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By Katherine E. Kelly, PhD

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Topics of Interest URLs

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Understanding the Role of Your PO

By Lucy Deckard, co-publisher
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We often emphasize that when a PI is pursuing funding, it's critically important to understand the funder's mission, culture, organization, procedures, and the role of the Program Officer (PO). In this article, we'll delve a bit deeper into this last item on that list. Often, if a researcher has pursued funding from one agency such as NIH or NSF, they may not realize how widely the roles and responsibilities of POs vary across different funders, shaping the relationship between the PO and grant applicants. Below are some aspects to keep in mind, with examples from different funders. (Note that various funders use different terms: Program Officer, Program Director, Program Staff, etc. For simplicity, we will use "Program Officer" or "PO" here.)

The PO's Role in the Review Process

The PO's role in the review process can vary from total autonomy at one extreme, to having no role at all at the other. Most funders seek input from external reviewers (for research grants, these are usually peer reviewers with research backgrounds in the field), but these peer reviews are often only advisory. The relative influence of the PO versus external reviews on the funding decision varies by funder and by program.

Small private foundations are most likely to give POs a high level of influence on funding decisions. The PO typically works very closely with the foundation leaders and is expected to ensure that the program supports the foundation's mission and current focus areas. Also, small private foundations don't need to answer to Congress, and questions of fairness or concerns about conflicts of interest are typically not big issues.

The Department of Defense (DoD) also gives its POs a lot of discretion in determining what projects to fund. POs are usually experts in the program research area and are charged with funding projects that will produce results that address DoD's specific needs in support of its mission.

Among DoD agencies, POs for the Defense Advanced Research Projects Agency (DARPA) are typically the most autonomous. DARPA POs are often leading experts in the topic of their program and are expected to work with the research community to drive breakthroughs. DARPA prioritizes fast "out-of-the-box" results, and DARPA POs have the discretion to select the most promising ideas, encourage teaming of specific researchers, and pull funding if results aren't coming as quickly as expected or if a more promising idea comes along. While proposals do undergo review by external experts, it is often the case that much of the decision has already been made by the DARPA PO during discussions with the proposing team about their proposed technology. However, the PO may have to compete within DARPA for funding. As a result, if your DARPA PO likes your idea, your relationship may be collaborative, as you help the PO to secure funds to support your project.

POs at the Air Force, Army and Navy Research Offices don't have quite as much autonomy as DARPA POs but are similarly tasked with helping to find the research projects that help solve issues that are important to the missions and priorities of their services. In order to

be competitive, you need to talk to your prospective PO about the specific needs of interest to their program and convince them that you can deliver.

POs at NSF are more in the middle of the autonomy spectrum. They choose reviewers and run review panels. They are experts in the field of their program and are expected to act like portfolio managers, investing in a range of projects that address various important topics within their program area. However, they will typically choose only from well-reviewed proposals. As a result, while proposals are not funded strictly in accordance with how they are ranked, it is rare for a poorly reviewed proposal to be funded.

At NIH, the review process for most proposals (except for responses to PARs and most RFAs) is conducted by the Center for Scientific Review, which is separate from the Institute or Center (IC) that funds the grants. The PO may not even be in the room when the proposal is reviewed, although they typically try to be. NIH funding decisions are typically tightly tied to the impact score and ranking assigned to them by the peer review panel. However, a proposal that gets a fundable score but does not address a topic of interest to the funding IC will not be funded. It also sometimes happens that a proposal that doesn't get a fundable score but addresses an area of high priority for the IC may still be funded. The PO provides internal input on how relevant your proposal is to the IC's priorities.

Similarly, at the National Endowment for the Humanities (NEH), POs provide recommendations on the well-reviewed applications. At the Department of Education Institute of Education Sciences (IES), POs have no role in evaluating proposals or making funding decisions.

Interacting with the PO

It's probably obvious that in cases where the PO has a lot of say in the review process and funding decision, it's a good idea to try to talk to the PO before writing your proposal. However, POs' responsiveness and receptivity to such discussions also vary among funders. Some foundation POs are overwhelmed with requests, and they may be unwilling to schedule individual discussions (although it's always a good idea to try). In contrast, some foundations, particularly those that have programs aimed at helping early career scholars such as the Ford Foundation, are typically very responsive.

While it's critical to get to know your DoD PO, if you're responding to a targeted RFP or BAA (as opposed to submitting an unsolicited proposal to a long-range BAA), DoD rules typically don't allow POs to talk to applicants in order to prevent unfair transmission of information. For that reason, it's a good idea to have developed a relationship with the PO well before the RFP or targeted BAA is issued.

DARPA POs often achieve a "celebrity" status and are so well known and busy that it can be very difficult to connect with them. However, similar to getting a meeting with Taylor Swift, you may be able to make connections through their assistants or through others (such as potential collaborators) who already have relationships with them.

NSF strongly encourages PIs to contact POs to discuss their projects and the fit with the program. However, the level of engagement can vary significantly depending on the program as well as the personality of the PO. While most POs are happy to meet with you in person or schedule a phone conversation, POs in the Social and Economic Sciences division are so overwhelmed with requests that they resist in-person meetings and may even request that you

send a white paper describing your idea instead of scheduling a phone conversation. It's important to be sensitive to the PO's constraints and the different cultures within NSF.

Even in cases where the POs have little or no involvement in the proposal review process, they can be of tremendous help. In fact, in some cases that lack of involvement frees them up to provide much more specific advice and mentoring. POs at NEH and IES often consent to read and critique entire proposal drafts. (If you'd like to get this kind of feedback, be sure to talk to the PO about this well in advance of the deadline.) NIH POs will often review and critique drafts of your Specific Aims page. Even though these POs will not be the involved in reviewing your proposal, they know their program's priorities and can help you to avoid common mistakes, so this advice can be invaluable.

Conclusion

From the examples above, it should be apparent how a PI can put himself at a disadvantage if he doesn't understand the role of the PO and the expectations for engagement. When getting to know a funder, do some research to make sure you understand these aspects of the agency. Potential sources of information include colleagues familiar with the funder, your research office, information provided by the funder on its website, in webinars, or in other outreach materials, and the PO herself.

Tensed about Tenses

By Lucy Deckard, co-publisher

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In our reviews of proposal drafts, we've recently noticed a new phenomenon: the use of the present tense when talking about activities that took place in the past or will take place future. We suspect this may be an outgrowth of the trend in recent years in which historians have started to use the present tense when talking about historical events. We're not sure why. Perhaps they think it makes history seem more relevant, or perhaps they are just tired of spending all of their time in the past tense. While we find this affectation irritating, it generally doesn't hamper understanding. It's usually obvious when a historian says, "Ulysses Grant works closely with President Lincoln, and jointly they decide to stage an attack …" that she's not talking about today. However, playing fast and loose with tenses in a research proposal can seriously confuse your reviewers. Clarity is paramount in writing proposals, and anything that introduces confusion or ambiguity is your enemy. Using the wrong tense can muddy your meaning in several ways.

First, in most proposals your prior work and preliminary results are a central part of your argument for why your proposed project is likely to be successful. However, there is always the danger that reviewers will become confused about what you have already done versus what you propose to do, particularly if you have extensive preliminary results. This confusion often manifests itself in the reviews in one of two ways. The reviewer states that you have already done most of the work, so should they why fund you? This comment is usually a result of the reviewer mistaking some or all of your proposed work for work you've already done. Or the reviewer complains that there are no preliminary results because the reviewer has mistaken your preliminary results for your proposed work.

The easiest way to avoid this confusion is to have clearly labeled separate sections or subsections for your prior work/preliminary results and your proposed work. However, even if you do this, if you discuss your past experiments in the present tense, the reviewer can become confused and think you are talking about proposed work. ***Keep in mind that if you are talking about specific tests or tasks that were done in the past, you should use the past tense.*** Put yourself in the shoes of the reviewer. If you read, "The specimens are subjected to a 500˚C soak and are then flushed with liquid nitrogen before being placed in a wind tunnel," what does that sentence mean to you? Is this a discussion of a standard test procedure? Is this a test that has already been done? Is this the procedure that the PI will follow if funded? Who knows? If instead you read, "The specimens **were** subjected to a 500˚C soak and **were** then flushed with liquid nitrogen before being placed in a wind tunnel," it is clear that this was an experiment that has already been conducted.

Second, when you describe past results in the present tense, you're implying that those results are broadly and generally applicable. That's fine if that is truly your meaning, but indiscriminant use of the present tense can lead reviewers to think you're making assertions that you don't intend to make. So, for example, if you write, "The results of these test indicate that unobtainium in the presence of adnausium generates an electrical current," you are stating that this is always the case. You may instead mean that under the specific experimental

conditions you tested, you found that an electrical current was generated. In that case, using the past tense shows that you know those results are specific to those test conditions.

Third, PIs often like to indicate a path forward for the proposed research after the funding period, assuming the project is successful. This can be a powerful way to emphasize the significance of your proposed research since it could lead to an entire new line of research. However, if you use the present tense rather than the future tense, you risk confusing your reviewer and leading them to think that this is work that you are proposing as part of your project.

Remember that reviewers are often reading your proposal late at night after reading several other proposals. They are tired and easily irritated. Don't make their job harder by confusing them with the wrong tense.

USDA/NIFA Antimicrobial Resistance Webinar

By Mike Cronan, co-publisher
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Information on 2017 funding for the national priority area of antimicrobial research (AMR) has been challenging to come by with the ongoing congressional impasse on the budget (see *Federal Engagement in Antimicrobial Resistance*). While the specific level of fiscal support of AMR for FY 2017 to research agencies, including NIH, NSF, USDA, CDC, and FDA, may remain somewhat murky until after the election, the recent AMR webinar by USDA provides an insight into how funding will be allocated over the coming years at the agency once the budget issues are resolved.

