Our eBook

New Faculty Guide to Competing for Research Funding is an invaluable tool for faculty writing research grants (Table of Contents).

Our Junior Faculty Grant Writing Workshop

Presented by Mike Cronan this workshop offers a 4-hour overview of how to write successful proposals based on the core competitive strategies used by successful research grant writers. Now scheduling workshops for the fall semester. LEARN MORE HERE.

Table of Contents

- Avoid NSF’s “Perp Walk” Audit for Plagiarism
- Drafting Up the PI’s Verbal Research Narrative
- Importance of Planning for Large Team Grants
- What All New Faculty Need to Know About NSF
- NSF REU Proposal Checklist
- Research Grant Writing Web Resources
- Educational Grant Writing Web Resources
- Agency Research News
- Agency Reports, Workshops & Roadmaps
- New Funding Opportunities
- About Academic Research Funding Strategies

Topics of Interest

- NSF Update to Important Funding Notice No. 133
- NIH ASSIST Webinar PP Slides, August 13
- Next Generation Photovoltaics Technology RFI
- National Robotics Initiative (NRI)
- NSF Graduate Research Fellowship Program
- 2014 Sloan Research Fellowships
- AIA Fellowships, Grants, and Scholarships
- Emerging Frontiers in Research and Innovation 2014
- NSF OCE Newsletter June 2013 - Making Waves
- Sustainable Environments Program
- Public Health Linkages with Sustainability: Summary
- Google RISE Awards

About the editor

Katherine E. Kelly, Ph.D., is a retired English professor from Texas A&M University. She is the author of several books and numerous articles and served as a contributing editor for an academic journal for five years. She provides editorial services to RD&GW News and to ARFS clients on proposals, journal articles, and manuscripts.
The Junior Faculty Grant Writing Workshop

Academic Research Funding Strategies, LLC
Workshop Presented by Mike Cronan

(Back to Page 1)

ABOUT THE PRESENTER: Mike Cronan has 23 years of experience developing and writing successful proposals at Texas A&M University (1987-2010). He was named a Texas A&M University System Regents Fellow (2001-2010) for developing and writing A&M System-wide grants funded at over $100 million by NSF and other research agencies, 1990-2000. He developed, staffed, and directed two highly successful proposal development offices at Texas A&M, one in the Texas Engineering Experiment Station (Office of Research Development & Grant Writing, 1994-2004), a state-wide engineering research agency with divisions at 14 universities, and the second for the Vice President for Research (Office of Proposal Development, 2004-09), working across all academic disciplines in 11 colleges. Mike Cronan has undergraduate degrees in civil engineering (University of Michigan), political science (Michigan State University), and an MFA in English (University of California-Irvine). He is a registered professional engineer in Texas (inactive). CONTACT: Mike Cronan at mjcronan@gmail.com or 979-229-8009 to discuss details of scheduling a workshop.

ABOUT THE WORKSHOP: This 4-hour workshop addresses the foundations of competitive grant writing for new and junior faculty, as well as those who assist them in the planning, developing, and writing of research grants to federal agencies and foundations. Based on our popular eBook-- New Faculty Guide to Competing for Research Funding: What all new faculty need to know about finding funding and writing research proposals—this workshop focuses on the key competitive strategies critical to funding success for faculty writing both research and educational grants.

See below for an overview of presentation topics that will be fine tuned in consultation with the client to ensure selection of topics best mapped to the client’s specific institutional needs.

An additional four hour presentation period (same day) can be structured to address specific client needs, for example, presentations specific to obtaining funding from various federal agencies, such as NSF, or scheduling individual consultations for faculty, or on other grant-writing topics such as those addressed in articles in Research Development and Grant Writing News or our eBook New Faculty Guide to Competing for Research Funding.

WORKSHOP LOGISTICS AND COSTS: Workshops may be scheduled any day Monday through Saturday, September 23 through December 11. Client provides all facilities, handouts, presentation room, projector, and backup laptop with compatible version of Microsoft PowerPoint as a redundant presentation system. Presenter provides laptop computer with HDMI to VGA connector and provides all workshop materials to the client in electronic form for producing hard copy handouts at least two days prior to the workshop. Cost: $1,750 + travel costs (e.g., airfare, lodging, rental car, meals). (The cost for the additional [same day] four-hour presentation period based on client selected topics is $750.)

Ask About Our Workshop on Writing Large Team Grants
We also offer a workshop focused on developing large team grants that addresses the needs of more senior faculty and research professionals making the transition from writing smaller research grants to writing center-level research grants in a team environment.
NEW FACULTY WORKSHOP TOPICS OVERVIEW (finalized in consultation with client)

Finding Funding
- Overview
- Developing a Research Funding Strategic Plan
- Federal Research Funding Agency Snapshots (NSF, NIH, DOE, DoD, DoED, etc.)
- Unsolicited Proposals
- Funding from Foundations

Planning Your Proposal
- Role of the RFP, Request for Proposals
- Role of the RFP in Proposal Organization
- Understanding Funding Agency Mission & Culture
- Program Officers: Why, When and How to Contact Them

Preparing to Write the Research Narrative
- Scheduling Proposal Production
- Typical Proposal Structure
- Developing the Research Narrative Template
- Understanding Agency Review Criteria
- Importance of Referenced Documents

How to Write a Successful Research Narrative
- Know Your Audience: Writing for Reviewers & Program Officers
- Writing a Compelling Project Summary/ “Hands-on” ACTIVITY: Group Analysis and Evaluation of Example Project Summaries
- Writing a Competitive Proposal Narrative
- Writing the Introduction and Overview Section
- Writing the Vision, Goals, Objectives, Rationale, and Outcomes Narratives
- Narrative Characteristics of Successful Proposals, e.g.,
  - Writing a Compelling Project Narrative
  - Writing for Reviewers
  - Avoiding the Generic Introduction
  - Understanding the Role of Specificity in the Successful Proposal
  - Avoid Building Your Proposal Out of Spare Parts
  - Preparing for the Challenge of Integrating Multiple Authors
  - Viewing Graphics as a Narrative Integrator
  - Among other topics, including Narrative Characteristics of Unsuccessful Proposals
Avoid NSF’s “Perp Walk” Audit for Plagiarism

NSF’s Office of the Inspector General (OIG) promotes economy, efficiency, and effectiveness in administering the Foundation’s programs; detects and prevents fraud, waste, and abuse within the NSF or by individuals that receive NSF funding; and identifies and helps to resolve cases of misconduct in science, according to that agency’s recent audit report. The most current Semiannual Report to Congress highlights the activities of the OIG for the six-month period ending March 31, 2013. During this six months, the report notes, a now former professor resigned and was sentenced to two years’ probation for using over $160,000 in NSF grant funds to purchase items for personal use, including cameras and binoculars. The report also describes a university that failed to adequately document and account for salary and stipends and was subsequently required to repay NSF $530,000.

In this period, OIG reports referring eleven cases of research misconduct to NSF and had seven findings of research misconduct for data falsification, fabrication, and plagiarism. A PI of an NSF Small Business Technology Transfer program awardee company was indicted on several charges based upon proposals, reports, and payment requests that contained false information. In addition, the PI fabricated timesheets and altered financial records to conceal personal expenditures.

None of the cases in this 50-page investigative report rise to the level of major crimes, although it could be argued they rise to the level of major stupidity, nor does the report provide the night time crime drama entertainment that could be had by watching TNT’s Major Crimes. Of course, a similar question comes to mind in reading both the OIG investigative report and watching Major Crimes—how dumb can these “perps” possibly be?!

However, for anyone involved in the submission of proposals to NSF, either as a principal investigator or member of a research office, this OIG report should be interpreted as the first kick of the mule, in keeping with Speaker Sam Rayburn’s wise observation that “there is no education in the second kick of the mule.” Of course, for anyone who has raised teenagers, it is painfully clear that the point of this admonition is often missed, especially by teenage boys who seem to rely on repeated mistakes to learn.

Most importantly for those actually involved in the writing of an NSF Project Description, some reflection on the sections of this investigative report that address the OIG’s investigative audits related to plagiarism is clearly warranted. The sections of your proposal to be scrutinized include both the core research narrative, the broader impacts-related proposal sections, as well as biosketches and commitment letters, which should be reviewed for plagiarism, data fabrication, and other embellishments of the facts. Moreover, to those who confuse using so-called “boiler plate” as a substitute for actually developing your own ideas in the proposal narrative, this audit report should come as a clear shot across the bow that not only is the use of “boiler plate” the sign of ineptness but also, according to this OIG audit investigation, “such actions may constitute civil and criminal false statements and false claims.”
In light of this OIG report, it is worth noting how the use of “boiler plate” was characterized in the April 2012 issue of this newsletter:

Start quote: “Truly frightening proposals emerge when authors view them as nothing more than generic boilerplate text easily transplanted from an old proposal to a new one with a few minor adjustments. Attempts to find ‘spare parts for proposals’ salvaged from prior efforts that now populate the ‘grant writing cloud’ and other so-called ‘proposal databases’ are ill advised (See Do Not Build Your Proposal Out of Spare Parts, October 2011).

“A successful proposal grows from the seed of a compelling and exciting research idea. Every required proposal component that evolves from that idea must do so in an internally integrated manner that adds a logical synthesis, and hence strength, to the core research idea. Attempts to transplant a modified research narrative from an existing proposal into a new proposal will significantly weaken the overall proposal. Writing a successful project narrative requires many thoughtful iterations of each proposal section that reveal to the reader the relational symmetry of one section to another. The well-written and convincing research narrative must clearly evolve to reflect and serve the needs of your specific research vision and the performance metrics required for your success. Using so-called boiler plate text in a research narrative will likely elicit the same response as attempting to pass counterfeit $100 bills to a Secret Service agent.

“So it is important to beware the notion that a new proposal can be a largely borrowed or heavily modeled statement based upon other proposals, or a tattered template shared ‘in the grant writing cloud.’ There are not enough immunosuppressant grant-writing techniques available to disguise such ‘borrowing’ from the astute reviewer, particularly given that the good program officer and reviewer will function as the immune system of a proposal under consideration. If they detect a transplanted research narrative, they should, and most likely will, reject it....”

As can be noted from the following abbreviated extracts from the OIG audit investigation related specifically to plagiarism in proposals, those who support the development and writing of proposals should be mindful that the OIG audit report addresses issues that are more subtle and nuanced than the more egregious examples of plagiarism quoted below. For example, many research development professionals often support multiple research PIs by writing broader impacts sections of the Project Description, or evaluation sections, which too often sound eerily like boiler plate evaluations comprised of slogans looking for metrics. In the case of undergraduate research, for example, there are really a finite number of models used for mentoring students. However, this will be a common component of many large proposals, and so the key is to fit the model to the context of the specific effort.

The issue for the grant writer is that there are likely many arguments, phrases, and ways of expressing them on many NSF-relevant topics that have been written up numerous times in the past by the grant writer in one form or another, as well as viewed in operation on funded projects in terms of effectiveness, e.g., related to diversity, innovation, K-12 outreach, informal science, STEM student training models, etc. And this is not a bad thing. It is a good thing because it gives the PI a more honed and well-argued narrative contribution to the Project Description, but again, it must be done in the context of the current research and not past efforts to avoid the somewhat nuanced possibility that grant writers might be flagged by OIG
for plagiarizing from their own past writings on prior proposals. However, the important take away message here, particularly after reviewing the text below, is **that this must always be tightly mapped to the logical context of the newly proposed research**, i.e., integrated into the narrative in a logical fashion rather than appearing as a siloed section of narrative taken from some other proposal. **Keep this in mind when thinking about the following excerpts from the OIG investigation report:**

**Professor Plagiarizes in Two Proposals**
Our investigation determined that a PI at an Ohio university recklessly committed plagiarism in his NSF proposal. The PI admitted that he plagiarized, but asserted that in his native culture plagiarism is, in certain circumstances, encouraged, and that persons who plagiarize in such circumstances are considered well-educated and knowledgeable. We concluded that, regardless of whether his statement accurately reflected the practice in his native culture, when submitting a proposal to NSF he is required to abide by U.S. standards of scholarship and NSF policy. We recommended that NSF require certifications for one year...

**Former University Official Wrote Plagiarized Proposals for Staff**
We ascertained that two proposals nominally submitted by different PIs from the same institution contained nearly identical text, and both proposals contained text apparently copied from an awarded NSF proposal submitted by another institution...

**PI and Co-PI Plagiarize Almost Entire Project Description in NSF Proposal**
Our inquiry determined that a declined NSF proposal submitted by a New York PI and two co-PIs contained text apparently copied from twelve sources comprising nine of the nearly fourteen pages of the project description...

**Plagiarism Follows PI from Company to Company**
Our investigation determined that a PI submitted multiple SBIR proposals from two companies that contained substantive plagiarism. The PI denied that she plagiarized, claiming that her proposals had been edited, changing her words to match text in the source documents. However, most of the plagiarized text was in a proposal on which she was sole PI and there was evidence of direct copying-and-pasting from the sources...

**Faculty Member Plagiarizes in Multiple NSF Proposals**
A PI at a Texas university plagiarized in multiple NSF proposals. The PI admitted to copying in one proposal, asserting that he had believed citation alone was sufficient. The university’s investigation did not make a finding of research misconduct because the sources were cited and quotation marks or other demarcation of verbatim text is “a matter of style”, commonly omitted. We disagreed and conducted our own investigation...

**Assistant Professor Blames Software for Deleting Attribution**
An assistant professor at an Arizona university plagiarized text in two NSF proposals. The assistant professor stated that the software he used deleted quotation marks, citations, and
other punctuation. After the university investigation revealed unattributed copying in a second NSF proposal, he asserted that he was unaware of the need for quotation marks, despite having two doctoral degrees. The university determined that he committed research misconduct...

**PI Plagiarizes in Two NSF proposals**
Our investigation found that a PI at a company in Virginia plagiarized more than 150 lines of text from eighteen different sources in two proposals, one of which NSF awarded. In response to our recommendations, NSF required the PI to submit certifications and assurances for his NSF proposals for two years, and barred him from serving as an NSF reviewer, advisor, or consultant for one year...

**Professor’s Incomplete Citation Practices Result in Plagiarism**
A professor at a Colorado university recklessly plagiarized in his CAREER proposal that NSF awarded with ARRA funds. The professor cited most of the published papers, but did not distinguish the copied text by quotation marks or indentation. Additionally, he did not cite his colleagues’ unpublished manuscripts from which he also copied text.

**Professor Enters into a Voluntary Exclusion Agreement to Resolve Data Falsification Allegations Spanning More than a Decade**
A former professor at a Massachusetts university agreed to voluntarily exclude himself from federal funding for eighteen months as a result of a university investigation that concluded that he had falsified data in eight different projects...

**Graduate Student, Given a Second Chance, Falsifies and Fabricates Additional Data**
A doctoral student at a Minnesota university intentionally fabricated and falsified data used by his dissertation advisor in an NSF proposal...

**NSF-Supported Graduate Student Admits to Data Fabrication and Falsification**
A former graduate student who conducted NSF-funded research at an Illinois university admitted that he fabricated and falsified data in a publication and his Ph.D. dissertation. Based upon the admission, the university revoked the student’s Ph.D. and requested the publication be retracted...

**PI Falsifies Letters of Collaboration**
Our investigation concluded that an owner of a small business in Georgia submitted a proposal that included falsified letters of collaboration. The owner falsified five letters he had received for a previous SBIR project by removing the text related to the original project and subsequently submitted them in a proposal to a different program. He did not add text relevant to the new program, but just left white space in the letters, which led to inquiries from merit reviewers...

