed electronics continues to enable. Many solid state device technologies from Silicon to Gallium Nitride, Niobium to Photonics, are contributing to these military system advances. Significant electronic challenges arise when these EW/IO, communications and radar systems are required to operate concurrently, with both transmit and receive functionality utilizing either a single aperture or multiple apertures. **Due December 11.**

**National Robotics Initiative (NRI)**
The goal of the National Robotics Initiative is to accelerate the development and use of robots in the United States that work beside, or cooperatively with, people. Innovative robotics research and applications emphasizing the realization of such co-robots acting in direct support of and in a symbiotic relationship with human partners is supported by multiple agencies of the federal government including the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the National Institutes of Health (NIH), and the U.S. Department of Agriculture (USDA). The purpose of this program is the development of this next generation of robotics, to advance the capability and usability of such systems and artifacts, and to encourage existing and new communities to focus on innovative application areas. It will address the entire life cycle from fundamental research and development to manufacturing and deployment. Methods for the establishment and infusion of robotics in educational curricula and research to gain a better understanding of the long term social, behavioral and economic implications of co-robots across all areas of human activity are important parts of this initiative. Collaboration between academic, industry, non-profit and other organizations is strongly
encouraged to establish better linkages between fundamental science and technology development, deployment and use. **Due December 11.**

**Partnerships for Innovation: Accelerating Innovation Research- Research Alliance**
The NSF Partnerships for Innovation (PFI) program within the Division of Industrial Innovation and Partnerships (IIP) is an umbrella for two complementary subprograms, Accelerating Innovation Research (AIR) and Building Innovation Capacity (BIC). Both programs are concerned with the movement of academic research discoveries into the marketplace, although each focuses on different stages along the innovation spectrum. The PFI:AIR program has two additional subprograms: the PFI:AIR-Technology Translation (See NSF 13-575) and PFI:AIR-Research Alliance (this solicitation). This PFI: AIR-Research Alliance (RA) solicitation is intended to accelerate the translation and transfer of existing research discoveries into competitive technologies and commercial realities by leveraging the investments NSF has made in research alliances (e.g., consortia such as Engineering Research Centers, Industry University Cooperative Research Centers, Science and Technology Centers, Nanoscale Science and Engineering Centers, Materials Research Science and Engineering Centers, Centers for Chemical Innovation, Emerging Frontiers in Research and Innovation grantees and others) and catalyzing academic-based innovation ecosystems. The goal is that these synergistic partnerships and collaborations between government, academia, and other public and private entities will result in new wealth and the building of strong local and regional economies. **WEBINAR:** A webinar will be held within 6 weeks of the release date of this solicitation to answer any questions about this solicitation. Details will be posted on the IIP website ([http://www.nsf.gov/eng/iip/pfi/index.jsp](http://www.nsf.gov/eng/iip/pfi/index.jsp)) as they become available. **Required LOI due December 13; full due February 12.**

**Stanton Nuclear Security Fellowship**
Nuclear security is one of the greatest challenges facing the world today. The spread of nuclear weapons to unstable and hostile states, the risk of conflict between nuclear armed nations, and the potential for terrorist groups to acquire nuclear arms all demand new thinking and creative policy solutions. The Stanton Nuclear Security Fellowship (SNSF) Program, made possible by a generous grant from the Stanton Foundation, offers younger scholars studying nuclear security issues the opportunity to spend a period of twelve months at the Council on Foreign Relations’ (CFR) offices in New York or Washington, DC, conducting policy-relevant research. CFR awards up to three fellowships annually. The fellowships will be awarded on the basis of academic and professional accomplishments and promise, and on the merits of the specific research projects proposed. The fellows could work on a wide range of issues, including nuclear terrorism, nuclear proliferation, nuclear weapons, nuclear force posture, and, as it relates to nuclear security, nuclear energy. While in residence full-time at CFR, fellows will be expected to lead a project of their own design, conduct original research, and write at least one policy relevant document. Fellows are expected to participate fully in CFR’s intellectual life. The scholars selected as SNSFs will be mentored by the fellows of CFR’s David Rockefeller Studies Program. **Due December 16.**