Clearly, future AMR funding directions and opportunities will be highly interdisciplinary and of great interest to researchers and the research offices that support them across numerous academic colleges and departments. However, anticipating the future AMR funding landscape, particularly as it relates to specific funding solicitations among these core noted agencies, still requires research offices to do some digging. Moreover, agency websites differ in the amount of information they make available about AMR funding directions.

NIH, for example, does an excellent job of posting current and open AMR funding opportunities at *NIAID Antimicrobial Resistance Funding Information,* as well as addressing *Fostering Research Partnerships To Address Antimicrobial (Drug) Resistance*. But this information reflects the current state and not the future state of funding, the latter key to long-term strategic planning for research offices tracking this funding domain. The 2014 NIH report, *NIAID's Antibacterial Resistance Program: Current Status and Future Directions*, is now somewhat dated, especially in light of the budget issues over the past few years, as is the CDC's 2012 *Public Health Action Plan to Combat Antimicrobial Resistance*. More current is the June report, *Combating Superbugs: U.S. Public Health Responses to Antibiotic Resistance,* of HHS's Biomedical Advanced Research and Development Authority (BARDA).

Specific to USDA, however, a May solicitation aligned with the *National Action Plan for Combating Antibiotic-resistant Bacteria*, *USDA Announces $6 Million in Available Funding for Antimicrobial Resistance Research*, was published with an August 3 due date. Concurrent with this open period, USDA initiated a series of 14 webinars, *Animal Health Stakeholder Webinar Series*. Thirteen of these will be conducted in October and November.

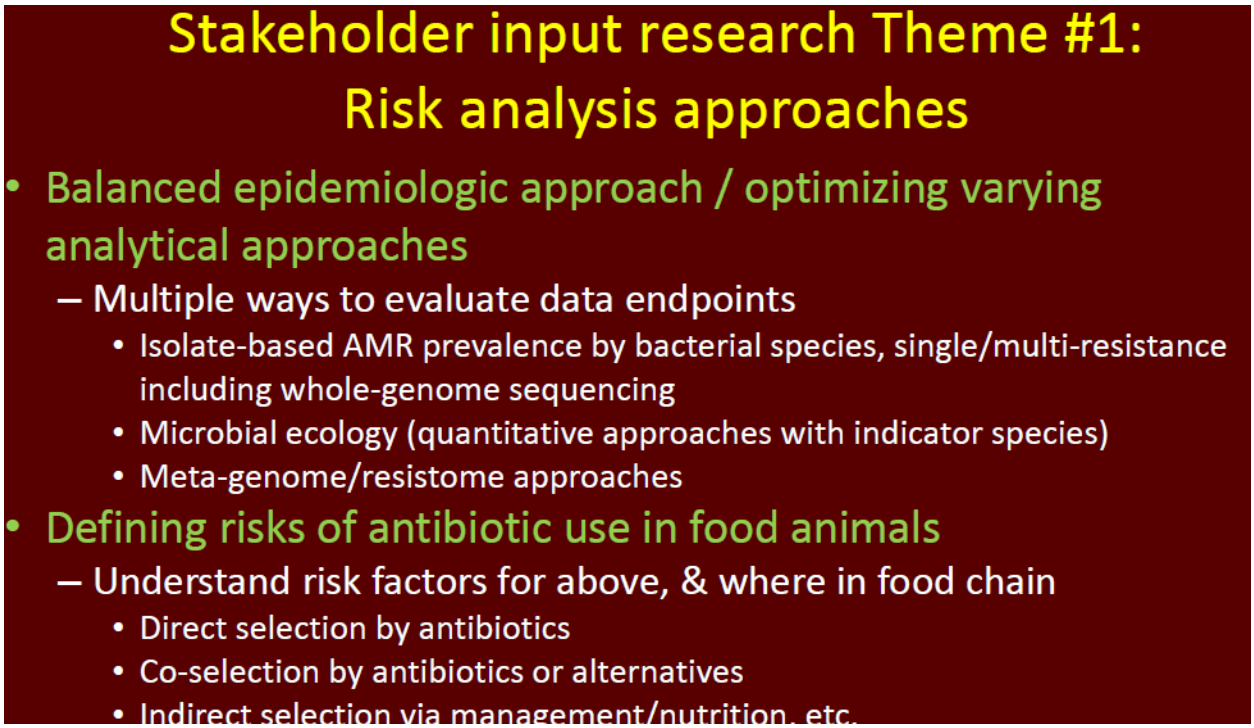
The first of these, the three-hour *Animal Health Stakeholder Webinar- -Antimicrobial Resistance,* hosted July 19 by the USDA NIFA/ARS/Chief Scientist Office, addressed two items: (1) it identified AMR priorities for the next five years from the perspective of animal agriculture, and (2) it prioritized five key AMR themes in research, education, and extension. The purpose of the webinar was to solicit comments on where USDA can "***best focus its limited resources and efforts across programs involving antimicrobial resistance in the context of animal health***." The basis of the webinar was the program priority area (A1221) in Animal Health and Disease as excerpted from the 2016 Foundational RFA, as below:

- Cellular, molecular, genomic/genetic or whole-animal aspects of animal health and disease, especially focusing on one or more of the following:

- Maintenance of homeostasis, including influences of microbiomes on health and disease;
- Disease prevention (e.g., vaccines, diagnostics, enhanced innate or adaptive immunity, disease resistance or susceptibility, or management); or
- Therapeutic interventions for disease reduction/treatment, including alternatives to current antimicrobial treatments.

Long-term AMR research priorities at USDA/NIFA, according to the webinar, will be aligned with the **five themes presented below in slides from the webinar used to guide discussion**. These evolving priorities will come into sharper focus over the coming year, and will be assigned a five-year time horizon. While this webinar was specific to USDA/NIFA, it's important to note that AMR funding will extend across five principal agencies, as noted above, and the funding opportunities will likely be highly interdisciplinary, although bounded in some way by the mission focus of each agency, i.e., AMR research at NSF will not be the same as AMR research at USDA, but it will likely rhyme.

Therefore, in preparing a strategic response to the future AMR funding landscape, it will be important to ***look for AMR intersections between and among agencies in this research domain***. That will be key for several reasons, most importantly for assessing institutional AMR capacities across multiple colleges and departments and for forming AMR research partnerships. ***In a transdisciplinary world, identifying and exploiting research and funding agency intersections is the key to success***.



Stakeholder input research Theme #2: Optimize antibiotic therapy

- Optimize antibiotic treatments to minimize resistance while maximizing animal health benefits
  - Develop and employ rapid diagnostics to reduce unnecessary and ineffective treatments
  - Better define risk/benefits of various uses/routes of administration/dosage regimens
  - Ensure optimal duration of exposure to balance selection pressures with efficacy
  - Establish in relation to animal/pathogen breakpoints
  - Consider changing bacterial populations over time (plasmid acquisition, fitness)

Stakeholder input research Theme #3: Alternative approaches to health

- Emphasis on herd health management practices, including treatment regimen optimization, and alternatives
  - Management approaches to minimize need for antibiotics
    - Vaccines, biosecurity, animal handling, weaning, transport, stress
  - Alternatives to antibiotics
    - Non-specific immune modulators, phage therapy, metals, host peptides, etc
- Mitigation strategies employing 'systems approaches'
- Examine 'best practices' from elsewhere

Stakeholder input research Theme #4: 'One Health' challenges

- Expanded from food chain to include environmental interactions / microbiome of within/without host
  - Vector control
- Importance of indicator/commensal organisms versus pathogens in selection and expansion of resistance

Stakeholder input research Theme #5: Underserved/represented groups

- Need for diverse treatment options (including antibiotics) for 'minor species', aquaculture (including finfish), and other persons/groups/regions
  - Address small producer challenges
  - Address veterinarian shortages
  - Alternative commercialization pathways

Basic Grant-Writing Training Presentation Part 2

By Mike Cronan, co-publisher

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In last month's issue of this newsletter an article entitled *Basic Grant Writing Training Presentation* addressed five topics that provide the basis of any grant training program for new and junior faculty, or, as the article addressed, providing grant training for nonfaculty professional staff in various university offices, centers, and institutes that are often called upon to write proposals, or assist in the writing of proposals.

In this issue, we have focused on translating last month's article into a 19-slide PowerPoint presentation entitled *How to Write Funded Grants*, available for download **HERE**. This presentation is meant to serve as a starting point for research offices who may be planning basic grant-writing workshops for new faculty or professional staff entering your university in the coming weeks, or others currently at your university who would benefit from grant-writing training. It is based on a key words organizational approach to grant writing that benefits from the presenter's experience in participating in the planning, developing, and writing of research proposals. In this case, the key words serve as discussion prompts for the presenter.