**The Importance of Accurate Information in Biosketches and Letters of Collaboration or Support**
An NSF proposal consists of multiple sections, and PIs have a responsibility to ensure that each section contains accurate information. Our office regularly receives allegations where key
Information was omitted, or information was fabricated, in the proposal’s biographical sketch (“biosketch”) and letters of collaboration or support. NSF instructions for preparing a biosketch state that the section should contain a “list, in reverse chronological order, of all the individual’s academic/professional appointments beginning with the current appointment.” This includes foreign appointments, non-salaried appointments, or appointments of limited term. In a case reported herein, a professor resigned his position after it was discovered that he failed to acknowledge his appointments at foreign universities on his conflict of interests forms. NSF also provides clear instructions about relevant publications that can be included in the biosketch:

A list of: (i) up to five products most closely related to the proposed project; and (ii) up to five other significant products, whether or not related to the proposed project. Acceptable products must be citable and accessible including but not limited to publications, data sets, software, patents, and copyrights.

Unpublished documents, manuscripts described as “to be submitted” or “in preparation” should not be listed, and publications listed as “submitted” or “in press” must actually exist.

Similarly, NSF states that letters of support “must be unique to the specific proposal submitted and cannot be altered without the author’s explicit prior approval.” We have seen several cases where PIs recycled old letters of collaboration or support and either put a new date on the letter or simply removed the original date. In a case discussed herein, a PI went a step further and removed several sentences from letters of collaboration because they related to a program to which a proposal had previously been submitted.

Padding one’s biosketch and altering letters of collaboration or support are a violation of the standards of scholarship; in an NSF proposal, such actions may constitute civil and criminal false statements and false claims.

The examples above should give everyone pause of sufficient duration to make sure there are no such problems in your proposals.
One thing is certain when working on large team proposals: the ability to adapt flexibly, productively, and quickly to the Principal Investigator’s style and preferences for developing the research narrative is key to success. While PIs are different in many ways, certain PI archetypes tend to emerge. Each PI will have a preferred process by which the team will conceptualize the research plan and organize the logical sequence of narrative arguments used to convince program managers and reviewers to fund the proposal.

For example, some PIs prefer to work as the sole or principal author of the research narrative; other PIs prefer to work as a member of a collaborative writing team; some PIs prefer to make writing assignments among research team members and serve as the editor and “synergy integrator” of the various sections; and yet other PIs prefer a process whereby they verbally narrate the research narrative and ask members of the team to write a first draft based on those discussions.

The classical analog for the latter might be described as the “Socrates PI” with selected team members playing the role of Plato or Xenophon in recording and drafting the PIs verbal telling of the research narrative, much as Plato did with his dialogues recounting Socrates’ philosophical insights. In more common vernacular, this process might be called the “straw man” approach to writing the research narrative, and with the right team dynamics, it can be another effective way among many to write a successful research narrative. Of course, it all depends on the PI and the reasons the PI prefers to develop the research narrative in one way rather than another. There are many ways to develop and write a successful proposal. The best way is the one that best recognizes the PIs preferred ways of planning, organizing, managing, conceptualizing, and communicating the proposed research.

In this case, the best way that team members and research professionals can assist the PI in writing the research narrative is to accept the PI’s preferred mode of operation rather than trying to impose some idealized characterization of what you would like the proposal development process to be. Admittedly, most people who have worked on a sufficient number of large team proposals may wistfully speculate about the possible benefits of having a team therapist as part of the development group, but that discussion is best left to a “beer summit” after the proposal is submitted.

Moreover, if you ever have the urge to request that the PI and team members indulge your “inner psychologist,” in so-called team building exercises, for example, by taking some variant of the “Big Five Dimensions of Personality” trait taxonomy test as a way of writing a more competitive proposal—expunge it! Developing and writing successful proposals is an applied pursuit and rather than a theoretical one. It is the domain of the learned and often humbled by experience (by reviewers, program officers, etc.) proposal writer rather than the aspiring proposal theoretician. Be mindful of Yogi Berra’s observation that "In theory, there is no difference between theory and practice. But in practice, there is."
Moreover, it is important not to confuse or equate proposal process knowledge with research knowledge. The old saying "You dance with them what brung you" is good advice. In the case of the large team research proposal, the one “what brung you” is typically the PI whose track record of research funding success and research management experience forms the keystone for success of the entire team configuration and most influences that dynamic. While large team proposals must truly be team efforts, that is not to say that there is not an indispensable team member whose energy and vision drive the effort, and whose absence would make a submission impossible. That person is the PI.

That said, there are many reasons a PI may prefer to verbally narrate the research narrative to a few team members serving as a writing team rather than personally write the initial and subsequent proposal drafts. In some cases, for example, the PI may have to meet an almost impossible travel schedule, both nationally and internationally, or has other research commitments that make proposal assistance from team members and research development professionals essential to the proposal going forward. In other cases, the PI’s writing expertise may not be as strong as the PI’s scientific expertise, especially in cases where English is the PI’s second or third language. However, in many cases, there are multiple reasons why the PI’s verbal explanation of the research vision and goals to a small writing team will, in turn, produce a series of useful “straw man” drafts.

This process allows the PI “to think out loud,” as it were, and more easily converge in an orderly way on the most compelling and convincing arguments to make for funding. In fact, some PIs think better “out loud” (i.e., verbally) while others may think better by writing drafts in isolation. In either case, a compelling research story must be translated into the language that will find its way into the final research narrative and that is accessible and easily understood by reviewers. This process often begins with a series of meetings where the PI explains the significant aspects of the proposed research to a small writing team and explains why the research advances the agency mission objectives defined in the solicitation. This process also allows the PI to think about the most convincing arguments to make for funding and do it in real time with feedback from the writing team in the form of challenging questions that help the PI better hone the rationale behind the research story to be told. Moreover, this process helps prepare the PI for the give and take challenges of a site visit or a reverse site visit, or even an agency conference call as was required for the submission of the recent NSF ERC preliminary proposal.

If the right support is available to assist the PI, either from the research team or from research professionals, this “straw man” process of writing the research narrative may make the difference between submitting a competitive rather than a non-competitive proposal, or not submitting a proposal at all. In this process, the “straw man” draft is the first preliminary draft of the research narrative and is used as the starting point to begin converging by numerous iterations on the final narrative. Of course, a “straw man,” by definition, is meant to be challenged and made better by those challenges. And this presupposes a PI that is willing to be challenged and with enough confidence to use challenging questions and observations to bring clarity and robustness to the research narrative. This process works well for a gracious and self-confident PI, but not so well for a thin-skinned PI or roosters.
This process of developing the proposal requires significant communications between the PI and the writing team, but it is adaptable to a PI’s travel schedule by allowing conference calls by cell phone when face to face meetings are not possible. It requires a writing support team that is disciplinarily knowledgeable about the research topic, knowledgeable about the specific solicitation, funding agency expectations, and review criteria (e.g., the role of the 3-plane diagram in NSF’s current Engineering Research Centers solicitation), fluent writers of draft technical text, and experienced strategists in terms of how best to write for reviewers to achieve the requisite order, logic, and proportionality of the arguments made for funding.

Moreover, it requires a support team whose members are skilled at asking the PI the right questions to be answered in the research narrative and not intimated by asking for clarification, repeatedly when necessary. For example, the “straw man” process may start with the PI giving an overview of why the proposed research is a good match for the solicitation, why the proposed research is significant and important to the field, along with a preliminary overview of the vision, goals, objectives, rationale, and outcomes of the proposed research.

As a start to the process, the PI’s initial discussion may sound very good as a broad brush summary or a vision from the so-called “30 thousand foot level,” but the writers of the first “straw man” draft need to then ask the PI the harder questions: “Why is your research unique and different from what is currently being done? Why is your research transformational and not just incremental? Can you explain the importance of your research without using jargon or specialized knowledge? This may become more of an interrogation than the broad lobbing of softball questions. After all, the first “straw man” draft is meant to give the PI something to respond to and advance the evolving research narrative to the next of the many iterations it takes to have a final draft competitive for funding.
Center-level and large team research grants (LTGs) can range in funding from a few million dollars to tens of millions of dollars with award durations from a few years to ten years or more, often with the option of continued funding based on performance. The major federal research agencies, such as the National Science Foundation (NSF), National Institutes of Health (NIH), Department of Defense (DoD), Department of Energy (DOE), among others, fund LTGs. The Engineering Research Centers (ERC) and Science and Technology Centers (STC) funded for decades by NSF are well known examples of LTGs. NSF estimated that the agency would receive 250 preliminary proposals by July 30, 2013 for the currently open ERC program.

Federal research agencies fund LTGs for multiple reasons. These grants may begin with national research reports, such as those from the National Academies, that define a national research grand challenge, perhaps in genomics, materials, energy, climate change, biological systems, education, and workforce training, among others. In other cases, LTGs may originate within a specific federal agency, or, in the case of NIH, within a specific Institute’s research road map or strategic research plan. The common denominator of LTGs, however, relates to the complexity of the scientific problem being addressed, disciplines required to address the problem, value-added benefits team research brings to solving the problem, capacity of the team research approach to bring multidisciplinary integration and synergistic solutions to the problem, and the capacity for the development of new technologies, scientific innovation, and commercialization.

The scale and scope of LTGs are characterized in several ways that differentiate them from smaller grants with only a few Principal Investigators (PI) working in a more narrow disciplinary domain. LTGs represent premier agency investments, more dollars over more years, more disciplines, components and moving parts (i.e., complexity), more team members and team dynamics, more partnered institutions, more time needed to plan, develop and write, more interdisciplinarity and synergy required to demonstrate the value-added benefits of team research, and, consequently, more development challenges for the PIs.

Moreover, LTGs are more complex to plan, develop, and write than are smaller grants. Successful LTGs must communicate a compelling research vision, demonstrate major value added-benefits to the team structure, achieve research synthesis, integration and synergy, address multiple program components that build on the research core, offer a management plan that enables the research vision, propose a convincing research strategic plan over a five- or ten-year performance period, convince program officers and reviewers that the proposed research is transformational and not merely incremental, and navigate multiple review gates to funding success.

Existing faculty research teams and research affinity groups can position themselves for potential LTG opportunities by presenting an existing research team with a track record of collaboration in place, creating a strategic plan for the team, defining the significance of the team’s research capacities and research synergies, identifying potential funding opportunities,
mapping the team’s research expertise and interests to possible funding opportunities, becoming knowledgeable about the agency’s specific background, context, and rationale for specific LTG opportunities (e.g., through agency reports, workshops, and examination of more recently funded LTGs), and anticipating the future LTG funding directions and opportunities, thereby positioning the team to compete for them.

Building research teams and research affinity groups guided by a strategic plan can lay the competitive foundation needed to achieve success in competing for LTG opportunities. These awards sometimes—but not always—have the benefit of a long time horizon before the due date. Regardless, team strategic planning helps build a competitive configuration of research capacities, collaborative experiences, and successes to create a foundation for a future LTG. Moreover, team strategic planning can generate new research ideas and help test the validity of existing research directions in the context of LTG opportunities. Well configured teams guided by a team strategic plan offer the depth and breadth of expertise to address complex, multidimensional research problems in an integrative and synergistic way, something that lies at the heart of a successful LTG.

The development of team proposals also serves the long-term interests of an emerging research partnership by moving it towards a more competitive configuration better positioned and experienced for new research horizons, which are the usual domain of LTGs. Additionally, the team process of strategic planning will help prepare the research partnership for the possible submission of smaller, more focused research grants (building blocks of LTGs) that will provide an important research component for the future, i.e., components required for a research center, particularly since center-level awards are often built on a strategic configuration of successful small research grants that de facto form the core research framework of a future center. At NSF, for example, the long-standing ERC and SRC programs in part represent a forward-looking aggregate of many smaller programs funded by the agency whereby the center structure itself enables a synergistic benefit not possible without the center serving as the integrator, and not just for the research but for other activities as well, e.g., education and training, technology development, innovation, commercialization, etc.

It is important to keep in mind that many successful LTGs are awarded on resubmission rather than first submission; hence, submitting an LTG, even if declined, provides an important long-term learning experience for the research team. Developing and writing an LTG and getting reviewer comments should the grant be declined advances the team towards its goal of a funded center on a second or third or fourth attempt—if the team learns from the review comments and discussions with program officers.

Of course, an informed decision to submit an LTG must be grounded on a candid self-assessment of the capacity to perform and of the capacity to develop a competitive proposal in the time allotted. LTGs represent a major commitment of time and resources—the decision to submit or not to submit is a critical one. Several factors need to determine the readiness of the team to submit, foremost among them being the team research vision and a strategic plan that will guide the research goals and objectives. There needs to be an assessment of the team configuration’s competitiveness and maturity, and a decision to complement the existing team with additional partnerships to enhance the effort’s competitive benefits. In making this
determination, the research team should have a history of collaborative success, for example, by funded projects and publications that validate the team’s research credentials. This process of team self-assessment is further advanced by the team’s capacity to understand the funding agency’s vision and rationale for the program and how the program advances the agency’s mission. In turn, this requires that the team map its research vision to that of the agency offering the specific LTG opportunity through a funding solicitation. The team’s research vision must map tightly to the agency’s vision and motivation for funding the program; further, the team’s research expertise and experience must be shown to position them to plan, develop, and write a competitive LTG. Of course, for this to work requires a committed team comprised of a committed PI and committed team members.

Equally important as team self-assessment is the team’s understanding of the agency’s motivation and rationale for funding a specific LTG. This includes understanding why the agency is funding the LTG program, the origins and history of the program, how and why the program evolved and changed over time, influences that have transformed the program over time and how the transformations occurred, the agency vision for the program going forward, how the program fits the national research context, the reports, workshops, conferences, etc. that have examined the program, how the program fits the agency strategic plan, and whether or not other agency-funded aligned programs exist at different scales.

This process of strategic planning and self-assessment will help ensure that the configuration of the research team is appropriate for the LTG opportunity, something that will be key to its competitiveness. Each collaborator or team member, for example, must bring specific expertise to the project and take a distinct and well-defined role with clear relevance to the research goals and objectives defined in the solicitation. Moreover, it is critical that the budget should be performance-based on value-added contributions by each team member, and each member should benefit from the project long term.

One key to a successful LTG is that it be lead by a successful PI. A successful PI is characterized by many factors, chief among them an appropriate record of research funding and publications relevant to the LTG opportunity. However, other important characteristics of a successful LTG PI go beyond research credentials. For example, the PI must have strong project management and strategic planning skills, understand the funding agency’s expectations for the LTG, be a strong team builder who enjoys the respect and trust of team members, possess strong planning and organizational skills, be able to manage team dynamics and keep the team focused, have strong scientific and technical communication skills, have strong team communication skills, possess the capacity to communicate a compelling research vision for the LTG, know how each team member’s expertise fits the vision and contributes to the competitiveness of the LTG, and have the ability to advance the project from research silos to research synergy.

Given what characterizes a successful LTG effort and the long time horizons needed to enable a successful effort, it is important to start the strategic planning process far in advance and develop a “team game plan” to ensure that your team will be “center ready” when the opportunity arises.
With the coming start of the fall semester, many new faculty will begin the process of developing a strategic plan for developing and writing research grants to federal agencies. Their success in this effort will play an important role in determining the outcomes of their third-year review and sixth-year promotion and tenure decision. The National Science Foundation may be the most popular agency of choice for many new faculty for many reasons. First, the agency is widely recognized as a premier funder of academic research in engineering, science, mathematics, social and behavioral and economic sciences. Second, it’s known for its support of education at all levels, particularly including undergraduate research and graduate fellowships. And what new faculty has not dreamed of receiving an NSF CAREER award. And finally, NSF funded research is widely recognized as significantly validating the research credentials of new faculty, particularly in the eyes of department heads, senior faculty, and deans who make the promotion and tenure decisions.