**Programming Grants to Accompany NEH on the Road Exhibitions**
These grants support ancillary public humanities programs to accompany NEH on the Road traveling exhibitions. Typical formats involve lectures, reading and discussion programs, film discussion programs, Chautauqua presentations by scholars, family programs, exhibition tours, and other appropriate formats for reaching the general public. **Due December 31.**

**Ocean Sciences Research Initiation Grants (OCE-RIG), Broadening Participation**

The Division of Ocean Sciences (OCE) offers Research Initiation Grants in an effort to increase the participation of under-represented groups in the ocean sciences. Research Initiation Grants provide start up funding for researchers who have been recently appointed to tenure track (or equivalent) positions, with the twin goals of enhancing the development of their research careers and broadening the participation of under-represented groups in ocean sciences. In this solicitation, the term under-represented groups will refer to and include the following: veterans, persons with disabilities, African Americans, Hispanics, Native Americans, Alaska Natives, and Pacific Islanders. **Due January 13.**

**National Digital Newspaper Program**

NEH is soliciting proposals from institutions to participate in the National Digital Newspaper Program (NDNP). NDNP is creating a national digital resource of historically significant newspapers published between 1836 and 1922, from all the states and U.S. territories. This searchable database will be permanently maintained at the Library of Congress (LC) and be freely accessible via the Internet. (See the website, Chronicling America: Historic American Newspapers.) An accompanying national newspaper directory of bibliographic and holdings information on the website directs users to newspaper titles available in all types of formats. During the course of its partnership with NEH, LC will also digitize and contribute to the NDNP database a significant number of newspaper pages drawn from its own collections. **Due January 15.**

**International Affairs Fellowship in Nuclear Security**

The International Affairs Fellowship in Nuclear Security (IAF-NS), sponsored by the Stanton Foundation, offers university-based scholars valuable hands-on experience in the nuclear security policymaking field and places selected fellows in U.S. government positions or international organizations for a period of twelve months to work with practitioners. The IAF-NS closes the gap between research and practice and enriches the teaching and scholarship of academics, while also benefiting policymakers by exposing them to cutting-edge scholarly research. The Council on Foreign Relations (CFR) awards approximately two fellowships annually. The fellowships will be awarded on the basis of academic and professional accomplishments, and on the contribution the fellowship will make to the applicant’s academic career development. Potential topics appropriate for the fellowship include nuclear terrorism, nuclear proliferation, nuclear weapons, nuclear force posture, security implications of nuclear energy, international security cooperation, deterrence, and war and conflict. During their fellowship tenures, fellows will be invited to attend CFR meetings and participate in select events, such as the annual International Affairs Fellows Conference in New York City. **Due January 17.**
**Catalyzing New International Collaborations (CNIC)**

The CNIC program will support US researchers’ participation in activities intended to catalyze new international collaborations designed to open up new scientific directions for the proposer. These include, but are not limited to: research planning visits, initial data gathering activities, proof-of-concept, single or multiple visits within a maximum 12-month time period to plan a new international research collaboration, or exploratory workshops designed to bring together US and non-US-based researchers representing several institutions and focused on a topic specified in the Project Description. Generally, CNIC-supported workshops will include between 10-25 individuals, of whom roughly half will be from the US, and are usually expected to take place abroad. However, in special circumstances, they may take place within the US if they include substantial international participation and are held for the purpose of establishing new international collaborations. **Due January 22.**

**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. **White Papers Due November 18; full proposal February 14.**

**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.**

**Research Interests of the Air Force Office of Scientific Research**
AFOSR plans, coordinates, and executes the Air Force Research Laboratory’s (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in three scientific directorates: Aerospace, Chemical and Material Sciences, Physics and Electronics, and Mathematics, Information and Life Sciences. Open until superseded.

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

**DARPA 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.**

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/](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
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--

- 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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