The presentation topics are those five enumerated and discussed in the July article:

- Finding funding
- Understanding the funding solicitation
- Funding agency mission and culture
- The well-written narrative
- Proposal review process

The goal here is to develop a brief (45-60 minute) presentation that provides key topic prompts to a presenter who can adapt and revise those prompts to cover topics in a broad way, or to drill down into topic specifics as part of a longer presentation. For example, the finding funding topic slide 5 briefly lists three principal vehicles for federal agency funding: funding solicitations, unsolicited proposals, and Broad Agency Announcements (BAAs). Depending on the audience's level of experience, the presenter may focus discussion primarily on funding solicitations posted to Grants.gov, and discuss only briefly unsolicitated proposals or BAAs, perhaps noting that a majority of proposals to NSF and NIH are unsolicited or investigator initiated rather, and that BAAs are open for a year or more and often require discussions with program officers or white papers before a full proposal is invited for submission. Moreover, if this framework were used for a two-hour presentation to, for example, an audience involved in writing proposals in engineering and the sciences, a much longer discussion could be given based on slide 5 key words to characterize the BAA process, including some description of what characterizes a well-written white paper

The point is that this example presentation provides a relational framework and organizational scheme for key topics, but leaves it up to the presenter to verbally elaborate on each topic or key word, thereby making it easier to answer audience questions during the presentation. It is worth noting that a more effective presentation can be made when the

presenter encourages questions during rather than at the end of the presentation. This helps to calibrate the presentation and discussion to better fit audience needs. For example, the bulleted topic/key word point on slide 5 "*Understand interdisciplinarity and team grants*" can be discussed in a timeframe of only one minute, or up to an hour or more, since the key words "*interdisciplinarity*" and "*team grants*" can be described at various levels of detail, including characterizing the challenges of writing team grants and team dynamics.

As a further example, the topic point on slide 8, "*Never be hesitant about contacting a program officer for clarifications*" can be quickly stated, or the presenter may go into more detail about contacting a program officer, including a discussion of how best to contact program officers, what to ask and what not to ask program officers, etc.

For yet another example (slide 11), consider the topic point, "*All funded proposals have one common characteristic: the proposal makes a strong and compelling case that the proposed activities will* ***bring value-added benefits to the agency's mission priorities.***" This point can be discussed in a few minutes, or it could easily receive a more expanded discussion related to the meaning of "*value-added benefits*" and how those differ by agency mission. The discussion could include the presenter's observations on the difference between a federal mission agency and a basic research agency, and the role played by agency mission in writing a funded proposal.

The sample PowerPoint presentation used here offers a starting point to identify key topics and key words and a possible logical organization of those topics and words that makes sense in the actual writing of a proposal, i.e., begin with finding funding, read and understand the solicitation, construct a narrative with an understanding of the agency mission and culture, understand the elements of good writing and the narrative mistakes that constitute poor writing, and understand the review process and the criteria on which the proposal will be judged.

This is a good time in the academic calendar to start identifying who in your university community will benefit from a presentation on how to write funded grants. Using this presentation as an initial starting point to adapt, revise, and expand proposals will give presenters a jump start on the topics and key words to cover and the depth of specifics and details to offer in discussing these five core topics of successful grant writing.

The Hallucinatory Proposal Narrative

By Mike Cronan, co-publisher

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No one knows how often Thomas Edison discussed the characteristics of a successful research proposal with his colleagues. Nor is it clear whether or not his observation that "***vision without execution is just hallucination***" was given to those drafting the often required research vision statement in proposals both small and large. Regardless, his quote stands as excellent advice, as well as an admonition, on the role of the vision statement in relation to the rest of the research narrative. Not all proposals require a vision statement, but many do. Some are highly prescribed, some are implicitly described, and others are made to function as an opening designed to quickly capture reviewers' interest.

Vision statements can be challenging to write since they require a clear, concise distillation of a significant research question or research outcome of sufficient importance to make the transition from good science to exciting science in the reviewers' minds. A successful vision statement needs to be brief, typically under 100 words, and memorable to reviewers. It may be among the most challenging 100 words to write in the entire research narrative.

The vision statement is typically introduced in the first sentence of the research narrative, for example, "*The vision motivating the proposed research is to… "*, followed by 50-100 words describing the vision. A well-crafted vision statement will intrigue the reviewers and elicit curiosity and enthusiasm to learn more about the proposed research. Done well, the vision statement motivates the reviewers to read the next 15, 20 or more pages of the research narrative with an enquiring spirit.

In the normal hierarchy of a compelling one-page introduction or project summary to a research narrative, the vision statement is typically followed by a brief, often bulleted description of the project's goal(s) and objectives. Each goal will have operational objectives that offer reviewers the first specifics and details on how a goal(s) will be achieved and how the goal(s) together enable the vision. Goals and objectives also need to be crafted clearly and concisely.

It is worth noting that, depending on the solicitation and agency, different nomenclatures may be used for key parts of the research narrative, e.g., one agency may use the term "specific aims," while another may use "objectives," both meaning the same thing. Or, one solicitation may require a narrative section entitled "research plan," while another may require a section entitled "rationale and approach." In some cases, one agency may prescribe the content and word count for a vision statement,, whereas other agencies may leave it entirely up to the proposal's author.

Regardless of nomenclature, the vision statement, goal(s), and objectives introduced on page 1 of your proposal form the narrative framework of your proposed research. When done well, this statement will quickly engage the interest of the reviewers in your project. This narrative framework sets the stage for and organizes the rest of the proposal, which explains exactly how you will achieve your research vision. To this end, it is critical that the vision statement, goals, and objectives be coupled with a convincing plan for how the proposed

research will be accomplished, creating significant research outcomes that enable the vision. Without this elaboration, Edison's "***vision without execution is just hallucination***" observation becomes an apt characterization of the doomed proposal.

The take away message here is that there must be a very clearly defined and logical stepwise narrative description that takes the reviewer from the vision, goals, and objectives listed on page 1 of the proposal to the anticipated research outcomes listed on page N. The narrative description of **how** you get from a research vision to research outcomes is the key to a successful proposal.

In practice, few proposals overlook the research plan entirely, but many proposals fail to win reviewers' support because the research plan is insufficiently addressed in the research narrative and therefore fails to convince reviewers that the proposed research will succeed. For example, poorly reviewed research plans may be too general and therefore fall short of giving reviewers the specific information they need to judge whether the research vision can be accomplished. In other cases, poorly reviewed research plans over emphasize **what** will be done and give little detail on **how** it will be done. In yet other cases, the research plan is poorly reviewed because it is poorly written, which makes it challenging and confusing for the reviewers to understand. A common reviewer complaint is that the research plan is too general and lacks the specifics required to judge the success of the proposed research.

Moreover, on team proposals, the research plan may suffer because various authors write narrative contributions specific to a research goal, resulting in an overall research plan that seems siloed rather than integrated. Team proposals involving multiple authors often suffer from inconsistencies in descriptions of research goals and objectives. For example, it is not unusual to find slight but important variations in the wording of a specific goal and objective on page 1 of a proposal and later, within a specific section of the research plan. This kind of inconsistency can also occur among various sections of the research plan that address multiple project goals. Inconsistencies among contributing authors' wording of core research specifics and details within the research narrative confuses the reviewers. Unfortunately, it is not an uncommon occurrence.

So when drafting and editing your research narrative, keep Edison's observation in mind as a standard against which to judge whether your vision statement is followed by a convincing plan for successful execution, or whether it is followed by a plan insufficiently compelling to warrant funding.

Research Grant Writing Web Resources

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USDA AFRI Requests for Applications

In fiscal year 2016, the AFRI Program will undergo several phases to streamline the content of all the Request for Applications (RFAs). In so doing, sections of general information that are relevant to each RFA are provided below and can be accessed via a link in the official RFA document. In order to view the important guidance needed to complete a responsive application, please, click on the following link(s):

- Letter of Intent (LOI) Instructions 2016 (LOI_letter_of_intent_2016.docx) (15.5 KB)
- Letter of Intent (LOI) Instructions 2016 (LOI_letter_of_intent_2016.pdf) (157.86 KB)
- Project Types (Project_Types_NIFA.docx) (21.33 KB)
- Project Types (Project_Types_NIFA.pdf) (190.2 KB)
- Application Review Requirements (Review_Criteria_NIFA_0.docx) (28.85 KB)
- Most Successful Universities and Colleges Receiving Federal Funds (Table 1 - Most Successful Institutions - FY 2016 AFRI RFAs.docx) (14.4 KB)
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- Grant Types - FY 2016 AFRI RFA (Grant Type - FY 2016 AFRI RFA.docx) (23.25 KB)
- Grant Types - FY 2016 AFRI RFA (Grant Type - FY 2016 AFRI RFA.pdf) (142.38 KB)

AFRI will solicit its core program through eight separate Request for Applications (RFA). Applicants are encouraged to review each RFA to explore all the opportunities available to them.

SBM/NCI Host Webinar Highlighting Six New NCI Funding Opportunities

The Society of Behavioral Medicine (SBM), a COSSA member, in collaboration with the National Cancer Institute (NCI), held a webinar on Friday, August 12 from 1:30 p.m. to 3:00 p.m. designed to share information about new priorities in behavioral research from NCI in areas such as cognition, integrated data analysis, and cancer communication in new media. Associate Director of the NCI Behavioral Research Program William Kleinwill provide an overview the funding opportunities. The associated NCI Funding Opportunity Announcements are:

- Leveraging Cognitive Neuroscience Research to Improve Assessment of Cancer Treatment Related Cognitive Impairment RO1 (PAR-16-212), R21 (PAR-16-213)
- Predicting Behavioral Responses to Population-Level Cancer Control Strategies R21 (PAR-16-257)
- Improving Smoking Cessation in Socioeconomically Disadvantaged Populations via Scalable Interventions (PAR-16-201), R01 (PAR-16-202)
- Innovative Approaches to Studying Cancer Communication in the New Media Environment R21 (PAR-16-248), R01 (PAR-16-249)
- Cancer-related Behavioral Research through Integrating Existing Data R21 (PAR-16-255), R01 (PAR-16-256)

Stimulating Innovations in Behavioral Intervention Research for Cancer Prevention and Control R21 (PAR-16-278)

Educational Grant Writing Web Resources

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It Takes a Village to Raise an Engineer

We present survey results from grade 3-5 students, focused on student understanding of engineering. The work, supported by a National Science Foundation Math Science Partnership between a large, research-focused university and a high need, urban school system, focuses on bringing the work of engineers to the world of inner city elementary students through an engineering focused in-school curriculum, and an out of school-time experience, supported by community partnerships and guided by engineering mentors. One year of student survey data compared to quasi-experimental control groups are discussed. Comparisons of student responses revealed that after one year of the program, students in the program were able to articulate with greater accuracy what the discipline of engineering is and what engineers do than in the year previous and also in relation to comparable students who had not yet been exposed to the program. These findings have potential positive implications for the impact of community-based partnerships on students understandings of engineering.