As an agency, NSF has become one of the most accessible to new faculty eager to learn about NSF funding opportunities and how to best position themselves for writing successful proposals to that agency. Moreover, NSF is unique among federal research agencies in emphasizing the integration of research and education. If you are new to NSF, do not underestimate the importance of this underlying theme, which is manifested across all NSF program areas. No other federal research agency melds the scientific and engineering research and educational domains to the extent that NSF does in its funding solicitations. Of course, the flip side of this relates to the importance of communicating to new faculty, who may have “NSF stars in their eyes,” what is not funded by NSF or otherwise represents an uncompetitive submission to that agency.

New faculty looking to NSF to support their research over the coming years should keep in mind a series of “take away” messages for submitting successful proposals to that agency, including:

- **NSF is a basic (i.e., fundamental) research agency, not a mission agency whose funded research must clearly advance the agency’s mission-critical objectives, such as at DoD, DOE, NASA, NOAA, NIST, EPA, etc.** Moreover, if your research is applied, most likely NSF will not be your research home, and you should look for funding from a mission agency or industry. NSF defines its research domain as being at the frontiers of new knowledge, thereby representing transformational (a favorite NSF word, as is interdisciplinary) rather than incremental advancement in a research area. For example, while both DARPA and NSF fund basic research, DARPA’s basic research has several constraints, most importantly a constraint to further the DARPA mission by research outcomes in a bounded mission domain. NSF, by contrast, funds unbounded, open-ended, and exploratory basic research unfettered by specific mission objectives and research outcomes other than those promising significant advancement to the field. Or, as NSF describes it: “**NSF’s job is to**
Research Development & Grant Writing News

determine where the frontiers are, identify the leading U.S. pioneers in these fields and provide money and equipment to help them continue." NSF believes this “occurs at disciplinary boundaries and intersections rich with the potential for technology development, innovation, and commercialization.”

- **Develop a strategic plan for your research.** This plan should incorporate your third-year review and six-year P&T research objectives and map your “P&T” research strategic plan to funding opportunities at NSF.
  - Look beyond a first grant submission to NSF in your strategic planning but also at a related series of “building block” grants at the agency with the potential over a six-year time horizon for you to build a very robust configuration of research success.

- **Be self-sufficient in identifying funding opportunities at NSF.** NSF makes it extremely easy for new faculty to “pack their own funding chute.” Sign up for NSF Funding RSS Feeds. The time between when a grant’s announcement and its due date is precious time in writing a successful proposal. Don’t depend on others to find grant opportunities for you. Also, sign up for the NSF RSS feeds on newly published documents that will help you better understand the priority funding areas at NSF. NSF Dear Colleague Letters are a common way for NSF to communicate this information to potential proposers.

- **NSF funds both solicited and unsolicited proposals.** Roughly 50% of NSF grants are in response to unsolicited or investigator-initiated proposals. Most NSF core programs have unsolicited due dates, target dates, or proposal windows that come around once or twice each year (although some core programs accept proposals at any time). This information is posted on the core program webpage at NSF. Also, NSF Dear Colleague Letters post updated information on the unsolicited process, e.g., **Dear Colleague Letter: Unsolicited Proposals at the Interface of the Biological, Mathematical and Physical Sciences, and Engineering (BIOMAPS).** See the [Grant Proposal Guide](#) for specific information on submitting unsolicited proposals.

- **Take the time to understand the NSF mission and culture.** This means that you must know your audience. Selecting the right pitch to use in selling your proposal presupposes you understand the agency’s culture and mission. Explore the NSF website, particularly in program areas that map to your research and educational interests. Review newly published documents for information that will help you write better proposals.

- **Understand the role of Broader Impacts in NSF proposals.** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes, e.g., education and training, diversity, inclusive workforce, etc. See Revised NSF Merit Review Criteria Effective for Proposals Submitted or Due on or After January 14, 2013 [HERE](#).

- **Learn how your proposal will be reviewed at NSF.** NSF supports basic or fundamental research in engineering and the sciences using a peer-review process based on intellectual merit and broader impacts. This distinction is particularly important for those new to NSF, and understanding its multifaceted and sometime subtle implications represents the keystone for your success at the agency. See Merit Review section of GPG [HERE](#).

- **Read the NSF Strategic Plan.** Perhaps more so than at any agency, NSF requires the capacity to contextualize your research in the terms of its strategic plan. This capacity will
**Research Development & Grant Writing News**

*Play a major role in your success or failure at that agency.* The NSF Strategic Plan, *Empowering the Nation Through Discovery and Innovation*, was released on May 2, 2011, and covers Fiscal Years 2011-2016. Moreover, given NSF’s commitment to diversity and inclusion in research, education, and training, anyone new to the agency would be well advised to also review the NSF document *Diversity and Inclusion Strategic Plan*, 2012-2016.

- **View NSF webinars.** You are always competing at the margins or boundaries of excellence when submitting a proposal to NSF. To be successful at NSF requires that every opportunity you have to write a better proposal needs to be fully exploited. Viewing an NSF webinar that gives you a deeper and more nuanced understanding of the funding agency’s reasons for supporting a program will provide critical information when crafting the arguments you will put forward to convince program officers and reviewers to fund your proposal. Subscribe to the [NSF Events RSS Feed](#) and be alert for agency webinars that address programs of interest to you.

- **Use the NSF Awards Database to know what is funded and why.** NSF’s website is full of helpful information and resources for PIs, one of the most useful of which is NSF’s searchable award database. This database allows you to find and identify the projects that have been funded by a particular NSF program, to identify projects funded on a particular topic, and to find out who has been funded on what projects. All of this information can be invaluable if you need to: identify which NSF program is likely to fund your research topic; determine what types of projects a particular program or solicitation is likely to fund; and locate collaborators or mentors. Moreover, by reading through abstracts of currently funded research, you will gain a better insight into the competitive characteristics of a successful proposal. In some cases you can use the database to identify PI’s of funded projects and email or call them for additional insights, and possibly even a copy of their proposal if you are in an area not competitive with them. Never be shy about asking for information that will be helpful to you. See [What’s New In The New Award Search](#).

- **Review the GPG.** While your university research office will help guide you through the [NSF Grant Proposal Guide](#), it is also important that you familiarize yourself sufficiently with this document to help you write a proposal that better meets the proposal criteria of the agency, both for solicited and unsolicited proposals (see [GPG Summary of Changes](#), January 2013). This is your guide to success at NSF. Read it closely and often!

- **Understand the role of the NSF program officers and how and when to contact them.** One of the most common mistakes new faculty make that results in an unfunded proposal is the failure to clarify ambiguities that arise in the reading of an NSF funding solicitation or referenced documents in the solicitation. *In research grant-writing, timidity is never rewarded and ambiguities are always punished.* If any uncertainty or ambiguity arises in your reading of the solicitation documents, call the program officer for clarification. Any ambiguity in the research narrative will leave the reviewers confused or guessing at your research objectives, and will most likely lead to a declined proposal. Do not call a program officer with questions that are clearly answered by several close readings of the solicitation. Do not call a program officer to ask if it is likely your proposal will be funded. But do call with questions that help clarify the solicitation, or help resolve uncertainties that remain after close readings of the funding solicitation.
Talk to your NSF-funded colleagues. Another good source of information about NSF is colleagues who have been funded by that agency, particularly recent recipients of an NSF CAREER proposal, or more senior faculty who have served as reviewers for NSF or as program rotators at the agency.


Moreover, keep in mind that at its core, every successful proposal, regardless of agency, asks a compelling question, poses a hypothesis, or fills a technical or societal need that advances the research agenda of the funding agency. The proposal must be framed within the context of the agency mission in a way that clearly demonstrates that your methods of investigation and potential outcomes will advance the field sufficiently to warrant investment in your proposed research. For a proposal to meet with success, it must contain a compelling and persuasive project narrative that poses a significant and exciting research question and convinces reviewers that your methods, expertise, and experience (e.g., preliminary data) will coalesce to contribute to a successful research outcome and bring value-added benefits to the agency’s research portfolio.

To achieve this result, you must frame the arguments in your research narrative in a way that demonstrates to program officers and reviewers a full response to the specific solicitation, as well as a complete understanding of how that solicitation fits within the larger context of the agency’s overarching research agenda or mission-critical research objectives. This becomes particularly important at NSF, which has framed its research vision in a manner that requires the research narrative to address issues such as the integration of research and education, broader impacts, and societal impacts, among many others specifically configured in the review criteria.

The more you know about what motivates a funding agency, the better and more knowledgably you will be able to advance arguments that convince program officers and reviewers to fund your research because of the significant ways it advances the agency research mission and the field.

The Dictionary of Common NSF Usage
Copyright 2013 Academic Research Funding Strategies. All rights reserved.
By Mike Cronan, co-publisher
(Re-published here from the February 15, 2013 newsletter)

Whether you are a newcomer or an experienced researcher with NSF, you may have noticed that the language the agency uses in its solicitations and on its website constantly evolves and changes. In this sense, NSF’s mantra of lying at the frontiers of scientific discovery applies both to the ideas it funds and to the language it uses to describe that frontier. Fluency in the language used by a funding agency can be exploited to gain additional marginal advantage in writing a successful research narrative. By contrast, failure to learn an agency’s language, either by ignoring that language or showing an indifference to it, can significantly reduce the competitiveness of a proposal. This can occur in several ways: for instance, it may impede your understanding of the solicitation, reduce the clarity with which you interpret the
goals and objectives of the agency, and/or degrade the quality of your research narrative, particularly if you are not able to translate your ideas into the language of the funding agency when required.

It is the rare research narrative that does not offer several opportunities to echo the funding agency’s language as a way of enhancing a proposal’s merits. In this regard, “echo” does not mean “parrot.” **Fluency** is the operative term here. Adopting the agency’s preferred language must be done carefully and appropriately when describing your research. However, if you have not become comfortable with the agency’s language, then you have lost an opportunity to gain another competitive advantage in the research narrative.

The recent changes to the NSF merit review process that went into effect this past January 14 offer one example of how NSF language is evolving ([New Merit Review Website](#)). Other instances of language change can be found in NSF solicitations, reports, workshops, and the like. Several key language changes at NSF have to do with the evolving definition of terms most often used to describe NSF expectations in solicitations, including broader impacts, innovation, synergy, societal goals, transdisciplinarity, and value-added benefits, among others. Whether you are writing a proposal to NSF or assisting with the development and writing of a proposal to NSF, it is important to keep in mind that fluency in NSF’s language and terms will translate into a significant competitive advantage during your proposal’s review. If NSF’s language sounds “foreign” to you, then you need to make that language familiar as quickly as possible. The following examples of NSF terms represent a good starting point for this process. In occasional subsequent articles on this topic, more terms will be addressed that play an important role in the competitiveness of your proposals. Understanding and using these clearly and unambiguously will help you demonstrate a clear understanding of the agency’s expectations.

**Broader Impacts**

As is the case with “societal benefits,” the most convincing and compelling definition of broader impacts will be one that you **self-define as a logical consequence of the research you propose** and which you have clearly embedded in the context of that research. The most effective definition of broader impacts should appear to emerge from the research you propose rather than from a repetition of apparently undigested NSF language. In fact, the revised review criteria that became effective January 14 were motivated by many examples of proposers who interpreted NSF examples of broader impacts as a mandatory listing of activities required in the project description, regardless of their relevance to the proposed research. To avoid making this mistake, self-define broader impacts within the context of the proposed research, ensuring that the definition makes sense within that context.

Any definition and discussion of broader impacts needs to begin with an understanding of how NSF defines broader impacts at the more general and more global scale (see below NSF quote), and then quickly contextualize it to the scale of your proposed research in a manner that grows out of what you propose. Too often, proposers waste precious time trying to find a prescriptive definition of broader impacts (or societal benefits) published by NSF, or attempt to use a pre-existing or “canned” description and force fit it to their particular proposal (see **Do Not Build Your Proposal Out of Spare Parts**, October 1, 2011). This never works. There is no
easy way around the fact that the **broader impacts** narrative section (now mandatory under revised merit review criteria) in your proposal must be well thought out and make sense within the context of the research you propose. So, review the NSF general discussion of **broader impacts** below, and then start the harder task of self-defining what broader impacts means within the context of your unique research. And remember, sometimes the outcome of your research itself may represent the most compelling **broader impacts** if you succeed in what you propose.

NSF: “**Broader impacts** may be accomplished through **the research itself**, through the **activities that are directly related to specific research projects**, or through activities that are **supported by, but are complementary to, the project**. NSF values the advancement of scientific knowledge and activities that contribute to achievement of societally relevant outcomes. Such outcomes include, but are not limited to: full participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education and educator development at any level; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a diverse, globally competitive STEM workforce; increased partnerships between academia, industry, and others; improved national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education.”

**Innovation**

NSF’s [Strategic Plan for FY 2011 to 2016, *Empowering the Nation through Discovery and Innovation*](www.nsf.gov), focuses on using discovery and **innovation** to benefit large segments of society. The fact that **innovation** appears in the title of this strategic document shows the importance the agency places on this concept. To expand your working definition of what NSF means by **innovation**, familiarize yourself with the NSF Innovation Corps ([I-Corps](www.nsf.gov/)). It focuses on a set of activities and programs that prepare scientists and engineers to extend their focus beyond the laboratory in order to broaden the impact of select, NSF-funded, basic research projects through **innovation**. While **innovation** is the focus of this program, it **appears often as an important component of many NSF programs, making it essential to develop a definition of its meaning**. NSF defines **innovation** as a way to help translate scientific and engineering discoveries into **useful technologies, products, and processes**.

The agency objective in advancing **innovation** is to address the fact that, while knowledge gained from NSF-supported basic research frequently advances a particular field of science or engineering, **some results also show immediate potential for broader applicability and impact in the commercial world**. Such results may be translated into technologies with near-term benefits for the economy and society. I-Corp, for example, combines experience and guidance from established entrepreneurs with a targeted curriculum that teaches grantees to identify valuable product opportunities that can emerge from academic research, and offers entrepreneurship training to student participants. NSF seeks to advance this topic through what it often refers to as **“innovation ecosystems.”** The NSF investment in **innovation ecosystems** seeks to build on NSF’s investment in fundamental research to offer academic
researchers and students an opportunity to learn firsthand about technological innovation and entrepreneurship to fulfill the promise of their discoveries.

Societal Goals/Impacts/Benefits/Implications

NSF now specifically addresses societal goals in the revised review criteria (effective January 14, 2013). The second of three guiding principles NSF recently published as part of the revised guidelines states: “NSF projects, in the aggregate, should contribute more broadly to achieving societal goals.” Moreover, the potential for the proposed activity to benefit society or advance desired societal outcomes is now one of the five elements (described by NSF as “the things NSF cares about”) that NSF reviewers and program officers are to consider under the new guidelines in evaluating how well proposals address both the Intellectual Merit and Broader Impacts criteria. Here again, a good working definition of what NSF means by societal goals/impacts is important to developing a competitive proposal.

Like the broader impacts criterion, advancing societal goals often presents a challenge for principal investigators to address in the research narrative, and often confuses proposers trying to understand NSF’s expectations. This difficulty arises when principal investigators expect NSF to tell them precisely what the agency means by Societal Goals/Impacts/Benefits/Implications. But this will never happen. In the end, the definition of societal goals and societal benefits as addressed in the research narrative needs to be organic to, or a logical extension of, the proposed research. Your specific definition of societal impacts needs to be incubated in the context of your research rather than from a prescriptive definition provided by NSF. As in the case of broader impacts, NSF provides a generic sense of these terms with the expectation that they will be tightly mapped to the context of your particular proposal. Basically, NSF expects that the research team responding to the societal benefits requirements in any solicitation will do so through a process of thoughtful consideration of the implications of the research within the context of its presentation in the project description. Your societal benefits discussion should be a logical outgrowth of that within your specific context. The most convincing and compelling societal benefits statement definition will be the one you self-define in the context of your proposed research. This brings to mind the position in which Nobel physicist I. I. Rabi found himself after the end of WWII when he told his research colleagues that they were facing deep budget cuts to the laboratory: “Well, there is no more money available for equipment. Now we are going to have to start to think.” And so it will be for PIs deciding how to define and respond to NSF requirements related to societal impacts.

Transformative Research

Transformative research has become the mantra of many research agencies. However, it is advisable to recognize an agency-specific component to the definition. “Transformative research” means something different at NIH than it means at NSF, a difference that your research narrative will need to recognize. This article will focus on the NSF definition of transformative research as addressed in the agency’s 2007 report, "Enhancing Support of Transformative Research at the National Science Foundation." In this report, the National Science Board presented its findings and recommendations that NSF should enhance its ability
to identify and fund transformative research. NSF has consequently adopted the following working definition for transformative research:

“Transformative research involves ideas, discoveries, or tools that radically change our understanding of an important existing scientific or engineering concept or educational practice or leads to the creation of a new paradigm or field of science, engineering, or education. Such research challenges current understanding or provides pathways to new frontiers.”

Transformative research results often do not fit within established models or theories and may initially be unexpected or difficult to interpret; their transformative nature and utility might not be recognized until years later. Characteristics of transformative research are that it:

(a) Challenges conventional wisdom,
(b) Leads to unexpected insights that enable new techniques or methodologies, or
(c) Redefines the boundaries of science, engineering, or education.

Transformative research often results from a novel approach or new methodology. Thus, some (but not all) transformative research will be viewed as risky. An interdisciplinary approach to research often produces transformative research, but not all interdisciplinary research is transformative and not all transformative research is interdisciplinary. Although there is no set formula that produces transformative research, everyone seems to agree that “you know it when you see it.” Additionally, the Advisory Committee for GPRA (Government Performance and Results Act of 1993) Performance Assessment (AC/GPA) identified awards it considered potentially transformative in the Report of the Advisory Committee for GPRA Performance Assessment, FY2009.

The following are examples of transformative research. The letters that follow reference the characteristics listed above:

- The continental drift model—at first controversial and then proved correct 50 years later based on new analytical methods and sampling of the ocean floor. (a)
- The discovery of metallic glasses, at first an obscure theoretical possibility that eventually made possible the operation of today’s integrated circuits. (a)
- The idea that polar ice sheets could serve as neutrino detectors, originally tested in Greenland through an NSF SGER award. (a, b)
- The discovery of the widespread exchange of genetic information in the environment, both among microbes and between microbes and higher organisms, which alters evolutionary changes such as in the development of disease resistance and revises our fundamental understanding of The Tree of Life. (a, b).
- Research into large-scale, hypertext web searches that eventually led to the creation of Google. (b)
- The use of magnetic resonance imaging as a tool for monitoring brain function, which greatly expanded the limits of behavioral research. (b)
- The cross-disciplinary coordination of investigations into cognitive simulation and pedagogical techniques that resulted in today’s highly effective cognitive tutors. (b)
- The development of the Force Concept Inventory in Physics, which set a direction for improvement in education based on measurement of students’ deep understanding of scientific concepts. (b, c)
• Research on Very Large Scale Integrated circuit design methodology that not only led to the microelectronic revolution’s cell-phones, personal data assistants, and supercomputers but also provided the intellectual framework of abstraction that pervades most of today’s computer science. (c)
• The careful refinement of distance measures in the Universe, intended to fine tune cosmological parameters, which instead gave rise to radically new physics, and the concept of dark energy. (c)
Many of you are working on proposals to NSF’s Research Experiences for Undergraduates (REU) Sites program, due August 28th. Having an REU Site funded in your research area or department can provide valuable infrastructure for future broader impacts components for other NSF proposals. Below is a checklist for your REU Site proposal, covering new NSF Grant Proposal Guide requirements as well as common REU proposal mistakes you’ll want to be sure you have avoided.

✔ Does your Project Summary follow the new GPG guidelines? NSF’s new Grant Proposal Guide, effective January of this year, has new requirements (Chapter II, C.2b) for the Project Summary. Your Summary must be divided into three sections: Overview, Intellectual Merit, and Broader Impacts. Be aware that even though your Project Summary fits in one page in your MS Word document, depending on the font you used, it may not fit into one page once loaded into the Fastlane windows. The estimated length allowed by Fastlane for the Project Summary is now a total of 4600 characters including spaces (divided among the three sections as you like), although you can sometimes fit a bit more—just be sure that when the entire Project Summary is viewed in Fastlane, it’s still just one page.

✔ Does your project plan conform to current REU requirements? For long-running programs like this one, it’s tempting to neglect to read the new solicitation and just assume that requirements are the same as the last time you applied; however, NSF commonly tweaks programs, including the REU. NSF is now encouraging year-long continued mentoring of REU participants; in order to be competitive, you’ll want to make sure you have this component in your proposal. Also, the method for calculating indirect (F&A) costs has changed. Rather than having an administrative allowance in lieu of indirect costs, the indirect costs are now calculated as usual per the NSF Proposal & Award Policies & Procedures Guide (keeping in mind that most costs associated with support of the student participants will go under “Participant Support” which does not carry indirect costs.)

✔ Do you have a detailed timetable in your overview? A detailed plan and a strong grasp on logistical details are critical to the success of an REU site. Therefore, you will want to convince reviewers that you know exactly how the program will be run and what student participants will be doing. In the overview section of the Project Description, NSF asks for a timetable. Make this a detailed, week-by-week table, not a vague description of the types of activities you envision for your REU site.

✔ Are the research activities described from the point of view of the student participants’ experiences? A common mistake is to just copy and paste general research project descriptions from the faculty REU mentors without discussing what the undergraduate participant’s role will be, what she will learn, and how she will benefit from the experience. The quality of the research experiences is the crux of the proposal, and reviewers will want to know whether students will be mentored to become more independent as the summer goes on, taking some ownership of their part of the project and developing research skills.
and confidence in their abilities, or whether the undergraduate participants will simply be graduate student “helpers” and bottle washers. Be sure you described the research activities in enough detail to convince reviewers of the former.

✔ Did you adequately describe the diversity and qualifications of your faculty/mentors? It’s obvious that the success of a student’s research experience hinges on the quality of the mentoring he receives. There is also a large body of research indicating that diversity in mentors is key to encouraging continued interest in research among student from underrepresented groups (which is one of NSF’s main motivations for funding the REU program). Be sure to discuss the previous experience of your faculty mentors in mentoring undergraduates in research (including highlighting publications co-authored with undergraduates in the biosketches, and putting an asterisk by each undergraduate student’s name). Also, discuss explicitly the demographics of your mentor pool. If graduate students will have an important role in mentoring the undergraduate participants, discuss how these graduate students will be trained in mentoring. Such training can also be provided for faculty, particularly those who may not yet have a track record of mentoring undergraduates in research.

✔ Do you have a strong recruitment plan? Remember that the entire point of REU Sites is to provide research experiences for students who otherwise might not have access to them. REU sites are now explicitly required to recruit at least half of their undergraduate participants from institutions where STEM research opportunities are limited. In practice, most NSF divisions expect an even higher proportion (80 – 100%) for Research One institutions with REU sites. Remember also that NSF funds can only be used to support students who are U.S. citizens, nationals, or permanent residents. You will therefore need a strong recruitment plan. If your current plan is a vague discussion of intentions to send out flyers and put up a website, you should revisit this. It’s always better to have named contacts at institutions where you plan to recruit who have agreed to help you with your recruiting efforts (there is still time to get a letter from them). It’s especially helpful if you have faculty colleagues in your field who can help identify and recruit students who are good candidates. Since diversity is a primary goal, be sure that these institutions have a strong pool of diverse students (for example, minority serving institutions), and that you have a plan to target underrepresented students for recruitment.

✔ Do you have a rigorous evaluation plan? As with all education-related programs funded by NSF, a strong evaluation plan is expected. If you have any evaluation experts at your university, it’s a good idea to ask them to help you with your evaluation section. Remember also that NSF now expects you to track student participants after graduation to help determine if they are more likely to go into a research-oriented career or graduate study. Since most of the participants will not be from your own institution, this will require some planning on your part.

✔ Do you have a separate broader impacts section? The new GPG now requires that all Project Descriptions (not just Project Summaries) include a separate, labeled Broader Impacts section. This section does not need to be very long since you will be addressing broader impacts throughout your Project Description, but it should provide a good
summary of your REU site’s broader impacts that a reviewer could copy and paste into her
review sheet.

✓ Did you include Results of Prior NSF support if your institution has had an REU site in the
same discipline? Unlike most other proposals, you and your co-PIs do not have to have
been involved in that site. It just needs to have been in the same disciplinary area as your
proposed REU site. Be sure to include separate “Intellectual Merits” and “Broader Impacts”
results per the new GPG. Describe the prior REU Site’s results in detail, including
demographic data; see the solicitation (Section IV 9g) for requirements.

✓ Did you think your budget through in detail? Bringing in up to 12 undergraduates from
other institutions, housing them, feeding them, and providing community building activities
and enrichment activities in addition to research experiences is a logistically complex
undertaking. Have you talked to your campus housing office? Do you know what kind of
meal plan the students will have? Are there fees that need to be paid to allow the students
to use the library or other campus facilities? All of these things need to be included in the
budget. (Note that you are not allowed to require the student participants to pay fees or
tuition.) Also, be sure to check the solicitation to find out which expenses (especially
related to food and entertainment) are allowable. Just as important as good planning is
making it clear to your reviewers that you have a good plan. You can do this by writing a
clear and detailed Budget Justification. You have up to three pages in the Budget
Justification to describe your plans to the reviewers; be sure to take advantage of that extra
space.

✓ Did you include a Facilities, Equipment, and Other Resources section? In previous REU
competitions, this section was not required; it is now required, so be sure you don’t forget
it.

✓ Did you include letters as appropriate? You are allowed up to five letters. As we mentioned
above, if you have collaborators at other universities, colleges, or community colleges who
will help you with recruiting, you should include a letter from each of them describing in
detail how they will help you. If you have not used up your allotted five letters, it’s also a
good idea to include letters from the directors of others on campus who will be helping you,
if appropriate. For example, if enrichment activities such as a GRE tutorial will be provided
by another office, you should get a letter from that office affirming that they will provide
that service for you.

✓ Have you collected 2-page Biosketches and Current and Pending support forms from you
Senior Personnel (up to a total of 12)? Remember that the biosketches should be tailored
to the REU, which means publications and activities related to mentoring of undergraduates
should be highlighted, and undergraduate co-authors should be marked with an asterisk.

✓ Did you remember your Data Management plan? As with all NSF proposals, a Data
Management plan is required. Also, if you have a postdoc on the budget, you will need a
Postdoc Mentoring plan.

✓ Have you planned to submit at least a day before the deadline? NSF receives large
numbers of REU proposals each year, so it’s a good idea to submit at least a day early to
avoid any problems with Fastlane and to avoid overloading your grants office, which may be submitting multiple REU proposals from your institution.
How to Obtain NSF Proposals Using Freedom of Information

National Science Foundation policy is to make the fullest possible disclosure of information, subject to restrictions imposed by the Freedom of Information Act (FOIA) and Privacy Act, to any person who requests information, without unnecessary expense or delay. Information is provided here on how to make FOIA and Privacy Act requests for NSF records and how to contact the FOIA and Privacy Act offices at NSF.

Most NSF documents are readily available to the public. The NSF Library (Reading Room) is located on the second floor (Rm 225) at the agency location of 4201 Wilson Blvd, Arlington VA. Please check our link to Documents Online to browse, search, and retrieve electronic copies of available NSF publications. Among the documents available online are program announcements, policy statements, agency bulletins, administrative staff manuals, and other instructions that affect the public. Press releases, text of speeches, and other public affairs documents are available from the Office of Legislative and Public Affairs. Abstracts of all NSF awards made since 1989 are available through FastLane or through the Search Awards page. Information about older awards may be available (after a certain period of time records are transferred to the ownership of National Archives and Records Administration). Contact the appropriate program office or the FOIA Officer. Copies of awarded proposals are available upon request, there may be applicable fees. Personal and proprietary information will be removed from the proposal documents before they are released.

If you wish to make a FOIA request for records, NSF regulations (published at 45 CFR, Part 612) describe the agency policies in detail. At a minimum, requests should:

- be in writing, (regular mail, electronic mail, and facsimile requests are accepted);
- be clearly identified as a FOIA request, (this should be indicated in the text, and on the envelope if the request is sent by regular mail);
- clearly describe the records sought, (the more information provided - name(s), date(s), specific subject area(s) - the easier it will be to determine if the records you are seeking exist; more specific and limited requests generally result in quicker responses and lower (or no) fees); and
- state willingness to pay applicable fees (fees for search, review and duplication may be applicable, depending upon the identity of the requester).

Include the mailing address to which records should be sent. If you include your telephone number, we can contact you if there is any question about the scope of your request, possible fees, etc.. You will not be charged if applicable fees are less than $25, but you may wish to include a maximum dollar amount you are willing to pay.

Remember that the FOIA applies only to existing agency records. It does not require agencies to create records, or to answer questions. However, NSF will attempt, in all cases, to provide the information desired.

Mail:
National Science Foundation
Alfred P. Sloan Foundation Research Grants
The Alfred P. Sloan Foundation makes grants on six broad subject matters, known within the Foundation as major program areas:

Basic Research
The Foundation believes that a carefully reasoned and systematic understanding of the forces of nature and society, when applied inventively and wisely, can lead to a better world for all. With its Basic Research program area, the Foundation expands that understanding by funding original, high-quality research in science, technology, engineering and mathematics. Grants in the Basic Research program area promise to substantively benefit society or significantly add to the body of scientific knowledge. By funding basic research, the Alfred P. Sloan Foundation has created a digital survey of the sky, is advancing species identification and discovery worldwide, and is crafting a better understanding of the built environment in which we live.

STEM Higher Education
The Alfred P. Sloan Foundation is unique among foundations in its focus on science and technology. We believe that the scholars and practitioners in scientific and technical fields are chief drivers of the nation's prosperity. Grants in the STEM Higher Education program area promote access to the scientific enterprise, provide information about scientific and technical careers, and encourage innovation to the structure of scientific training.