Students' Use of Evidence-Based Reasoning in K-12 Engineering: A Case Study

The Next Generation Science Standards (NGSS), along with other documents related to K-12 policy and curriculum, have brought increased attention to engineering content and practices in K-12 classrooms. One of the essential scientific and engineering practices in NGSS is engaging in argument from evidence. In the science education research community, this is represented by the practice of scientific argumentation, which relates to making and supporting claims about phenomena. In engineering, this practice instead relates to developing solutions to engineering problems, through which students can use evidence from science and mathematics, as well as criteria and constraints to support their design decisions. This practice of evidence-based reasoning (EBR) was used as the basis of this study. The following questions were used to guide this research: In what steps of the engineering process of design are students using EBR? and For what purposes are students using EBR when participating in engineering process of design within a STEM integration unit?

This research used an exploratory case study design to investigate one middle student teams' use of EBR in the engineering process of design. This team participated in a STEM integration unit with a life science focus. Transcripts of audio recordings of the team's discussions and student worksheets filled out during the engineering lessons were analyzed in three steps. Toulmin's Argument Pattern was used to identify instances of EBR within students' oral and written communication. The Framework for Quality K-12 Engineering Education was then used to determine in which steps of the process of design these instances occurred. Finally, open coding was used to identify the purposes for which students were using EBR in the process of design.

Professional Development for the Integration of Engineering in High School STEM Classrooms

Science, Technology, Engineering, and Mathematics (STEM) education in the U.S. is in transition. The recently published A Framework for K-12 Science Education: Practices,

Crosscutting Concepts, and Core Ideas as well as the Next Generation Science Standards are responsive to this call and clearly articulate a vision that includes engineering practices as key components. This shift presents significant challenges to school districts owing to a stark lack of research-based engineering-focused instructional materials and corresponding teacher professional development. The purpose of this study was to investigate the impact of a professional development program on high school STEM teachers' ability to enact design-based pedagogical practices associated with the pre-selected engineering design curriculum (INSPIRES Engineering in Healthcare: A Heart-Lung System Case Study). Data were generated through evaluation of teacher practice using the Reformed Teaching Observation Protocol (RTOP). Findings demonstrated that RTOP scores were statistically significant.

Student Understanding of the Engineering Design Process Using Challenge Based Learning

In this study conducted in a large metropolitan city, teachers introduced and implemented CBL in the curriculum. One research objective of the study was to teach middle and high school students the engineering design process (EDP) while solving a real world challenge using Challenge Based Learning (CBL). The EDP is the formulation of a plan to help an engineer build a product or formulate a process with a specified performance goal. Because there are performance characteristics as well as constraints, there will typically be a variety of potential solutions. EDP involves a number of steps, and parts of the process may need to be repeated many times before production of a final product can begin. Students were asked to draw their understanding of the EDP at the conclusion of the CBL curricular Unit. Specifically, we observed the nature of students' misconceptions and the effects CBL pedagogy has on conceptual understanding of the EDP.

Agency Research News

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Dear Colleague Letter: Data Resources for the BRAIN Initiative

NSF supports fundamental research across the broad spectrum of disciplines associated with Understanding the Brain (see https://www.nsf.gov/brain), and is a partner in the federal "Brain Research through Advancing Innovative Neurotechnologies" (BRAIN) Initiative. This broad interagency effort is supporting projects that are using different combinations of technologies and model organisms, generating multi-modal data sets aimed at understanding specific circuit contributions to brain function. These data sets include systematic collections of molecular profiles, anatomic information, functional properties of brain cells, as well as neuronal activity data, connectivity maps and high-resolution data on complex behaviors. Current Brain Initiative projects, thematic areas and programs supported by NIH or NSF can be found at the following websites:

- NIH Link: http://www.braininitiative.nih.gov/funding/fundedAwards.htm
- NSF Link: https://www.nsf.gov/news/special_reports/brain/initiative/

The large and complex datasets generated by these projects are representative of trends in the field, and NSF recognizes the need for novel approaches to manage, integrate and analyze these diverse data types. With this Dear Colleague Letter, NSF calls attention to core programs at NSF that support informatics, software and cyberinfrastructure projects in a broad range of disciplines, including neuroscience. More specifically, NSF is encouraging researchers with expertise in data science to partner with BRAIN Initiative projects to enhance the dissemination and utilization of these data sets. This DCL is part of NSF's phased approach to develop a national research'infrastructure for neuroscience as outlined in the Dear Colleague Letter NSF 16-047. The standing core programs or solicitations at NSF that are most relevant to this effort include:

- Advances in Biological Informatics (ABI): https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5444
- Software Infrastructure for Sustained Innovation (SI2): http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503489&org=NSF
- Data Infrastructure Building Blocks (DIBBs): http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504776&org=ACI&from=home

In order to take advantage of this Dear Colleague Letter, please contact a relevant Program Officer listed on the Program websites above.

DCL: NSF Support for DARPA Spectrum Collaboration Challenge (SC2) Participants

Over the last five years, the National Science Foundation (NSF), through its Networking Technology and Systems (NeTS) and Enhancing Access to the Radio Spectrum (EARS) programs, has invested extensively in spectrum sharing research. In March 2016, in response to the challenge described above — the increasing demand for wireless spectrum — the Defense Advanced Research Projects Agency (DARPA) announced a Spectrum Collaboration Challenge (SC2) that aims to reward teams for developing smart systems that collaboratively, rather than

competitively, adapt in real time to today's fast-changing, congested spectrum environment. In particular, SC2 aims to redefine the conventional spectrum management roles of humans and machines in order to maximize the flow of radio frequency (RF) signals. SC2 is structured in three yearlong phases, and is open to anyone. However, only a limited number of SC2 participants will receive support from DARPA for their challenge-related activities.

Through this Dear Colleague Letter (DCL), NSF's Directorate for Computer and Information Science and Engineering (CISE) encourages academic researchers to participate in SC2, and announces its intention to support those researchers to pursue novel strategies in spectrum collaboration as part of SC2. **NSF support is restricted to those researchers who are SC2 participants but are not being funded by DARPA for SC2 specifically**. SC2 participation requires time and effort to develop, validate, and test novel strategies for wireless spectrum collaboration.

NSF intends to accept proposals from academic researchers actively engaged in SC2 in one of two ways: (i) supplemental funding requests to existing NeTS/EARS awards on wireless spectrum research; or (ii) EArly-concept Grants for Exploratory Research (EAGER) (see NSF's *Grant Proposal Guide (GPG)*, Chapter II.D.2, for proposal preparation instructions).
Prior to submitting a supplemental funding request or EAGER proposal, a one-page summary of the research to be proposed should be emailed to Thyaga Nandagopal (tnandago@nsf.gov). That summary should include a synopsis of the proposed approach, details of the team's composition, recent research results from the team in spectrum collaboration, and evidence of the team's participation in SC2 (e.g., the team's relative ranking in SC2).

Dear Colleague Letter - Collaborative Supplemental Funding Opportunity in Graphene and 2D Layered Materials and Devices under the U.S. NSF/ENG - US-EC International Opportunity
The Directorate for Engineering (ENG) of the National Science Foundation (NSF) is pleased to announce a U.S.-EU collaborative research opportunity. The goal is to enable research synergy through international collaboration and reduce some of the current barriers to working internationally. NSF/ENG, the NSF Office of International Science and Engineering (OISE) and the Directorate-General for Communications Networks, Content and Technology of the European Commission (EC) will address these points by allowing U.S. and EU researchers to submit requests for funding that will be considered as supplements to existing grants. More specifically, this will be in the form of funding available for international collaboration between the U.S. and the EU in the area of Graphene and two-dimensional (2D) Layered Materials and Devices.

NSF would like to make existing grantees aware of additional government funding to support international collaborations in the areas of Graphene and 2D Layered Materials and Devices. The funding mechanisms available through two of these Agencies (AFOSR and ARO) are described below. Proposers are encouraged to discuss with the appropriate contact person listed at the end of the Dear Colleague Letter which would be the most appropriate mechanism for funding collaborative efforts.