Public Understanding of Science, Technology, & Economics
This program seeks to bridge the two cultures—the humanities and the sciences—through support of books, radio, film, television, theatre, and new media to reach a wide, non-specialized audience. The program has supported books such as Eric Kandel’s The Age of Insight, and Richard Rhodes’s The Making of the Atomic Bomb. The nationwide theatre program has supported works such as David Auburn’s Proof, and Anna Ziegler’s Photograph 51, about Rosalind Franklin. In film, the program has pioneered a film development pipeline of multiple program partners beginning with six film schools, through which Sloan is able to nurture and develop individual projects with different grants until they are successfully launched—in 2013 both Andrew Bujalski’s Computer Chess and Rob Meyer’s A Birder’s Guide to Everything premiered at festivals. The Foundation also has a robust radio and television program which supports original high quality programming across the country, and includes support of Radiolab and Science Friday, and supports television programs such as PBS’s The American Experience. Other support goes to innovative efforts such as the World Science Festival.
Economic Performance and the Quality of Life
The Alfred P. Sloan Foundation believes that a theory-based, empirically-tested understanding of the U.S. economy is essential to improving the American quality of life. The Foundation funds grants for high-quality original research that promise to broaden that understanding or use it to improve American institutions. Grants in the Economic Performance and Quality of Life program have expanded our knowledge of how particular industries function, encouraged better communication and cooperation between citizens and their local governments, and focused scholarly and public attention on the issues and challenges faced by contemporary working families.

Select National Issues
The Alfred P. Sloan Foundation recognizes that there are select opportunities outside of science, education and economics in which it can create an important benefit to society. Its National Issues program area looks for unique opportunities where Foundation funds promise to advance a significant national interest. Grants in the Select National Issues program are funding work to increase America's biosecurity and investigate how recent advances in information technology affect the spread of knowledge and the structure of scientific endeavor.

Civic Initiatives
Since its founding in 1934, the Alfred P. Sloan Foundation has been proud to call New York City home. With its Civic Initiatives program, the Foundation responds to unique opportunities to benefit the New York City metro area in ways that advance the Foundation's other interests in science, technology and economic performance. Grants in the Civic Initiatives program have founded awards to recognize exceptional public service and reward effective teaching of science and mathematics.
Next Generation Science Standards: For States, By States

Next Generation Science Standards identifies the science all K-12 students should know. These new standards are based on the National Research Council’s A Framework for K-12 Science Education. The National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and Achieve have partnered to create standards through a collaborative state-led process. The standards are rich in content and practice and arranged in a coherent manner across disciplines and grades to provide all students an internationally benchmarked science education.

Developing Effective Mathematics Teachers through National Science Foundation Funded Math and Science Partnership Program Grants

"We sent out a call for articles to the 2012 Learning Network Conference participants following the conference, and a motivated, hard working group of authors, who double as leaders for mathematics focused MSP projects, responded, some of whom are publishing their scholarship for the first time in this special issue. They have taken their 2012 conference presentation proposals and presentations focused on the theme of effective STEM teaching and created manuscripts. Peers reviewed each manuscript and offered authors constructive feedback. The authors have responded to feedback from those reviewers as well as worked with feedback from us, as the guest editors of this special issue. What has resulted is a collection of seven thoughtful articles representing MSP projects from across the United States, all with the common goal of aiming to improve mathematics teaching and learning at various points in the K-12 spectrum of schooling.

The Mathematics Enthusiast: Special Issue NSF MSP Grants

Full Issue Link

Algebra I and Geometry Curricula: Results from the 2005 High School Transcript Mathematics Curriculum Study

"The Mathematics Curriculum Study explores the relationship between student coursetaking and achievement by examining the content and challenge of two mathematics courses taught in the nation's public high schools--algebra I and geometry. Conducted in conjunction with the 2005 National Assessment of Educational Progress (NAEP) High School Transcript Study (HSTS), the study uses textbooks as an indirect measure of what was taught in classrooms, but not how it was taught (i.e., classroom instruction). The study uses curriculum topics to describe the content of the mathematics courses and course levels to denote the content and complexity of the courses. The results are based on analyses of the curriculum topics and course levels developed from the textbook information, coursetaking data from the 2005 NAEP HSTS, and performance data from the twelfth-grade 2005 NAEP mathematics assessment."
Highlights of the study findings show that about 65 percent of the material covered in high school graduates' algebra I was devoted to algebra topics, while about 66 percent of the material covered in graduates' geometry courses focused on geometry topics. School course titles often overstated course content and challenge. Approximately 73 percent of graduates in "honors" algebra I classes received a curriculum ranked as an intermediate algebra I course, while 62 percent of graduates who took a geometry course labeled "honors" by their school received a curriculum ranked as intermediate geometry. Graduates who took rigorous algebra I and geometry courses scored higher on NAEP than graduates who took beginner or intermediate courses.

**Making Explicit the Commonalities of MSP Projects: Learning from Doing**

"The seven projects discussed in the preceding articles are funded by the National Science Foundation (NSF) Math and Science Partnership (MSP) program (Hamos et al., 2009), which began in 2002. One of the main goals of the MSP program is to build capacity and integrate the work of higher education, especially its STEM disciplinary faculty, with that of K12 to strengthen and reform mathematics and science education (Hamos et al., 2009). Thus, the MSP program brought together three sets of people (disciplinary faculty, teacher educators, and school system personnel) who do not usually work together to reform the mathematics and science education of teachers. For many of the MSP partnerships this was the first time that members of these groups were purposefully working together to develop mechanisms designed to 1) increase both preservice and in-service teachers' mathematical content knowledge for teaching; 2) provide teachers with the opportunity to learn mathematics in the manner in which their students should learn mathematics in order to develop habits of mind similar to those of mathematicians, such as making conjectures and testing them out, modeling contextual situations with mathematics, and persevering in solving problems; and 3) engage all of the partners in collaborative opportunities focused on student learning and assessment. Accordingly, the seven partnerships discussed throughout this issue and other partnerships chose coursework at universities, some combination of coursework and professional development, and/or study groups as the mechanisms to accomplish the objectives of the MSP program.

**Technology Outlook for STEM+ Education 2012-2017: An NMC Horizon Report Sector Analysis**

“The Technology Outlook for STEM+ Education 2012-2017 reflects a collaborative effort between the New Media Consortium (NMC), the Centro Superior para la Enseanza Virtual (CSEV), Departamento de Ingenieria Electrica, Electronica y de Control at the Universidad Nacional de Educacion a Distancia (UNED), and the Institute of Electrical and Electronics Engineers Education Society (IEEE) to inform educational leaders about significant developments in technologies supporting science, technology, engineering, and mathematics education. The addition of the "+" in the acronym, as used here, incorporates communication and digital media technologies in the traditional four areas of study.

This report was produced to explore emerging technologies and forecast their potential impact expressly in a STEM+ context. In the effort that ran from July through September 2012, the carefully selected group of 46 experts who contributed to this report considered hundreds
of relevant articles, news, blog posts, research, and project examples as part of the preparation that ultimately pinpointed the most notable emerging technology topics, trends, and challenges for STEM+ education over the next five years.

**NMC Horizon Report: 2013 K-12 Edition**
"The New Media Consortium, the Consortium for School Networking (CoSN), and the International Society for Technology in Education (ISTE), with the support of HP, produced the NMC Horizon Report > 2013 K-12 Edition. This fifth edition in the annual K-12 series of the NMC Horizon Project examines emerging technologies for their potential impact on and use in teaching, learning, and creative inquiry within the environment of pre-college education. Six emerging technologies are identified across three adoption horizons over the next one to five years, as well as key trends and challenges expected to continue over the same period, giving educators, school administrators, and practitioners a valuable guide for strategic technology planning.

**Addressing the Achievement Gap in Mathematics Through Improved Problem Solving Strategies**
“The goal of this webinar is to provide REL Central constituents with information regarding the achievement gap in mathematics in the Central Region and information on research-based strategies to enhance students’ mathematical problem solving skills. This event will provide participants with practical examples of instructional strategies that improve students’ mathematics performance. The event is based on the recent IES Practice Guide titled “Improving Mathematical Problem Solving in Grades 4 through 8” found at the following link: [http://ies.ed.gov/pubsearch/pubsinfo.asp?pubid=WWCPGMIM12](http://ies.ed.gov/pubsearch/pubsinfo.asp?pubid=WWCPGMIM12). September 17.

**Early College, Early Success: Early College High School Initiative Impact Study**
“The study authors examined whether attending Early College High Schools increased postsecondary outcomes. As defined in this study, Early Colleges are high schools that partner with local colleges and universities to offer students the opportunity to take courses towards earning an Associate’s degree or up to 2 years of college credit towards a Bachelor’s degree. The authors evaluated the impact of Early Colleges on high school graduation, college enrollment, and degree attainment both for the overall sample and for various subgroups of interest (women, racial/ethnic minorities, low income students, and first generation college students). Using retrospective data, study authors found 10 Early Colleges in 5 states that (a) operated exclusively as Early College High Schools, (b) had graduates during the study years, and (c) used and kept records of a lottery process to determine who would be offered admission to the program. A total of 2,458 students from 3 cohort years entered the identified lotteries. Students who were offered admission to Early College High Schools via the lottery formed the intervention group, while students not offered admission formed the comparison group.

**Synthesis of IES Research on Early Intervention and Early Childhood Education**
“The report describes what has been learned from research grants on early intervention and early childhood education funded by the Institute's National Center for Education Research and
Research Development & Grant Writing News

National Center for Special Education Research, and published in peer-reviewed outlets through June 2010. This synthesis describes contributions to the knowledge base produced by IES-funded research across four focal areas:
• Early childhood classroom environments and general instructional practices;
• Educational practices designed to impact children's academic and social outcomes;
• Measuring young children's skills and learning; and
• Professional development for early educators.

Research supported by IES has made significant contributions to the evidence base in these areas. The authors also raise important questions for education research in the future, including:
• What are the crucial features of high-quality early childhood education?
• Which instruction is most effective for which children and under what circumstances?
• How do we effectively and efficiently support teachers in improving their instruction?

Mathematical Habits of Mind for Teaching: Using Language in Algebra Classrooms
"The notion of mathematical knowledge for teaching has been studied by many researchers, especially at the elementary grades. Our understandings of this notion parallel much of what we have read in the literature, but are based on our particular experiences over the past 20 years, as mathematicians engaged in doing mathematics with secondary teachers. As part of the work of Focus on Mathematics, Phase II MSP, we are developing, in collaboration with others in the field, a research program with the ultimate goal of understanding the connections between secondary teachers' mathematical knowledge for teaching and secondary students' mathematical understanding and achievement. We are in the early stages of a focused research study investigating the research question: What are the mathematical habits of mind that high school teachers use in their professional lives and how can we measure them? The main focus of this paper is the discussion of the habit of using mathematical language, and particularly how this habit plays out in a classroom setting."
**Next Generation Photovoltaics Technology RFI**
The U.S. Department of Energy is seeking comments and information from members of academia, research laborites and industry to assist DOE in understanding the research topics in next generation photovoltaic technologies that would aid in: narrowing the gap between theoretical and realized device efficiency limits; exceeding the Shockley-Queisser limits; overcoming materials and process barriers. The knowledge gained from these research efforts may lead to methods or device structures that can facilitate the deployment of photovoltaics through reduced cell costs achieved by increased cell efficiencies or cost effective materials/processes. This request for information (RFI) asks interested parties to provide information on topic areas in innovative, transformative PV cell technology research which have high potential to be impactful to the PV landscape in 10-20 years, particularly those that will facilitate terawatt deployment of PV. Although the DOE may determine as the result of this RFI to issue a formal Funding Opportunity Announcement (FOA), there is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI. For more information, see the full solicitation. **Respond by August 30.**

**Materials Engineering and Processing Program (MEP) Overview**
Effective September 1, 2013, the Materials Engineering and Processing Program (MEP) will be accepting proposals. This program replaces the Materials Processing and Manufacturing (MPM), Materials and Surface Engineering (MSE), and Structural Mechanics and Materials (SMM) programs. These programs will no longer be accepting new proposals. This webinar will introduce the MEP program and answer questions concerning its focus and goals. **Webinar August 21.**

**Dear Colleague Letter: Forensic Science - Opportunity for Breakthroughs in Fundamental and Basic Research and Education**
This Dear Colleague Letter is to alert all basic science and engineering communities, including education researchers, to the Foundation’s interest in receiving proposals that, while investigating fundamental questions, seek to pose and test hypotheses that could inform research in forensic sciences. The interest spans both disciplinary and interdisciplinary research. Additionally, the wide public interest in forensics can provide an effective vehicle for basic research in science education. International partnerships, where appropriate, are encouraged, as are synergistic interactions with forensics and/or law enforcement agencies and organizations. Proposals for workshops to explore fundamental science drivers and their relevance to forensics are also welcome.

**Dear Colleague Letter: Temporary Suspension** of Division of Materials Research (DMR) Computational and Data-Driven Materials Research (CDMR) Program and Materials World Network (MWN) Program in Fiscal Year 2014; Sunset of the DMR International Materials Institutes (IMI) Program
This letter is to notify the community of status changes for three programs in the NSF Division of Materials Research in fiscal year 2014. The three programs are The International Materials Institutes (IMI), The Materials World Network (MWN) and Computational and Data-Driven Materials Research (CDMR). Please know that all of these programs are valued at NSF and the work accomplished through them is laudable.

The Materials World Network program (NSF 12-593) has been in effect since 2004, enabling fully funded collaborations between US researchers and those abroad through coordinated review at the national agency level. DMR is proud of the many international collaborations and successful global research it has nucleated over these nine years. DMR is changing the frequency of this competition from annual to biennial. Thus, there will be no competition in fiscal year 2014, and the biennial competition will commence with a solicitation in fiscal year 2015. DMR remains committed to enabling international collaborations through the usual routes of supplements to existing grants, and through the NSF International Science and Engineering efforts at http://www.nsf.gov/od/iia/ise/index.jsp.

Eight International Materials Institutes have been supported by DMR and the final five are completing their awards in fiscal year 2014. These efforts have enabled an actively internationally-engaged materials research workforce. DMR has decided to sunset this program and no further competitions will be run.

The Computational and Data-Driven Materials Research (CDMR) program was announced one year ago through a Dear Colleague Letter (NSF 12-122). The response to this was good and some outstanding proposals that complement DMR’s other programs are being awarded this summer. For the upcoming window (fiscal year 2014), CDMR will not be a separate program. Interested Principal Investigators should consult with the Program Directors of DMR’s Condensed Matter and Materials Theory program (CMMT).

Dear Colleague Letter - Announcement of Intent to use an Asynchronous Review Mechanism for Proposals submitted to the Physics Division during the FY2014 Competition

This message is to inform you that the Physics Division will be reviewing proposals submitted for review during the FY2014 competition using a combination of ad hoc and panel review. The panel review portion may use an asynchronous mechanism the Division piloted in FY2013. The review principles remain the same as those with which you may already be familiar. The only mechanistic difference is that panel members are able to review and provide input to the panel discussion in the weeks prior to the panel meeting rather than limiting the discussion to the narrow range of time dedicated to the face-to-face panel meeting itself. Our experience with the pilot indicates that the extra time that this mechanism allows can lead to a more thorough examination of all the proposals by the full panel and hence more useful input to the NSF and feedback to the PIs. In the course of implementation, all normal rules of conflict of interest and confidentiality of information will apply. It is important to stress that the review will strictly follow the established NSF review criteria of intellectual merit and broader impact. Each of the PHY Program Officers will decide on whether to employ this asynchronous mechanism or to continue their review process as they have in the past. Please visit the NSF merit review website for complete information about the merit review process http://nsf.gov/bfa/dias/policy/merit_review/.
If you have any questions about this process, please contact the cognizant Program Officer for the program to which the PI is applying. The names of these individuals are attached to the Program Descriptions for the respective programs on the Physics Division web page at http://www.nsf.gov/div/index.jsp?div=PHY/.