Air Force Office of Scientific Research (AFOSR) funding opportunities: Several portfolios within AFOSR (http://www.wpafb.af.mil/afrl/afosr/) support basic research on 2D materials. Each portfolio manager or associated program has the opportunity to support international collaborations and exchanges. Please refer to the following links for more information:

http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=16662 and http://www.grants.gov/web/grants/view-opportunity.html?oppId=276388. AFOSR's International Office manages additional programs that support international student exchanges. The exchanges, which may be for students either to or from a US institution, must be as part of a current AFOSR grant. ***AFOSR contact: Kenneth Goretta, kenneth.goretta@us.af.mil.***

Army Research Office (ARO) funding opportunities: The ARO (http://www.arl.army.mil/www/default.cfm?page=29) is very much interested in advancing Army relevant, long term, basic research areas in 2D materials. Investigators working in these areas in the US and Europe are encouraged to refer to ARO's Broad Agency Announcements (BAA) at http://www.arl.army.mil/www/default.cfm?page=8 or the US Army International Technology Center at http://www.rdecom.army.mil/rfecatl/ to get more details about the current programs and funding opportunities. ***ARO contact: Chakrapani Varanasi, chakrapani.v.varanasi.civ@mail.mil.***

Dear Colleague Letter: Support for Engaging Students and the Public in Polar Research

The Geosciences and Education and Human Resources Directorates are partnering to advance and develop understanding of learning environments that build upon the rich interdisciplinary resources emerging from polar investments. To that end, the Division of Polar Programs (PLR), the Division of Undergraduate Education (DUE) and the Division of Research on Learning (DRL) encourage proposals that will leverage the extensive National Science Foundation (NSF) investment in polar sciences and infrastructure, and STEM education research and development, to promote an informed citizenry and the next generation of polar scientists. In order to advance polar science educational opportunities, PLR, DUE and DRL will accept and review proposals for research and development projects **that facilitate access to polar research efforts in (1) undergraduate education, (2) informal science education or (3) formal PK-12 science or math education**. Proposals must be submitted to either the Improving Undergraduate Science Education: Education and Human Resources (IUSE: EHR) deadline of November 2, 2016, the Advancing Informal STEM Learning (AISL) deadline of November 8, 2016, or the Discovery Research PreK-12 (DRK-12) deadline of December 5, 2016.

The integration of research and education is essential to NSF's mission (see the current NSF Strategic Plan). In addition, NSF strives to broaden participation in science and to make the results of research projects widely accessible to students and the public. Specifically, PLR seeks to meet these objectives by supporting the engagement of students, educators, and the public in polar research projects. While participation of educators and students in both Arctic and Antarctic research projects is encouraged, logistics are often difficult and expensive. Therefore, PLR, DUE, and DRL encourage education research and development proposals that make use of innovative technology for remote communication to give large groups of students, educators and the public access to polar research efforts in the polar regions without requiring all participants to travel there. Proposals that engage audiences with long-term investments in polar research and logistics (e.g. the Arctic or Antarctic science stations), with databases that have extended lifespans, (e.g. data from the Arctic Observing Network), or with public participation in scientific research, such as crowdsourcing or citizen science related to the Arctic, are particularly encouraged.

In addition to addressing polar STEM content, proposals should clearly articulate how they advance understanding of one of the three EHR core research areas: (1) Learning and Learning Environments, (2) Broadening Participation, or (3) Workforce Development. Projects should explain plans for sustaining access to data and resources for a period that extends well beyond the end of any potential award and for evaluating the outcomes of the investment in education research and development. In order to support the goals above, NSF encourages the submission of proposals to any of three solicitations issued by the Directorate for Education and Human Resources:

- Improving Undergraduate Science Education: Education and Human Resources (IUSE:EHR) solicitation for the November 2, 2016 deadline.
- Advancing Informal STEM Learning (AISL) deadline of November 8, 2016
- Discovery Research K-12 (DRK-12) deadline of December 5, 2016.

Proposals must be identified by starting the proposal title with the term: "Polar (DCL- 16-119): (*Insert Project Title Here*)" If travel to the polar regions is included in the project, PIs are strongly encouraged to call the program officer to discuss logistics and related documentation that must be included in the proposal.

Agency Reports, Workshops & Research Roadmaps

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NASA Space Technology Roadmaps and Priorities Revisited

Historically, the United States has been a world leader in aerospace endeavors in both the government and commercial sectors. A key factor in aerospace leadership is continuous development of advanced technology, which is critical to U.S. ambitions in space, including a human mission to Mars. To continue to achieve progress, NASA is currently executing a series of aeronautics and space technology programs using a roadmapping process to identify technology needs and improve the management of its technology development portfolio. NASA created a set of 14 draft technology roadmaps in 2010 to guide the development of space technologies. In 2015, NASA issued a revised set of roadmaps. A significant new aspect of the update has been the effort to assess the relevance of the technologies by listing the enabling and enhancing technologies for specific design reference missions (DRMs) from the Human Exploration and Operations Mission Directorate and the Science Mission Directorate. NASA Space Technology Roadmaps and Priorities Revisited prioritizes new technologies in the 2015 roadmaps and recommends a methodology for conducting independent reviews of future updates to NASA's space technology roadmaps, which are expected to occur every 4 years.

Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020

Advanced computing capabilities are used to tackle a rapidly growing range of challenging science and engineering problems, many of which are compute- and data-intensive as well. Demand for advanced computing has been growing for all types and capabilities of systems, from large numbers of single commodity nodes to jobs requiring thousands of cores; for systems with fast interconnects; for systems with excellent data handling and management; and for an increasingly diverse set of applications that includes data analytics as well as modeling and simulation. Since the advent of its supercomputing centers, the National Science Foundation (NSF) has provided its researchers with state-of-the-art computing systems. The growth of new models of computing, including cloud computing and publically available by privately held data repositories, opens up new possibilities for NSF. In order to better understand the expanding and diverse requirements of the science and engineering community and the importance of a new broader range of advanced computing infrastructure, the NSF requested that the National Research Council carry out a study examining anticipated priorities and associated tradeoffs for advanced computing. Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science and Engineering in 2017-2020 provides a framework for future decision-making about NSF's advanced computing strategy and programs. It offers recommendations aimed at achieving four broad goals: (1) position the U.S. for continued leadership in science and engineering, (2) ensure that resources meet community needs, (3) aid the scientific community in keeping up with the revolution in computing, and (4) sustain the infrastructure for advanced computing.

A Universal Process: How Mind and Matter Seem to Work

There are scientific reports suggesting striking similarities between the structures of networked systems, ranging from the tiny brain cells to atoms, to the Internet, and all the way up to even the galaxies. It is further argued that the similarities might be due to the existence of a universal natural growth process. At the microscopic level we do not yet know what that mechanism might be, however, we do have some significant clues at the macroscopic level, which do indicate that both mind (a network of the brain cells) and matter (i.e., network of atoms, molecules, planets, and galaxies) operate similarly. This article attempts to briefly explain such similarities using an abstract growth process and a structural representation along with some general concepts from computing, cognitive and natural sciences. This operational structure is well aligned with the latest empirical research on cognitive psychology and neuroscience. Technology tools whose pedagogical use is also aligned with our operational structure of the mind have been found to consistently increase student engagement and achievement in secondary schools. The same growth process and structural representation seem to describe the behavior and growth of the matter in the universe in many ways we can all relate to. Our interdisciplinary experience and analysis of analogies in different fields offer support to reports by the physicists and biologists about existence of a universal growth mechanism.

NCES Status and Trends in the Education of Racial and Ethnic Groups 2016

This report profiles current conditions and recent trends in the education of students by racial and ethnic group. It presents a selection of indicators that examine differences in educational participation and attainment of students in the racial/ethnic groups of White, Black, Hispanic, Asian, Native Hawaiian or Other Pacific Islander, American Indian/Alaska Native, and Two or more races. The report summarizes data on topics such as demographics; preprimary, elementary, and secondary participation; student achievement; student behaviors and persistence in education, postsecondary education, and outcomes of education.

NSF Workshop on Portable Seismic Systems and Commercial Seismic Acquisition

Science Literacy: Concepts, Contexts, and Consequences (2016)

Science is a way of knowing about the world. At once a process, a product, and an institution, science enables people to both engage in the construction of new knowledge as well as use information to achieve desired ends. Access to science—whether using knowledge or creating it—necessitates some level of familiarity with the enterprise and practice of science: we refer to this as science literacy. Science literacy is desirable not only for individuals, but also for the health and well- being of communities and society. More than just basic knowledge of science facts, contemporary definitions of science literacy have expanded to include understandings of scientific processes and practices, familiarity with how science and scientists work, a capacity to weigh and evaluate the products of science, and an ability to engage in civic decisions about the value of science. Although science literacy has traditionally been seen as the responsibility of individuals, individuals are nested within communities that are nested within societies—and, as a result, individual science literacy is limited or enhanced by the circumstances of that nesting. *Science Literacy* studies the role of science literacy in public support of science. This report synthesizes the available research literature on science literacy, makes recommendations on

the need to improve the understanding of science and scientific research in the United States, and considers the relationship between scientific literacy and support for and use of science and research.

Computational Thinking for All: Pedagogical Approaches to Embedding 21st Century Problem Solving in K-12 Classrooms

The recent focus on computational thinking as a key 21st century skill for all students has led to a number of curriculum initiatives to embed it in K-12 classrooms. In this paper, we discuss the key computational thinking constructs, including algorithms, abstraction, and automation. We further discuss how these ideas are related to current educational reforms, such as Common Core and Next Generation Science Standards and provide specific means that would allow teachers to embed these ideas in their K-12 classrooms, including recommendations for instructional technologists and professional development experts for infusing computational thinking into other subjects. In conclusion, we suggest that computational thinking ideas outlined in this paper are key to moving students from merely being technology-literate to using computational tools to solve problems.

New Funding Opportunities

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Content Order

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

[User Note: URL links are active on date of publication, but if a URL link breaks or changes a Google search on the key words will typically take you to a working link. Also, entering a grant title and/or solicitation number in the Grants.gov search box will work as well.]