Dear Colleague Letter: Announcement of Instrumentation Fund to Provide Mid-Scale Instrumentation for FY2014 Awards in Physics Division
One of the most critical needs of research projects funded through the Physics Division is that of having cutting-edge instrumentation that enables investigators to remain competitive in a rapidly-changing scientific environment. Because this instrumentation can often cost significantly beyond what an individual investigator award can provide, the Physics Division has established a special Mid-Scale Instrumentation Fund that enables Program Officers to include an instrumentation allotment in awards beyond the level that might be feasible otherwise.

Dear Colleague Letter: Belmont Forum - FACCE-JPI Multilateral International Opportunities Fund Initiative
The Directorate for Geosciences announces a new Multilateral Research Funding Initiative between the Belmont Forum¹ and Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI)². This partnership will provide international collaborative research opportunities that address the Belmont Challenge: “To deliver knowledge needed for action to mitigate and adapt to detrimental environmental change and extreme hazardous events”. This call of the International Opportunities Fund will focus on addressing issues “Food Security and Land Use Change that are best addressed through a coupled interdisciplinary and multinational approach. The Belmont Forum and FACCE-JPI will support on a competitive basis, collaborative, research projects co-designed by teams of researchers from at least three participating countries. These interdisciplinary teams will bring together natural scientists, social/economic scientists and research users, such as policy makers, regulators, NGOs and industry. Proposals will be jointly reviewed by the participating funding organizations and successful projects are expected to demonstrate added value through multilateral collaboration. Support for U.S.-based researchers will be provided through awards made by the National Science Foundation.

Special Guidelines for Submitting Collaborative Proposals under the SBE-RCUK Lead Agency Agreement
The Social, Behavioral and Economic Sciences Directorate (SBE) of the NSF and Research Councils UK (RCUK) are pleased to announce the SBE-RCUK Lead Agency Agreement. The goal of this agreement is to reduce some of the barriers to working internationally that researchers currently encounter. The SBE-RCUK Lead Agency Agreement will address these issues by allowing US and UK researchers to submit a single collaborative proposal that will undergo a single review process. Proposals will be accepted for collaborative research in areas at the intersection of NSF/SBE and RCUK’s missions. The primary UK Research Councils participating in this activity are the Economic and Social Research Council (ESRC), the Arts and Humanities Research Council (AHRC), and the Biotechnology and Biological Sciences Research Council.
Research Development & Grant Writing News

(BBSRC). Proposers should review the programs supported through NSF/SBE and through the relevant UK Research Council(s) for further information on what areas of research are eligible for support through this activity. Proposals are expected to adhere to typical proposal sizes and durations for the relevant UK Research Council(s) and SBE program(s) from which funding is sought. Proposals will be accepted for both interdisciplinary and disciplinary research projects. This document provides guidelines for the preparation, submission, review, and award of SBE-RCUK Collaborative Proposals.

Informal Guide for OCE Program Officers re: the CAREER Program

1. **Why would I submit a CAREER proposal rather than a regular science proposal to OCE?**
2. **When is the right time to submit a CAREER proposal?**
3. **When should I request a letter of support from my Department?**
4. **I recently joined the faculty as a non-tenure track Assistant Research Professor. Within the institution all new hires come under the Research Track rather than tenure track. I have teaching, service and research responsibilities just like a tenure track professor, and I get salary from the University to do those duties. Am I eligible for a CAREER award?**
5. **I am an assistant professor at an undergraduate institution that does not give graduate degrees. Am I eligible to apply?**
6. **How can I include other experts in my work? Science research is increasingly interdisciplinary and many young scientists work on large projects with large teams. It is a way for young scientists to broaden their expertise. Yet the CAREER program does not allow any co-investigators. What can be done about this?**
7. **How do I choose a pathway for my education component?**
8. **What are common mistakes PIs make in developing their education component?**
9. **I have heard that I need to do some evaluation of my education component. What is this and how do I do it?**

Dear Colleague Letter - FY 2014 Sustainable Chemistry, Engineering, and Materials (SusChEM) Funding Opportunity

In fiscal year (FY) 2013, NSF started an initiative to encourage and foster research in Sustainable Chemistry, Engineering, and Materials (SusChEM), partially in response to the mandate of the America COMPETES Reauthorization Act of 2010. The SusChEM initiative addresses the interrelated challenges of sustainable supply, engineering, production, and use of chemicals and materials. In FY 2014, the participating divisions are Chemistry (CHE); Chemical, Bioengineering, Environmental, and Transport Systems (CBET); Materials Research (DMR); Earth Sciences (EAR); and the Materials Engineering and Processing program in the Division of Civil, Mechanical and Manufacturing Innovation (CMMI). Fundamental research topics of interest in SusChEM include the replacement of rare, expensive, and/or toxic chemicals/materials with earth-abundant, inexpensive, and benign chemicals/materials; recycling of chemicals/materials that cannot be replaced; development of non-petroleum based sources of important raw materials; the elimination of waste products and enhancement in efficiencies of chemical reactions and processes; discovery of new separation science that will facilitate recycling and
production of valuable chemicals/materials; and development and characterization of low cost, sustainable and scalable-manufactured materials with improved properties.
The competitiveness of proposals can be enhanced by grounding the arguments you make in the proposal narrative, as appropriate, on national reports, agency research roadmaps, and research workshops that demonstrate your understanding of the national research agenda and how your research advances and maps to that agenda.

Preparing the Next Generation of Earth Scientists: An Examination of Federal Education and Training Programs
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.

Synthetic biology is an emerging discipline that combines both scientific and engineering approaches to the study and manipulation of biology. By asking different questions, synthetic biologists hope to improve our collective capacity to engineer customized biological systems designed to meet specific human needs and yield a deeper understanding of natural living systems. Although synthetic biology is young, the collective vision for the field is ambitious. As a better understanding of the global synthetic biology landscape could lead to tremendous benefits, six academies—the United Kingdom’s Royal Society (RS) and Royal Academy of Engineering (RAE), the United States’ National Academy of Sciences (NAS) and National Academy of Engineering (NAE), and the Chinese Academy of Science (CAS) and Chinese Academy of engineering (CAE)—organized a series of international symposia on the scientific, technical, and policy issues associated with synthetic biology. Positioning Synthetic Biology to Meet the Challenges of the 21st Century: Summary Report of a Six Academies Symposium Series offers an overview of the major topics addressed during the symposia, which included the development and potential of synthetic biology; an explanation of synthetic biology; and the agenda for each symposium.


The Office of Planning, Research and Evaluation (OPRE), a unit within the Administration for Children and Families (ACF), is responsible for advising the Assistant Secretary for Children
and Families on increasing the effectiveness and efficiency of programs to improve the economic and social well-being of children and families.

In collaboration with ACF program offices and others, OPRE is responsible for performance management for ACF, conducts research and policy analyses, and develops and oversees research and evaluation projects to assess program performance and inform policy and practice. The Office provides guidance, analysis, technical assistance, and oversight to ACF programs on: strategic planning; performance measurement; research and evaluation methods; statistical, policy, and program analysis; and synthesis and dissemination of research and demonstration findings.

Toward these ends, OPRE is happy to present an updated edition of The Program Manager’s Guide to Evaluation. The original guide has consistently been the most frequently accessed of OPRE’s resources. The new edition has been updated, under the guidance of Kathleen Dwyer, to reflect currently accepted practices, up-to-date terminology, and issues to consider at this time. Tips, samples, and worksheets that were missing from the online version have been inserted back into the guide, as has a thoroughly updated appendix containing a comprehensive list of evaluation resources. Based on feedback within ACF, we have chosen to focus on a single guide that includes examples that would be relevant to all ACF program areas, rather than create separate handbooks for each program.

As with the original edition of The Program Manager’s Guide to Evaluation, this updated edition explains what program evaluation is, why evaluation is important, how to conduct an evaluation and understand the results, how to report evaluation findings, and how to use evaluation results to improve programs that benefit children and families.

**Landsat and Beyond: Sustaining and Enhancing the Nation's Land Imaging Program**

In 1972 NASA launched the Earth Resources Technology Satellite (ETRS), now known as Landsat 1, and on February 11, 2013 launched Landsat 8. Currently the United States has collected 40 continuous years of satellite records of land remote sensing data from satellites similar to these. Even though this data is valuable to improving many different aspects of the country such as agriculture, homeland security, and disaster mitigation; the availability of this data for planning our nation's future is at risk.

Thus, the Department of the Interior's (DOI's) U.S. Geological Survey (USGS) requested that the National Research Council's (NRC's) Committee on Implementation of a Sustained Land Imaging Program review the needs and opportunities necessary for the development of a national space-based operational land imaging capability. The committee was specifically tasked with several objectives including identifying stakeholders and their data needs and providing recommendations to facilitate the transition from NASA's research-based series of satellites to a sustained USGS land imaging program.

Landsat and Beyond: Sustaining and Enhancing the Nation's Land Imaging Program is the result of the committee's investigation. This investigation included meetings with stakeholders such as the DOI, NASA, NOAA, and commercial data providers. The report includes the committee's recommendations, information about different aspects of the program, and a section dedicated to future opportunities.
New Funding Solicitations Posted Since July 15 Newsletter

**Higher Education Multicultural Scholars Program**
NIFA announces the availability of grant funds and requests applications for the [Higher Education Multicultural Scholars Program](#) (MSP) for fiscal year (FY) 2013 to conduct undergraduate and D.V.M. scholarship programs to meet national and international needs for training food and agricultural scientists and professionals, or professionals in rural economic, community, and business development. The amount available for support of this program is approximately $868,720. This notice identifies the objectives for MSP projects, the eligibility criteria for projects and applicants, and the application forms and associated instructions needed to apply for an MSP grant. NIFA additionally requests stakeholder input from any interested party for use in the development of the next RFA for this program. In FY 2013, special emphasis is placed on training that will address the changing demographics of the nation and the development of 21st century skills in USDA mission areas that include the Food, Agricultural, Natural Resources, and Human Sciences. The next generation workforce in USDA mission sciences will be multicultural, and as for all Americans, their educational development will require tools that creatively and innovatively contribute to their areas of emphasis, profession, and U.S. global competitiveness. **Due August 30.**

**Food and Agricultural Sciences National Needs Graduate and Postgraduate Fellowship (NNF) Grants Program**
This grant program supports: (1) training students for Master's and doctoral degrees in food, agricultural and natural resource sciences, and; (2) Special International Study or Thesis/Dissertation Research Travel Allowances (IRTA) for eligible USDA NNF beneficiaries. Awards are specifically intended to support traineeship programs that engage outstanding students to pursue and complete their degrees in USDA mission areas. Applicants provide clarity about the philosophy of their graduate training, and relevance to USDA mission sciences, NIFA priorities and national science education policies and statistics. Applications are being solicited from institutions that confer a graduate degree in at least one of the following Targeted Expertise Shortage Areas: 1) animal and plant production; 2) forest resources; 3) agricultural educators and communicators; 4) agricultural management and economics; 5) food science and human nutrition; 6) sciences for agricultural biosecurity; and 7) training in integrative biosciences for sustainable food and agricultural systems. **Due August 30.**

**Advanced Manufacturing Technology Consortia (AMTech) Program**
On July 24, 2013, NIST announced the the first competition and call for proposals for the newly established Advanced Manufacturing Technology Consortia (AMTech) Program. New in 2013, AMTech is a competitive grants program intended to establish new or strengthen existing industry-led consortia in planning research that addresses high-priority challenges impeding the growth of advanced manufacturing in the United States. This year, AmTech will first support effective technology consortia development by providing planning grants that leverage existing or establish new industry-led consortia. Activities supported by planning grants may include detailed technology roadmaps of critical long-term industrial research challenges directly related to manufacturing-sector needs. Subject to availability of funding, in future years AMTech also will advance industry consortia performance by funding basic and applied research directed at meeting these “long-term, pre-competitive” industrial needs identified in technology roadmaps or other planning efforts. This research approach includes broad participation by companies of all sizes, universities and government agencies. It is modeled on very successful national efforts within various industry and technology sectors. Due Sept. 6.

**American Psychological Association Interdivisional Collaboration Grant Program**
The Committee on Division/APA Relations (CODAPAR) of the American Psychological Association seeks proposals for collaborative projects sponsored by two or more APA divisions. The purpose of the program is to support joint activities that enhance the work, interests or goals of two or more divisions. Examples include, but are not limited to:
- Furthering APA’s goals of working to advance psychology as a science, a profession and a means of promoting human welfare.
- Projects that promote collaboration between the science and practice of psychology.
- Fostering the recruitment of ethnic minorities into psychology, APA or division membership or APA governance.
- Activities that focus on a currently unaddressed topic or area in psychology.
Due September 6.

**2014 Sloan Research Fellowships**
Visit the online application page for more information. Completed nominations are due Monday, September 16, 2013.

**Emerging Frontiers in Research and Innovation 2014**
The Directorate for Engineering at the National Science Foundation has established the Office of Emerging Frontiers in Research and Innovation (EFRI) to serve a critical role in focusing on important emerging areas in a timely manner. This solicitation is a funding opportunity for interdisciplinary teams of researchers to embark on rapidly advancing frontiers of fundamental engineering research. For this solicitation, we will consider proposals that aim to investigate emerging frontiers in the following research area: **Two-Dimensional Atomic-layer Research and Engineering (2-DARE).** This solicitation is coordinated with the Directorate for Mathematical & Physical Sciences within NSF. Additionally, interest within other Federal agencies, specifically Air Force Office of Scientific Research (AFOSR), may lead to an interagency effort. Submitted proposals may be shared with interested representatives from AFOSR.
EFRI seeks proposals with transformative ideas that represent an opportunity for a significant shift in fundamental engineering knowledge with a strong potential for long term impact on national needs or a grand challenge. The proposals must also meet the detailed requirements delineated in this solicitation. **LOI Sept. 18, preliminary Oct. 21; full by invitation Feb. 10.**

**Guggenheim Fellowships**
Often characterized as "midcareer" awards, Guggenheim Fellowships are intended for men and women who have already demonstrated exceptional capacity for productive scholarship or exceptional creative ability in the arts. Fellowships are awarded through two annual competitions: one open to citizens and permanent residents of the United States and Canada, and the other open to citizens and permanent residents of Latin America and the Caribbean. Candidates must apply to the Guggenheim Foundation in order to be considered in either of these competitions. The Foundation receives between 3,500 and 4,000 applications each year. Although no one who applies is guaranteed success in the competition, there is no prescreening: all applications are reviewed. Approximately 200 Fellowships are awarded each year. **Due September 19.**

**Education Dissertation Fellowship Program**
The Dissertation Fellowship Program seeks to encourage a new generation of scholars from a wide range of disciplines and professional fields to undertake research relevant to the improvement of education. These $25,000 fellowships support individuals whose dissertations show potential for bringing fresh and constructive perspectives to the history, theory, or practice of formal or informal education anywhere in the world. This highly competitive program aims to identify the most talented researchers conducting dissertation research related to education. The Dissertation Fellowship program receives many more applications than it can fund. This year, up to 600 applications are anticipated and about 25 fellowships will be awarded. **Due Oct. 4.**

**Center of Excellence: Nature-Inspired Sciences**
AFOSR invites the submission of proposals for a University Center of Excellence (CoE) for Nature-Inspired Sciences. The center will be established in collaboration with AFRL Munitions Directorate (Eglin AFB, FL). This research effort should consist of interdisciplinary teams of researchers with the skills needed to address the relevant research challenges necessary to meet the program goals. Multi-investigator and/or multi-university teaming is encouraged but not required. Proposals should describe cutting-edge efforts on basic scientific principles and problems. The recipient of this award must be an educational institution in the US as defined by 10 USC 2194. Proposals should be prepared as indicated below. The duration of the proposed effort will be a two-year base period with two two-year option periods to bring the total maximum term of the award to six years. This is a Broad Agency Announcement. No formal Request for Proposals (RFP) or other solicitation regarding this announcement will be made. **Due October 15.**

**Fiscal Year 2014 NOAA Gulf of Mexico Bay-Watershed Education and Training Program**
The National Marine Fisheries Service Southeast Region (Fisheries Southeast Regional Office) is seeking proposals under the Gulf of Mexico B-WET Program. The Gulf of Mexico B-WET program is an environmental education program that promotes locally relevant, experiential learning in the K-12 environment. Funded projects provide Meaningful Watershed Educational Experiences (MWEEs) for students, related professional development for teachers, and help to support regional education and environmental priorities in the Gulf of Mexico. This program addresses NOAA’s Long-Term Goal of “Healthy Oceans: Marine fisheries, habitats, and biodiversity are sustained within healthy and productive ecosystems” and NOAA’s Engagement Enterprise Objective for “An engaged and educated public with an improved capacity to make scientifically informed environmental decisions”. Due October 18.

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.

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.

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.

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 at 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.**

**ONRBAA13-021: 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.**

**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.**

**Links to New & Open Funding Solicitations**

*Links verified: Monday, July 08, 2013*

- American Cancer Society Index of Grants
- SAMHSA FY 2013 Grant Announcements and Awards
- DARPA Microsystems Technology Office Solicitations
- Open Solicitations from IARPA (Intelligence Advanced Research Projects Activity)
- Bureau of Educational and Cultural Affairs, Open Solicitations, DOS
- ARPA-E Funding Opportunity Exchange
- DOE Funding Opportunity Exchange
- NIAID Funding Opportunities List
- NPS Broad Agency Announcements (BAAs)
- NIJ Current Funding Opportunities
- NIJ Forthcoming Funding Opportunities
- Engineering Information Foundation Grant Program
- Comprehensive List of Collaborative Funding Mechanisms, NORDP
- ARL Funding Opportunities — Open Broad Agency Announcements (BAA)
- HHS Grants Forecast
- American Psychological Association, Scholarships, Grants and Awards
- EPA 2013 Science To Achieve Results (STAR) Research Grants
- NASA Open Solicitations
- Defense Sciences Office Solicitations
- The Mathematics Education Trust
- EPA Open Funding Opportunities
- CDMRP FY 2013 Funding Announcements
- Office of Minority Health
- Department of Justice Open Solicitations
- DOE/EEERE Funding Opportunity Exchange
- New Funding Opportunities at NIEHS (NIH)
- National Human Genome Research Institute Funding Opportunities
- Army Research Laboratory Open Broad Agency Announcements (BAA)
- SBIR Gateway to Funding
- Water Research Funding
HFSP Postdoctoral Fellowships

HFSP postdoctoral fellowships encourage early career scientists to broaden their research skills by moving into new areas of study while working in a new country. Long-Term Fellowships (LTF) are for applicants with a Ph.D. in a biological discipline, who will broaden their expertise by proposing a project in the life sciences which is significantly different from their previous Ph.D. or postdoctoral work. Cross-Disciplinary Fellowships (CDF) are for applicants with a Ph.D. from outside the life sciences (e.g. in physics, chemistry, mathematics, engineering or computer sciences), who have had limited exposure to biology during their previous training. Due August 29.

Institute of Education Sciences (IES): Education Research and Development Centers CFDA Number 84.305C

Purpose of Program: The central purpose of the Institute's research grant programs is to provide parents, educators, students, researchers, policymakers, and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need. The Institute's National Center for Education Research (NCER) will hold five competitions: One competition for education research, one competition for education research training, one competition for education research and development centers, one competition for statistical and research methodology in education, and one competition for partnerships and collaborations focused on problems of practice or policy. The Institute's National Center for Special Education Research (NCSER) will not hold competitions in FY 2014. Due September 4.

Institute of Sciences (IES): Research Training Program in the Education Sciences CFDA Number 84.305B
Purpose of Program: The central purpose of the Institute’s research grant programs is to provide parents, educators, students, researchers, policymakers, and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need. The Institute's National Center for Education Research (NCER) will hold five competitions: One competition for education research, one competition for education research training, one competition for education research and development centers, one competition for statistical and research methodology in education, and one competition for partnerships and collaborations focused on problems of practice or policy. Due September 4.

Institute of Education Sciences (IES): Partnerships and Collaborations Focused on Problems of Practice or Policy CFDA Number 84.305H

Purpose of Program: The central purpose of the Institute's research grant programs is to provide parents, educators, students, researchers, policymakers, and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need. The Institute's National Center for Education Research (NCER) will hold five competitions: One competition for education research, one competition for education research training, one competition for education research and development centers, one competition for statistical and research methodology in education, and one competition for partnerships and collaborations focused on problems of practice or policy. Due September 4.

Institute of Education Sciences (IES): Statistical Research Methodology in Education CFDA Number 84.305D

Purpose of Program: The central purpose of the Institute's research grant programs is to provide parents, educators, students, researchers, policymakers, and the general public with reliable and valid information about education practices that support learning and improve academic achievement and access to education opportunities for all students. In carrying out its grant programs, the Institute provides support for programs of research in areas of demonstrated national need. The Institute's National Center for Education Research (NCER) will hold five competitions: One competition for education research, one competition for education research training, one competition for education research and development centers, one competition for statistical and research methodology in education, and one competition for partnerships and collaborations focused on problems of practice or policy. Due September 4.

FY2014 Research Opportunities in High Energy Physics

The mission of the High Energy Physics (HEP) program is to understand how the universe works at its most fundamental level, which is done by discovering the elementary constituents of matter and energy, probing the interactions between them, and exploring the basic nature of space and time. This Funding Opportunity Announcement invites applications in six specific areas: 1. Experimental Research at the Energy Frontier, 2. Experimental Research at the
Intensity Frontier, 3. Experimental Research at the Cosmic Frontier, 4. Theoretical Research, 5. Accelerator Science and Technology Research and Development, 6. Particle Detector Research and Development. **Due September 9.**

**Water Sustainability and Climate**
The goal of the Water Sustainability and Climate (WSC) solicitation is to enhance the understanding and predict the interactions between the water system and land use changes (including agriculture, managed forest and rangeland systems), the built environment, ecosystem function and services and climate change/variability through place-based research and integrative models. Studies of the water system using models and/or observations at specific sites, singly or in combination, that allow for spatial and temporal extrapolation to other regions, as well as integration across the different processes in that system are encouraged, especially to the extent that they advance the development of theoretical frameworks and predictive understanding. **Due September 10.**

**Research in Quantum Computing**
The U.S. Army Contracting Command – Aberdeen Proving Ground RTP Division, on behalf of the U.S. Army Research Office (ARO), is issuing a Broad Agency Announcement (BAA), W911NF-13-R-0010, for the establishment of Research in Quantum Computing. There are two separate research topics covered in this announcement: 1. Quantum characterization, verification, and validation The Quantum Characterization, Verification, and Validation (QCVV) research topic seeks proposals addressing the development of theoretical and experimental techniques, procedures, and methods for characterizing few-qubit systems with a focus on metrics relevant to robust fault-tolerant quantum computation (FTQC). The ultimate goal is to develop a set of standards and procedures, together with experimental demonstration, that will aid in characterizing increasingly complex quantum information systems. 2. Advanced quantum computing measurement technology Quantum information systems utilize measurement in a variety of ways: for diagnostic purposes while calibrating a quantum information system, to tune up a process for optimal operation, and for final read-out when implementing a quantum information process. Three performance parameters characterize quantum computing measurement techniques: (1) speed, (2) fidelity, and (3) resources. The overall objective is to demonstrate novel qubit measurement techniques for existing qubits. This Broad Agency Announcement (BAA) which sets forth research areas of interest to the Army Research Laboratory- Army Research Office (ARL-ARO) is issued under paragraph 6.102(d)(2) of the Federal Acquisition Regulation (FAR), and 10 USC 2358 which provides for the competitive selection of basic research proposals. **Due September 10.**

**Susceptibility and Variability in Human Response to Chemical Exposure**
The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications proposing research to study life stage and/or genetic susceptibility in order to better characterize the sources of human variability in response to chemical exposure. The adverse outcome pathways (AOP) concept has the potential to serve as a framework for using susceptibility indicators, biomonitoring, and high throughput screening
(HTS) data in an integrated manner to predict population responses to novel, potentially harmful, chemicals. While much emphasis has been placed on improved biomonitoring and HTS approaches, research is needed to understand the underlying factors that influence human susceptibility and to develop tools and methods for the identification and use of susceptibility indicators in this context. This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. **Due September 10.**

**Digital Humanities Start-Up Grants**
The National Endowment for the Humanities (NEH) invites applications to the Digital Humanities Start-Up Grants program. This program is designed to encourage innovations in the digital humanities. By awarding relatively small grants to support the planning stages, NEH aims to encourage the development of innovative projects that promise to benefit the humanities. Proposals should be for the planning or initial stages of digital initiatives in any area of the humanities. **Due September 12.**

**Enduring Questions**
The NEH Enduring Questions grant program supports faculty members in the teaching and development of a new course that will foster intellectual community through the study of an enduring question. This question-driven course will encourage undergraduates and teachers to grapple with a fundamental concern of human life addressed by the humanities, and to join together in a deep and sustained program of reading in order to encounter influential thinkers over the centuries and into the present day. **Due September 12.**

**High-End Instrumentation Grant Program (S10)**
The ORIP High-End Instrumentation Grant (HEI) program encourages applications from groups of NIH-supported investigators to purchase a single major item of equipment to be used for biomedical research that costs at least $750,000. The maximum award is $2,000,000. Instruments in this category include, but are not limited to, biomedical imaging systems, NMR spectrometers, mass spectrometers, electron microscopes and supercomputers. **Due Sept. 13.**

**New Methods in 21st Century Exposure Science**
In the recently released report, "Exposure Science in the 21st Century: A Vision and A Strategy," the National Academies' National Research Council (NRC) has called for scientific researchers and risk assessors to modernize data collection and study of exposure science. The report authors note that information about exposure is vital to understanding and preventing human and environmental risks. The NRC vision for exposure science calls for development and application of new technologies to efficiently collect data that will support a more comprehensive understanding of the science. The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications proposing innovative research to advance methods for characterizing real-world human exposure to chemicals associated with consumer products in indoor environments. Current understanding of human exposure to the chemical constituents of consumer products is limited due to inadequate information on formulations, emissions, and persistence in indoor environments
associated with the diversity of usage scenarios. Methodological limitations currently impede collection of robust exposure information that is necessary to provide context for the results of a growing body of high throughput toxicity testing results and to characterize risk to human health for the general population and vulnerable groups. Due September 13.

**OCLC/ALISE Library & Information Science Research Grant Program (LISRGP)**

OCLC Online Computer Library Center, Incorporated and OCLC Research, in collaboration with the Association for Library and Information Science Education (ALISE), announce the Library and Information Science Research Grant Program (LISRGP) for 2014 and invite research proposals. In recognition of the importance of research to the advancement of librarianship and information science, OCLC and ALISE promote independent research that helps integrate new technologies that offer innovative approaches and contributes to a better understanding of the information environment and user expectations and behaviors. Research related (but not limited) to the following areas is encouraged: Impact of digital technology on libraries, museums, and archives; Social media, learning, and information-seeking behavior; and New developments in knowledge organization (metadata, social tagging, linked data, etc.) Due September 15.

**Air Force Fiscal Year 2014 Young Investigator Research Program (YIP)**

The Young Investigator Research Program (YIP) supports young scientists and engineers in Air Force relevant disciplines and is designed to promote innovative research in fields such as: energy, power and propulsion, materials interactions in extreme environments, aero-structure interactions and control, hierarchical design and characterization of materials, space architecture and protection, thermal control, mathematical, information and computer sciences, biology, behavioral sciences, plasma and quantum physics, theoretical and experimental physics, microwave and photonic systems, information and signal process, and materials-processing techniques. The awards foster creative basic research, enhance early career development of outstanding young investigators, and increase opportunities to recognize Air Force mission and challenges in science and engineering. Due September 15.

**Documenting Endangered Languages**

The Documenting Endangered Languages (DEL) program is a partnership between the National Endowment for the Humanities (NEH) and the National Science Foundation (NSF) to develop and advance knowledge concerning endangered human languages. Made urgent by the imminent death of an estimated half of the 6000-7000 currently used languages, this effort aims also to exploit advances in information technology. Awards support fieldwork and other activities relevant to recording, documenting, and archiving endangered languages, including the preparation of lexicons, grammars, text samples, and databases. DEL funding is available in the form of one- to three-year project grants as well as fellowships for six to twelve months. At least half the available funding will be awarded to projects involving fieldwork. All DEL applications are submitted to NSF for review. Upon completion of the review process, the administration of awards is conducted separately by NEH or NSF. Due September 16.
Joint DMS/NIGMS Initiative to Support Research at the Interface of the Biological and Mathematical Sciences

The Division of Mathematical Sciences in the Directorate for Mathematical and Physical Sciences at the National Science Foundation and the National Institute of General Medical Sciences at the National Institutes of Health plan to support research in mathematics and statistics on questions in the biological and biomedical sciences. Both agencies recognize the need and urgency for promoting research at the interface between the mathematical sciences and the life sciences. This competition is designed to encourage new collaborations, as well as to support existing ones. **Due September 23.**

USDA FY-2014 SBIR

The USDA SBIR program is carried out in three separate phases. Phase I is to determine the scientific or technical feasibility of ideas submitted by applicants on research topic areas described in section 8.0 of this solicitation. This program solicitation is only for the preparation and submission of Phase I applications. Phase I awards may not exceed $100,000.00 for a period normally not to exceed eight (8) months. However, longer grant periods, of up to 20 months, may be considered if the proposed research project will require more than 8 months to complete. The Phase I application should concentrate on research that will significantly contribute to proving the scientific or technical feasibility of the approach or concept and will be a prerequisite to further USDA support in Phase II. Similar to the changes USDA made last year, phase I award size has been raised to $100,000 and the program is now managed by National Institute of Food and Agriculture (NIFA). NIFA has five societal challenge areas that relate to the overall topics. The NIFA Societal Challenge Areas are: 1) Global Food Security and Hunger, 2) Climate Change, 3) Sustainable Bioenergy, 4) Childhood Obesity, and 5) Food Safety. Special consideration will be given to applications that address one of these priorities under the Project Narrative, item (2) under subsection 3.3.3.-Field 8, Responsiveness to USDA SBIR Program Priorities and Societal Challenge Areas. **Due September 26.**

NEH Summer Stipends

Summer Stipends support individuals pursuing advanced research that is of value to humanities scholars, general audiences, or both. Recipients usually produce articles, monographs, books, digital materials, archaeological site reports, translations, editions, or other scholarly resources. Summer Stipends support full-time work on a humanities project for a period of two months. Summer Stipends support projects at any stage of development. Summer Stipends are awarded to individual scholars. Organizations are not eligible to apply. **Due September 26.**

NEH Summer Stipends

Summer Stipends support individuals pursuing advanced research that is of value to humanities scholars, general audiences, or both. Recipients usually produce articles, monographs, books, digital materials, archaeological site reports, translations, editions, or other scholarly resources. Summer Stipends support continuous full-time work on a humanities project for a period of two months. Summer Stipends support projects at any stage of development. Summer Stipends are awarded to individual scholars. **Due September 26.**
**Dissertation Proposal Development Fellowship (DPDF) Faculty Field Competition**
The Dissertation Proposal Development Fellowship (DPDF) Faculty Field Competition is open to tenured humanities and social sciences faculty interested in creating or reinvigorating interdisciplinary fields of study through the training of the next generation of researchers. Selected research directors guide the development of effective doctoral dissertation proposals within innovative fields by helping fellows sharpen the focus of their research and identify appropriate methods of investigation and analysis. **Deadline October 1.**