New Funding Solicitations Posted Since July 15 Newsletter

DOE OS Early Career Research Program

The Office of Science of the Department of Energy hereby invites grant applications for support under the Early Career Research Program in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. **Preapplication due Sept. 8; invite Oct. 6; full Nov. 14.**

V. Kann Rasmussen Foundation

The V. Kann Rasmussen Foundation was founded with the aim of strengthening environmental research, including research on climate change, unsustainable consumption, and loss of biodiversity. The foundation gives priority in its grantmaking to projects that take stock of the scale of environmental problems; use a systems approach to achieve change; link policy, advocacy, and practical solutions; have international significance and perspective (even if U.S.-based); and incorporate original thinking and creative ideas. Currently, the foundation is considering projects or tools that promote ecosystem resilience and restoration of relevance to large geographic areas, including countries and continents; natural greenhouse gas sequestration and storage with large-scale impact potential; agro-biodiversity; and economic models of living within global limits and the practical implementation of changes needed to achieve sustainable consumption/production and a stable global ecosystem. Projects that communicate value-based living; new initiatives aimed at enhancing international cooperation and knowledge-sharing; and next generation leadership are also encouraged. **Letter of Intent deadline, September 14.**

DE-FOA-0001461: Funding Opportunity Announcement (FOA) Number DE-FOA-0001461: Co-Optimization of Fuels and Engines

The U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), Bioenergy Technologies Office (BETO) and Vehicle Technologies Office (VTO) announce a joint funding opportunity in support of the Co-Optimization of Fuels and Engines (Co-Optima) initiative. Eligibility for this FOA is restricted to U.S. Institutions of Higher Education and non-profit research institutions that operate as a division under the U.S. Institutions of Higher Education. This restricted eligibility applies to both Prime Recipients and Subrecipients. The Co-Optima initiative seeks to accelerate the introduction of affordable, scalable, and sustainable high performance fuels for use in high-efficiency, low-emission engines. This first-of-its-kind effort brings together multiple DOE offices, DOE National Laboratories, and industry stakeholders to simultaneously conduct tandem fuel and engine research and development and deployment assessment in order to maximize energy savings and on-road vehicle performance, while dramatically reducing transportation-related petroleum consumption and greenhouse gas (GHG) emissions. **Concept Letter deadline, September 18.**

Platforms for Advanced Wireless Research (PAWR): Establishing the PAWR Project Office (PPO) (PAWR/PPO)

The Platforms for Advanced Wireless Research(PAWR) program aims to support advanced wireless research platforms conceived by the U.S. academic and industrial wireless research community. PAWR will enable experimental exploration of robust new wireless devices, communication techniques, networks, systems, and services that will revolutionize the nation's wireless ecosystem, thereby enhancing broadband connectivity, leveraging the emerging Internet of Things (IoT), and sustaining US leadership and economic competitiveness for decades to come. In order to support the design, development, deployment, and operations of the advanced wireless research platforms, the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) will support the work of a PAWR Project Office (PPO). Working closely with the wireless research community, the PPO will assume responsibility for design, development, and deployment of a set of advanced wireless research platforms. Upon successful completion of the design of advanced wireless research platforms, and contingent upon support from NSF management, the PPO will proceed to the development and deployment phases with funding provided by NSF as well as a PAWR Industry Consortium. Upon successful deployment of each individual research platform, the PPO may subsequently operate the platform in service to the wireless research community. **Preliminary due September 20; full November 23.**

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 October 11.**

NRC-HQ-60-17-FOA-0001 U.S. Nuclear Regulatory Commission Funding Opportunity Announcement (FOA), Scholarship and Fellowship Education Grant, Faculty Development Grant, and Trade School and Community College Scholarship Grant, Fiscal Year (FY) 2017. Nuclear Regulatory Commission

The primary objective is to support scholarships for nuclear science, engineering, technology and related disciplines to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. The nuclear-related discipline supported by this funding is intended to benefit nuclear safety and security sector broadly. • **Fellowship** - The primary objective is to support fellowships for nuclear science, engineering, technology and related disciplines to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. The nuclear related discipline supported by this funding is intended to benefit the nuclear sector broadly. • **Faculty Development** - The primary objective is to support faculty development for nuclear science, engineering, technology and related disciplines to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. Proposed faculty can be supported for up to one 3 year period. The objectives are to attract and retain highly-qualified individuals in academic teaching careers. The grants specifically target probationary, tenure-track faculty during the first 6 years of their career and new faculty hires in the following academic areas: Nuclear, Mechanical, Civil, Environmental, Electrical, Fire Protection, and Materials Sciences Engineering as well as Health Physics. The NRC has interest in topics including but not limited to Fuels, Neutronics, Thermal-hydraulics, Accident-Progression (e.g., performance of safety relief valves), Consequence, Emergency Preparedness, and Radiation Protection Analysis; Radiochemistry, Probabilistic Risk Assessment, Seismology, Fire Risk Analysis, advanced reactor (non-light water reactor), safety systems and other related disciplines. Grants may include support for developing applications for new research or continuing research projects in their areas of expertise. The program provides support to enable newer faculty to enhance their careers as professors and researchers in the university department where employed. The research supported by this announcement is intended to benefit the nuclear sector broadly. • **Trade School and Community College Scholarships** - The primary objective is to support scholarships for nuclear science, engineering, technology, and related disciplines to develop a workforce capable of supporting the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials. The nuclear-related discipline supported by this funding is intended to benefit the nuclear sector broadly. **Due October 14.**

Promoting Sustainable Agriculture

The North Central Region Sustainable Agriculture Research and Education Program (NCR-SARE) is seeking grant funding pre-proposals which must address issues of sustainable agriculture of current and potential importance to the North Central Region. NCR-SARE is interested in projects that lead to resilient agricultural systems. Successful projects should contribute to the following NCR-SARE broad-based outcomes: Improving the profitability of farmers/ranchers and associated agricultural businesses; Sustaining and improving the environmental quality and natural resource base on which agriculture depends; and Enhancing the quality of life for farmers/ranchers, communities, and society as a whole. **Due October 20.**

Environmental Sustainability

The goal of the NSF Environmental Sustainability program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions. There are four principal general research areas that are supported: 1) Industrial Ecology; 2) Green Engineering; 3) Ecological Engineering; and 4) Earth Systems Engineering. **Due October 20.**

NOAA-NMFS-SE-2017-2005000 Fiscal Year 2017 NOAA Gulf of Mexico Bay-Watershed Education and Training (B-WET) Program

The National Marine Fisheries Service Southeast Regional Office (Fisheries Southeast Regional Office) is seeking proposals under the Gulf of Mexico B-WET Program (http://sero.nmfs.noaa.gov/outreach_education/gulf_b_wet/). The Gulf of Mexico B-WET program is a competitive, environmental education, grants 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 Oct. 28.**

DOE/OS Early Career Research Program

The Office of Science of the Department of Energy hereby invites grant applications for support under the Early Career Research Program in the following program areas: Advanced Scientific Computing Research (ASCR); Biological and Environmental Research (BER); Basic Energy Sciences (BES), Fusion Energy Sciences (FES); High Energy Physics (HEP), and Nuclear Physics (NP). The purpose of this program is to support the development of individual research programs of outstanding scientists early in their careers and to stimulate research careers in the areas supported by the DOE Office of Science. Due November 14.

URL Links to New & Open Funding Solicitations

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

- NETL Open Solicitations
- DoED List of Currently Open Grant Competitions
- Foundation Center RFP Weekly Funding Bulletin

Solicitations Remaining Open from Prior Issues of the Newsletter

Developing a National Research Infrastructure for Neuroscience (NeuroNex)
The goal of this solicitation is to foster the development and dissemination of (1) innovative research resources, instrumentation, and neurotechnologies, and (2) theoretical frameworks for understanding brain function across organizational levels, scales of analysis, and/or a wider range of species, including humans. This interdisciplinary program is one element of NSF's broader effort directed at Understanding the Brain, a multi-year activity that includes NSF's participation in the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative (http://www.nsf.gov/brain/) and the phased approach to develop a national research infrastructure for neuroscience as outlined in the Dear Colleague Letter NSF16-047. NSF envisions a connected portfolio of transformative, integrative projects that create synergistic links across investigators and communities, yielding novel ways of tackling the challenges of understanding the brain in action and in context. This program solicits proposals that will develop and disseminate innovative neurotechnologies and/or theoretical frameworks that will transform our understanding of the linkages between neural activity and cognition and behavior across different systems, environments, and species, while also providing an avenue for widespread dissemination of these technologies and theoretical frameworks as well as broad training opportunities. **LOI September 2; full October 21**.

Agriculture and Food Research Initiative - Foundational Program
The AFRI Foundational Program is offered to support grants in the six AFRI priority areas to continue building a foundation of knowledge critical for solving current and future societal challenges. The six priority areas are: Plant Health and Production and Plant Products; Animal Health and Production and Animal Products; Food Safety, Nutrition, and Health; Bioenergy, Natural Resources, and Environment; Agriculture Systems and Technology; and Agriculture Economics and Rural Communities. Single-function Research Projects, multi-function Integrated Projects, and Food and Agricultural Science Enhancement (FASE) Grants are expected to address one of the Program Area Priorities (see Foundational Program RFA for details). **Due September 10.**

Joint DMS/NIGMS Initiative to Support Research at the Interface of the Biological and Mathematical Sciences (DMS/NIGMS)
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 program is designed to encourage new collaborations, as well as to support existing ones. **Due September 14.**

Partnerships for International Research and Education (PIRE)

Partnerships for International Research and Education (PIRE) is an NSF-wide program that supports international activities across all NSF-supported disciplines. The primary goal of PIRE is to support high quality projects in which advances in research and education could not occur without international collaboration. PIRE seeks to catalyze a higher level of international engagement in the U.S. science and engineering community. International partnerships are essential to addressing critical science and engineering problems. In the global context, U.S. researchers and educators must be able to operate effectively in teams with partners from different national environments and cultural backgrounds. PIRE promotes excellence in science and engineering through international collaboration and facilitates development of a diverse, globally-engaged, U.S. science and engineering workforce. This PIRE competition will be open to all areas of science and engineering research which are supported by the NSF. **Preliminary due September 14; full April 24.**