**Innovation in Archives and Documentary Editing**
The National Historical Publications and Records Commission seeks projects that are exploring innovative methods to improve the preservation, public discovery, or use of historical records. Projects may also focus on techniques and tools that will improve the professional performance and effectiveness of those who work with such records, such as archivists, documentary editors, and records managers. Projects must anticipate results that will affect more than a single institution or a single state. Projects may focus on methods of working with records in any format, including born-digital records. Projects designed to publish historical records must focus on innovative methods of presenting archival records as primary sources. The Commission does not fund projects focused on artifacts or books. For a comprehensive list of the Commission's limitations on funding, please see [What We Do and Do Not Fund](http://www.nationalarchives.gov/). Applications that consist entirely of ineligible activities will not be considered. **Due October 3.**

**Partnerships for Innovation: Accelerating Innovation Research- Technology Translation (PFI: AIR-TT)**
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). In the final analysis, 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 subject of this solicitation is PFI: AIR Technology Translation (TT) only. The PFI: AIR-TT solicitation is intended to help bridge the funding gap between existing research discoveries that validate relevant science and engineering fundamentals and their translation through proof-of-concept, prototype, or scale-up along a path toward commercialization and engage faculty and students in entrepreneurial/innovative thinking. **WEBINAR**: A webinar will be held within 6 weeks of the release date of this solicitation to answer any questions about this solicitation. Details will be posted on the IIP website [http://www.nsf.gov/eng/iip/pfi/index.jsp](http://www.nsf.gov/eng/iip/pfi/index.jsp) as they become available. **Due October 7.**

**Healthy Schools: Environmental Factors, Children’s Health and Performance, and Sustainable Building Practices**
The U.S. Environmental Protection Agency (EPA), as part of its Science to Achieve Results (STAR) program, is seeking applications proposing research that will inform school (K-12 educational facilities) building design, construction and operation practices in order to foster safe and
healthy school environments and maximize student achievement and teacher and staff effectiveness. Specifically, the goal is to understand the relationship between environmental factors defined broadly and the health, safety and performance of students, teachers and staff. In addition to health-related concerns, the school environment may similarly impact the performance of students, teachers and staff, including lowering student achievement outcomes, and reducing teacher effectiveness. Accordingly, research is needed to better understand the negative impacts of the school environment on students’ health, safety, and achievement, and to measure the positive potential benefits of effectively managing environmental factors and applying sustainable building practices. The results of this research will help ensure that the risks of environmentally-induced illness and injury to America’s students, teachers and other school staff are diminished or avoided and that students, teachers and staff are provided with optimal learning environments in their schools. Due October 8.

**Doctoral Dissertation Improvement Grants in the Directorate for Biological Sciences (DDIG)**
The National Science Foundation awards Doctoral Dissertation Improvement Grants in selected areas of the biological sciences. Proposals must fall within the scope of any of the clusters in the Division of Environmental Biology (DEB) or the Behavioral Systems Cluster in the Division of Integrative Organismal Systems (IOS). These grants provide partial support of doctoral dissertation research for improvement beyond the already existing project. Allowed are costs for doctoral candidates to participate in scientific meetings, to conduct research in specialized facilities or field settings, and to expand an existing body of dissertation research. Due October 10.

**The Digital Manufacturing and Design Innovation (DMDI) Institute**
This effort pertains to applied research only. On behalf of the AMRDEC, ACC-RSA is soliciting concept papers and proposals which provide detailed examples of applied research project focus areas, technology transition plans for applications, proposed infrastructure and a sustainable business plan. The technical focus area of the Institute will be Digital Manufacturing and Design Innovation. Submissions must demonstrate that the proposed Institute has the potential to significantly advance manufacturing within the United States. Applicants shall address proposals to the contracting Point of Contact (POC) stated in Section VII of the Full Text Announcement. This is a restricted solicitation limited to a U.S. non-profit organization to serve as the award recipient to lead a Digital Manufacturing and Design Innovation (DMDI) Institute. The Government encourages small businesses to participate in any or all parts of this solicitation through teaming arrangements with the recipient. Due October 11.

**Lightweight and Modern Metals Manufacturing Innovation (LM3I) Institute**
The Government intends for this solicitation to support the establishment of a Lightweight and Modern Metals Manufacturing Innovation (LM3I) Institute that will advance the state of processing and fabrication technologies for lightweight and modern metals by facilitating the transition between basic/early research and full-scale production of associated materials, components and systems. This research activity generally falls within a manufacturing readiness level (MRL) range of 4 to 7. These manufacturing advancements in-turn spur the integration of
new material, component and system designs for defense and commercial applications. The Government seeks proposals to this announcement that describe the proposed infrastructure, technical applications and sustainable business plan for the Institute, to include providing detailed example research project focus areas and technology transition plans supporting DoD and other high value governmental and commercial applications. **Due October 15.**

**DOD FY13 Care for the Critically Injured Burn Patient II**
The Combat Casualty Care Research Program (CCCRP) is focused on leveraging cutting edge research and knowledge to address existing and emerging gaps in combat casualty care. The objective of this Program Announcement/Funding Opportunity is to explore innovative approaches to accelerate the translation of advances in knowledge into new standards of care for the treatment of the injured warfighter who sustains burn injuries. The results of the research funded through FY13 Care for the Critically Injured Burn Patient II (CCIBPII) Program Announcement/Funding Opportunity are expected to increase the body of knowledge available to professionals and practitioners in health, medical science and related fields. To be considered for funding, applications for the FY13 CCIBPII must address one of the Topic Areas listed in this Program Announcement/Funding Opportunity. **Due October 16.**

**Special Program Announcement for 2013 Office of Naval Research Opportunity: Select Topics in Materials Research Technology**
This announcement describes a research thrust, entitled “Select Topics in Materials Research Technology,” to be launched under the ONRBA13-001, Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology which can be found at http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx. The research opportunity described in this announcement specifically falls under the following sections of ONR BAA13-001: Topic #1 - Powder-Processing of Large Metal Structural Components: Section I, entitled “General Information”, sub-section 6, entitled “Research Opportunity Description”, the “Sea Warfare and Weapons Department (Code 33)” item, paragraph 2), subparagraph b, entitled “Structural Materials”. Topic #2 - Applied Research in Scaling Promising Dielectric Films for Wound Film Capacitors: Section I, entitled “General Information”, sub-section 6, entitled “Research Opportunity Description”, the “Sea Warfare and Weapons Department (Code 33)” item, paragraph 2), subparagraph a, entitled “Functional Materials”. **Due October 17.**

**DoD Duchenne Muscular Dystrophy Investigator-Initiated Research Award**
All projects should adhere to a core set of reporting standards for rigorous study design. The standards are described fully in www.nature.com/nature/journal/v490/n7419/full/nature11556.html. While these standards are written for preclinical studies, the basic principles of randomization, blinding, sample-size estimation, and data handling derive from well-established best practices in clinical studies and should be applied to those projects as well. Studies proposed under this award mechanism should not include: Target discovery; Drug screening; Mechanism of action studies; Hypothesis-driven pathophysiology studies Applications must include preliminary data that are relevant to
DMD and the proposed project. Clinical trials are supported by this award mechanism. Optional Qualified Collaborator: The FY13 DMDRP strongly supports collaborative research between laboratory scientists and clinical researchers, and between academic scientists and biotechnology/pharmaceutical industry scientists. Collaborations that bring new perspectives from other disciplines, or bring new investigators into the DMD field, are also strongly encouraged. Due November 6.

**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. Research may be on zoonotic, environmentally-borne, vector-borne, or enteric diseases of either terrestrial or freshwater systems and organisms, including diseases of animals and plants, at any scale from specific pathogens to inclusive environmental systems. Proposals for research on disease systems of public health concern to developing countries are strongly encouraged, as are disease systems of concern in agricultural systems. Investigators are encouraged to involve the public health research community, including for example, epidemiologists, physicians, veterinarians, food scientists, social scientists, entomologists, pathologists, virologists, or parasitologists with the goal of integrating knowledge across disciplines to enhance our ability to predict and control infectious diseases. Due November 20.

**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.
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.

Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology
This BAA is intended for proposals related to basic research, applied research, or advanced technology development. Open to September 2013.

APS for Food Security, Nutrition, Biodiversity and Conservation
The U.S. Agency for International Development (USAID) continues its commitment to foster more strategic alliances with the private sector’s “solution holders” who are often well positioned to address specific development challenges. The purpose of this APS is to announce USAID/Uganda’s plans to fund a limited number of Public Private Alliances to enhance food security and address issues of biodiversity and conservation. Competition under this APS will consist of a two-step process where applicants first submit a Concept Paper for an initial competitive review. All Concept Papers received will be evaluated for responsiveness to the application criteria specified in this APS. Open to September 15, 2013.

National Oceanic and Atmospheric Administration (NOAA)
The purpose of this notice is to request applications for special projects and programs associated with NOAA’s strategic plan and mission goals, as well as to provide the general public with information and guidelines on how NOAA will select proposals and administer discretionary Federal assistance under this Broad Agency Announcement (BAA). This BAA is a mechanism to encourage research, education and outreach, innovative projects, or sponsorships that are not addressed through our competitive discretionary programs. It is not a mechanism for awarding congressionally directed funds or existing funded awards. Open until September 30, 2013.

National Geospatial-Intelligence Agency Academic Research Program
The National Geospatial-Intelligence Agency (NGA) is releasing this solicitation for its sponsored academic research program. This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Department of Defense (DoD) Grant and Agreement Regulations (DoDGARs) 22.315(a). Awards will take the form of grants. However, other instruments may be considered as appropriate based on the proposals. Open to September 30, 2013.

FY 2013 Continuation of Solicitation for the Office of Science Financial Assistance Program
The Office of Science of the Department of Energy hereby announces its continuing interest in receiving grant applications for support of work in the following program areas: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics, Nuclear Physics, and Workforce Development for
Teachers and Scientists. This annual FOA DE-FOA-0000768 succeeds FOA DE-FOA-0000600, which was published September 30, 2011. **Open to September 30, 2013.**

**U.S. Army Medical Research and Materiel Command Broad Agency Announcement for Extramural Medical Research**
The U.S. Army Medical Research and Materiel Command’s (USAMRMC) mission is to provide solutions to medical problems of importance to the American Warfighter at home and abroad. The scope of this effort and the priorities attached to specific projects are influenced by changes in military and civilian medical science and technology, operational requirements, military threat assessments, and national defense strategies. The extramural research and development program plays a vital role in the fulfillment of the objectives established by the USAMRMC. General information on USAMRMC can be obtained at: [https://mrmc.detrick.army.mil/](https://mrmc.detrick.army.mil/). This Broad Agency Announcement (BAA) is intended to solicit extramural research and development ideas, and is issued under the provisions of the Competition in Contracting Act of 1984 (Public Law 98-369), as implemented in Federal Acquisition Regulation 6.102(d)(2) and 35.016. This announcement provides a general description of USAMRMC’s research programs, including research areas of interest; general information; proposal/application preparation instructions; and the evaluation and selection criteria. This fiscal year’s BAA contains several changes from previous USAMRMC BAAs. Read each section carefully. **Open to September 30, 2013.**

**Long Range BAA for Navy and Marine Corps Science and Technology**
ONR is constantly looking for innovative scientific and technological solutions to address current and future Navy and Marine Corps requirements. We want to do business with educational institutions, nonprofit and for-profit organizations with ground-breaking ideas, pioneering scientific research and novel technology developments. The following list includes currently active broad agency announcements (BAAs) -- each announcement provides technical and contracting points of reference. Required: All BAAs incorporate a standardized template for the submission of technical and cost proposals for all contract awards. Guidance and assistance in completing the form and spreadsheet can be obtained from points of contact provided in the BAA. **Download the forms** (updated for 2012) | **Email your feedback** | **Open to September 30, 2013.**

**FAA Center of Excellence for Environment and Energy**
The FAA is forming a Center of Excellence for Environment and Energy during FY-13. The COE will be a consortium of the FAA, university partners, and private industry affiliates selected by the FAA Administrator to work collectively on business and operational issues of mutual interest and concern. **Due October 4, 2013.**

**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 for award are considered to be the result of full and open competition and in full compliance with the provisions of Public Law 98-369 (The Competition in Contracting Act of 1984) and subsequent amendments. The US Army Research Institute for the Behavioral and Social Sciences is the Army’s lead agency for the conduct of research, development, and analyses for
the improvement of Army readiness and performance via research advances and applications of the behavioral and social sciences that address personnel, organization, training, and leader development issues. Programs funded under this BAA include basic research, applied research, and advanced technology development that can improve human performance and Army readiness. The funding opportunity is divided into two sections—(1) Basic Research and (2) Applied Research and Advanced Technology Development. The four major topic areas of research interest include the following: (1) Training; (2) Leader Development; (3) Team and Inter-Organizational Performance in Complex Environments; and (4) Soldier/Personnel Issues. Funding of research and development (R&D) within ARI areas of interest will be determined by funding constraints and priorities set during each budget cycle. **Open to February 5, 2018.**

**Research Interests of the Air Force Office of Scientific Research**

The Air Force Office of Scientific Research (AFOSR) manages the basic research investment for the U.S. Air Force (USAF). To accomplish this task, AFOSR solicits proposals for basic research through this general Broad Agency Announcement (BAA). This BAA outlines the Air Force Defense Research Sciences Program. AFOSR invites proposals for research in many broad areas. These areas are described in detail in Section I of the BAA, Funding Opportunity Description. AFOSR plans, coordinates, and executes the Air Force Research Laboratory's (AFRL) basic research program in response to technical guidance from AFRL and requirements of the Air Force; fosters, supports, and conducts research within Air Force, university, and industry laboratories; and ensures transition of research results to support USAF needs. The focus of AFOSR is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in five scientific directorates: Dynamical Systems and Control (RTA), Quantum & Non-Equilibrium Processes (RTB), Information, Decision, and Complex Networks (RTC), Complex materials and Devices (RTD), and Energy, Power, and Propulsion (RTE). The research activities managed within each directorate are summarized in Section I of the BAA. **Open until superseded.**

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

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

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

- **Strategic Planning** - Assistance in formulating research development strategies and building institutional infrastructure for research development (including special strategies for Predominantly Undergraduate Institutions and Minority Serving Institutions).

- **Training for Faculty** - Workshops, seminars and webinars on how to find and compete for research funding from NSF, NIH, DoE and other government agencies as well as foundations. Proposal development retreats for new faculty.

- **Large proposals** - Assistance in planning and developing institutional and center-level proposals (e.g., NSF ERC, STC, IGERT, STEP, Dept of Ed GAANN, DoD MURI, etc.).

- **Assistance for new and junior faculty** - Help in identifying funding opportunities and developing competitive research proposals, particularly to NSF CAREER, DoD Young Investigator and other junior investigator programs.

- **Facilities and Instrumentation** - Assistance in identifying and competing for grants to fund facilities and instrumentation.

- **Training for Staff** - Professional Development for research office and sponsored projects staff.

**Workshops by Academic Research Funding Strategies**

We offer workshops on research development and grant writing for faculty and research professionals based on all published articles. *(View Index of Articles)*

Copyright 2013 Academic Research Funding Strategies. All rights reserved.