Prediction of and Resilience against Extreme Events National Science Foundation

Natural disasters cause thousands of deaths annually, and in 2013 alone caused over $130 billion in damage worldwide. There is clear societal need to better understand and mitigate the risks posed to the US by natural hazards, consistent with the mandate of the National Science Foundation (NSF);to promote the progress of science [and] advance the national health, prosperity, and welfare; NSF and the Directorate for Geosciences (GEO) have long supported basic research in scientific and engineering disciplines necessary to understand natural hazards and extreme events, including through the Interdisciplinary Research in Hazards and Disasters (Hazards SEES) program and multiple core programs in the GEO Directorate. PREEVENTS is designed as a logical successor to Hazards SEES and is one element of the NSF-wide Risk and Resilience activity, which has the overarching goal of improving predictability and risk assessment, and increasing resilience, in order to reduce the impact of extreme events on our life, society, and economy. PREEVENTS will provide an additional mechanism to support research and related activities that will improve our understanding of the fundamental processes underlying natural hazards and extreme events in the geosciences. PREEVENTS is focused on natural hazards and extreme events, and not on technological or deliberately human-caused hazards. The PREEVENTS portfolio will include the potential for disciplinary and multidisciplinary research at all scales, particularly aimed at areas ripe for significant near- or medium-term advances. PREEVENTS seeks projects that will (1) enhance understanding of the fundamental processes underlying natural hazards and extreme events on various spatial and temporal scales, as well as the variability inherent in such hazards and events, and (2) improve our capability to model and forecast such hazards and events. All projects requesting PREEVENTS support must be primarily focused on these two targets. In addition, PREEVENTS projects will improve our understanding of the effects of natural hazards and extreme events and will enable development, with support by other programs and organizations, of new tools to enhance societal preparedness and resilience against such impacts. **Due September 19.**

Agriculture and Food Research Initiative Sustainable Bioenergy and Bioproducts (SBEBP) Challenge Area

In the Agriculture and Food Research Initiative Sustainable Bioenergy and Bioproducts (SBEBP) Challenge Area specific program areas are designed to achieve the long term outcome of reducing the national dependence on foreign oil through the development and production of regionally-appropriate sustainable bioenergy systems that materially deliver advanced liquid transportation biofuels, biopower, and bioproducts. **Due September 22.**

AFRI Sustainable Bioenergy and Bioproducts RFA

In the Agriculture and Food Research Initiative Sustainable Bioenergy and Bioproducts (SBEBP) Challenge Area specific program areas are designed to achieve the long term outcome of reducing the national dependence on foreign oil through the development and production of regionally-appropriate sustainable bioenergy systems that materially deliver advanced liquid transportation biofuels, biopower, and bioproducts. In FY2016, the SBEBP is soliciting applications in the following priority areas: (1) Regional Bioenergy Coordinated Agricultural Projects (CAPs) that focus on the production and delivery of regionally-appropriate sustainable biomass feedstocks for bioenergy and bioproducts. While the focus of CAPs will be on feedstocks, competitive proposals must present the feedstock development and production in the context of a comprehensive regional sustainable bioenergy and bioproducts supply chain systems; and (2) Investing in America's Scientific Corps: Preparing a New Generation of Students, Faculty, and Workforce for Emerging Challenges in Bioenergy, Bioproducts, and the Bioeconomy. The anticipated amount available for grants in FY 2016 is approximately $21 million. **Due September 22.**

Bridges to the Baccalaureate (R25)

The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. The over-arching goal of this NIGMS R25 program is to support educational activities that enhance the diversity of the biomedical, behavioral and clinical research workforce. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on Courses for Skills Development, Research Experiences, and Curriculum or Methods Development. A proposed program must include each activity and describe how they will be integrated. The Bridges to Baccalaureate Program is intended to provide these activities to community college students to increase transfer and retention to BS graduation in biomedical sciences. This program requires partnerships between community colleges or other two-year post-secondary educational institutions granting the associate degree with colleges or universities that offer the baccalaureate degree. Applicants should directly address how the set of activities will complement and/or enhance the training of a workforce to meet the nation's biomedical and clinical research needs by discussing 1) the rationale underlying the balance of effort and resources dedicated to each activity; 2) how the activities integrate; and 3) objective indicators that can measure the effectiveness of the program. Recruitment and retention plans are required elements of the program. **Due September 25**.

Bridges to the Doctorate (R25)

The NIH Research Education Program (R25) supports research education activities in the mission areas of the NIH. The over-arching goal of this NIGMS R25 program is to support educational activities that enhance the diversity of the biomedical, behavioral and clinical research workforce. To accomplish the stated over-arching goal, this FOA will support creative educational activities with a primary focus on Courses for Skills Development and Research Experiences. The Bridges to Doctorate Program is intended to provide these activities to master's level students to increase transition to and completion of PhDs in biomedical sciences. This program requires partnerships between master's degree-granting institutions with doctorate degree-granting institutions. Applicants should directly address how the set of activities will complement and/or enhance the training of a diverse workforce that also meets the nation's biomedical and clinical research needs by discussing 1) the rationale underlying the balance of effort and resources dedicated to each activity; 2) how the activities integrate; and 3) objective indicators that can measure the effectiveness of the program. A program application must include each activity, and describe how they will be synergized to make a comprehensive program. Additionally, recruitment and retention plans are expected as part of the application. **Due September 25.**

Joint NSF/NIH Initiative on Quantitative Approaches to Biomedical Big Data (QuBBD)

Recent advances in medical and healthcare technologies are creating a paradigm shift in how medical practitioners and biomedical researchers approach the diagnosis, prevention, and treatment of diseases. New imaging technologies, advances in genetic testing, and innovations in wearable and/or ambient sensors are allowing researchers to predict health outcomes and develop personalized treatments or interventions. Coupled with the rapid growth in computing and infrastructure, researchers now have the ability to collect, store, and analyze vast amounts of health- and disease-related data from biological, biomedical, behavioral, social, environmental, and clinical studies. The explosion in the availability of biomedical big data from disparate sources, and the complex data structures including images, networks, and graphs, pose significant challenges in terms of visualization, modeling, and analysis. While there have been some encouraging developments related to foundational mathematical, statistical, and computational approaches for big data challenges over the past decade, there have been relatively few opportunities for collaboration on challenges related to biomedical data science. The National Science Foundation (NSF) and the National Institutes of Health (NIH) recognize that fundamental questions in basic, clinical, and translational research could benefit greatly from multidisciplinary approaches that involve experts in quantitative disciplines such as mathematics, statistics, and computer science. The Quantitative Approaches to Biomedical Big Data Program is designed to support research that addresses important application areas at the intersection of the biomedical and data sciences by encouraging inter- and multi-disciplinary collaborations that focus on innovative and transformative approaches to address these challenges. **Due September 28.**

20160929-FT Summer Stipends National Endowment for the Humanities

Summer Stipends support individuals pursuing advanced research that is of value to humanities scholars, general audiences, or both. Eligible projects usually result in articles, monographs, books, digital materials and publications, 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 consecutive months. Summer Stipends support projects at any stage of development. D**ue September 29.**

N00014-16-R-FO05 Multidisciplinary Research Program of the University Research Initiative Department of Defense Office of Naval Research

The MURI program supports basic research in science and engineering at U.S. institutions of higher education (hereafter referred to as "universities") that is of potential interest to DoD. The program is focused on multidisciplinary research efforts where more than one traditional discipline interacts to provide rapid advances in scientific areas of interest to the DoD. As defined in the DoD Financial Management Regulation: Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high payoff research that provides the basis for technological progress (DoD 7000.14-R, vol. 2B, chap. 5, para. 050201.B). DoD's basic research program invests broadly in many specific fields to ensure that it has early cognizance of new scientific knowledge. The FY 2017 MURI competition is for the topics listed below. Detailed descriptions of the topics and the Topic Chief for each can be found in Section VIII, entitled, "Specific MURI Topics," of this FOA. The detailed descriptions are intended to provide the offeror a frame of reference and are not meant to be restrictive to the possible approaches to achieving the goals of the topic and the program. **Due November 15.**

USDA-NIFA-AFRI-005942 Agriculture and Food Research Initiative - Agriculture and Natural Resources Science for Climate Variability and Change Challenge Area

This AFRI Challenge Area focuses on the priority to mitigate and adapt to climate variability and change. It supports activities that reduce greenhouse gas emissions, increase carbon sequestration in agricultural and forest production systems, and prepare the nation's agriculture and forests to adapt to variable climates. The long-term outcome for this program is to reduce the use of energy, nitrogen fertilizer, and water by ten percent and increase carbon sequestration by fifteen percent through resilient agriculture and forest production systems. In order to achieve this outcome, this program will support multi-function Integrated Research, Education, and/or Extension Projects and Food and Agricultural Science Enhancement (FASE) Grants. **Due November 17.**

Research Interests of the Air Force Office of Scientific Research BAA-AFRL-AFOSR-2016-0007

The Air Force Office of Scientific Research "we, us, our, or AFOSR" manages the basic research investment for the U.S. Air Force. As a part of the Air Force Research Laboratory (AFRL), our technical experts discover, shape, and champion research within the Air Force Research Laboratory, universities, and industry laboratories to ensure the transition of research results to support U.S. Air Force needs. Using a carefully balanced research portfolio, our research managers seek to foster revolutionary scientific breakthroughs enabling the Air Force and U.S.

industry to produce world-class, militarily significant, and commercially valuable products. Our focus is on research areas that offer significant and comprehensive benefits to our national warfighting and peacekeeping capabilities. These areas are organized and managed in two scientific Branches: Engineering and Information Sciences (RTA) Physical and Biological Sciences (RTB). **Open until superseded**.

Open Solicitations and BAAs

[BAA's remain open for one or more years. During the open period, agency research priorities may change or other modifications are made to a published BAA. If you are submitting a proposal in response to an open solicitation, as below, check for modifications to the BAA at Grants.gov or by utilizing Modified Opportunities by Agency to receive a Grants.gov notification of recently modified opportunities by agency name.]

FY 2016 Continuation of Solicitation for the Office of Science Financial Assistance Program

The Office of Science (SC) 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, and Nuclear Physics. On September 3, 1992, DOE published in the Federal Register the Office of Energy Research Financial Assistance Program (now called the Office of Science Financial Assistance Program), 10 CFR 605, as a Final Rule, which contained a solicitation for this program. Information about submission of applications, eligibility, limitations, evaluation and selection processes and other policies and procedures are specified in 10 CFR 605. This Funding Opportunity Announcement (FOA), DE-FOA-0001414, is our annual, broad, open solicitation that covers all of the research areas in the Office of Science and is open throughout the Fiscal Year. **This FOA will remain open until September 30, 2016**, 11:59 PM Eastern Time, or until it is succeeded by another issuance, whichever occurs first.

DoD USAMRMC FY16 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 Service member at home and abroad, as well as to the general public at large. 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 programs play 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/ . This Fiscal Year 2016 (FY16) 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 (FAR) 6.102(d)(2) and 35.016. In accordance with FAR 35.016, projects funded under this BAA must be for basic and applied research and that part of development not related to the development of a specific system or hardware

procurement. Projects must be for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding rather than focusing on a specific system or hardware solution. Research and development funded through this BAA is intended and expected to benefit and inform both military and civilian medical practice and knowledge. This BAA provides a general description of USAMRMC's research and development programs, including research areas of interest, evaluation and selection criteria, pre-proposal/pre-application and full proposal/application preparation instructions, and general administrative information. Specific submission information and additional administrative requirements can be found in the document titled "General Submission Instructions" available in Grants.gov along with this BAA. This FY16 BAA is continuously open for a 12-month period, from October 1, 2015 through September 30, 2016, at 11:59 p.m. Eastern Time. Submission of a pre-proposal/pre-application is required and must be submitted through the electronic Biomedical Research Application Portal (eBRAP) (https://eBRAP.org/). Pre-proposals/pre-applications may be submitted at any time throughout the 12-month period. If the USAMRMC is interested in receiving a full proposal/application, the PI will be sent an invitation to submit via eBRAP. A full proposal/application must be submitted through Grants.gov (http://www.grants.gov/). **Invited full proposals/applications can be submitted under the FY16 BAA through September 30, 2016**.

W912HZ-16-BAA-01 2016 Broad Agency Announcement Department of Defense Engineer Research and Development Center

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, computer science, telecommunications management, energy, facilities maintenance, materials and structures, engineering processes, environmental processes, land and heritage conservation, and ecological processes. The BAA is available at http://erdc.usace.army.mil and is open until superseded. Proposals may be accepted at any time. For questions regarding proposals to CHL, EL, GSL, TEC & ITL, contact Mike Lee at 601-634-3903 or via email at Michael.G.Lee@usace.army.mil . For questions regarding proposals to CERL, contact Wanda Huber at 217-373-6730 or via email at Wanda.L.Huber@usace.army.mil or Andrea Krouse at 217-373-6746 or via email at Andrea.J.Krouse@usace.army.mil . For questions regarding proposals at CRREL, contact Ashley Jenkins at 217-373-7297 or via email at Ashley.M.Jenkins@usace.army.mil . Contact the

technical personnel listed at the end of each topic area for questions concerning the topic areas themselves. **Open until January 31, 2017**.

US Special Operations Command Broad Agency Announcement

This 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 USSOCOM's research areas of interest, general information, evaluation and selection criteria, and proposal/application preparation instructions. In accordance with FAR 6.102, projects funded under this announcement must be for basic and applied research and that part of development not related to the development of a specific system or hardware procurement. Projects must be for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding. Projects that are for the development of a specific system or hardware procurement will not be considered. The selection process is highly competitive and the quantity of meaningful proposal/applications (both pre-proposal/pre-applications and full proposal/full applications) typically received exceed the number of awards that available funding can support. This BAA provides a general description of USSOCOM's research and development programs, including research areas of interest, evaluation and selection criteria, pre-proposal/pre-application and full proposal/application preparation instructions, and general administrative information. Specific submission information and additional administrative requirements can be found in the document titled "General Submission Instructions" available in Grants.gov along with this BAA. **Open to May 14, 2017.**

W911NF-12-R-0012 Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research

The purpose of this Broad Agency Announcement (BAA) is to solicit research proposals in the engineering, physical, life, and information sciences for submission to the Army Research Office (ARO) for consideration for possible funding. For ease of reference, this BAA is an extraction of the ARO sections of the Army Research Laboratory BAA. (www.arl.army.mil/www/default.cfm?page=8). **Open to May 31, 2017**

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**.

DARPA-BAA-16-46 Defense Sciences Office Office-wide

The mission of the Defense Advanced Research Projects Agency (DARPA) Defense Sciences Office (DSO) is to identify and pursue high-risk, high-payoff research initiatives across a broad spectrum of science and engineering disciplines and to transform these initiatives into game-changing technologies for U.S. national security. In support of this mission, the DSO Office-wide BAA invites proposers to submit innovative basic or applied research concepts in one or more of the following technical areas: Mathematics, Modeling and Design; Physical Systems; Human-Machine Systems; and Social Systems. Each of these areas is described below and includes a list of example research topics that highlight several (but not all) potential areas of interest. Proposals must investigate innovative approaches that enable revolutionary advances. DSO is explicitly not interested in approaches or technologies that primarily result in evolutionary improvements to the existing state of practice. **Open until June 22, 2017.**

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

University Small Grants Broad Agency Announcement

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

HM0210-14-BAA-0001 National Geospatial-Intelligence Agency Academic Research Program

NGA welcomes all innovative ideas for path-breaking research that may advance the GEOINT mission. The NGA mission is to provide timely, relevant, and accurate geospatial intelligence (GEOINT) in support of national security objectives. GEOINT is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information. NGA offers a variety of critical GEOINT products in support of U.S. national security objectives and Federal disaster relief, including aeronautical, geodesy, hydrographic, imagery, geospatial and topographical information. The NGA Academic Research Program (NARP) is focused on innovative, far-reaching basic and applied research in science, technology, engineering and mathematics having the potential to advance the GEOINT mission. The objective of the NARP is to support innovative, high-payoff research that provides the basis for revolutionary progress in areas of science and technology affecting the needs and mission of NGA. This research also supports the National System for Geospatial Intelligence (NSG), which is the combination of technology, systems and organizations that gather, produce, distribute and consume geospatial data and information. This research is aimed at advancing GEOINT capabilities by improving analytical methods, enhancing and expanding systems capabilities, and leveraging resources for common NSG goals. The NARP also seeks to improve education in scientific, mathematics, and engineering skills necessary to advance GEOINT capabilities. It is NGA's intent to solicit fundamental research under this BAA. Fundamental

research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from Industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reason. (National Security Decision Directive (NSDD) 189, National Policy on the Transfer of Scientific, Technical, and Engineering Information). NGA seeks proposals from eligible U.S. institutions for path-breaking GEOINT research in areas of potential interest to NGA, the DoD, and the Intelligence Community (IC). **Open to September 30, 2017.**

NOAA-NFA-NFAPO-2016-2004791 FY2016 to FY2017 NOAA Broad Agency Announcement
This notice is not a mechanism to fund existing NOAA awards. 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**. Funding for activities described in this notice is contingent upon the availability of Fiscal Year 2016 and Fiscal Year 2017 appropriations. Applicants are hereby given notice that funds have not yet been appropriated for any activities described in this notice. Publication of this announcement does not oblige NOAA to review an application beyond an initial administrative review, or to award any specific project, or to obligate any available funds. **Open to September 30, 2017.**

NOAA-OAR-SG-2016-2004772 National Sea Grant College Program 2016-17 Special Projects
The purpose of this notice is to request proposals for special projects associated with the National Sea Grant College Program's (Sea Grant) strategic focus areas, and to provide the general public with information and guidelines on how Sea Grant will select proposals and administer Federal assistance under this announcement. This announcement is a mechanism to encourage research or other projects that are not normally funded through Sea Grant national competitions. This opportunity is open only to Sea Grant Programs. Section III of this announcement describes eligibility requirements in more detail. Funding has not yet been made available to support applications submitted to this Federal Funding Opportunity (FFO), but such funding may become available during the year. Section II.A. below describes individual competition announcements that will be used to announce when funding is available; any restrictions or requirements on such funding, such as matching funds; and other funding details. Awards will be made under this FFO only if funds have been announced as provided in this FFO. **Open to September 30, 2017.**

BAA-16-100-SOL-00002 Broad Agency Announcement (BAA) for the Advanced Development of Medical Countermeasures for Pandemic Influenza- BARDA
BARDA (full announcement) encourages the advanced research, development and acquisition of medical countermeasures such as vaccines, therapeutics, and diagnostics, as well as innovative approaches to meet the threat of Pandemic Influenza in support of the preparedness mission and priorities of the HHS Public Health Emergency Medical

Countermeasures Enterprise (PHEMCE) articulated in the 2014 PHEMCE Implementation Plan. The Implementation Plan is located on the ASPR website: http://www.phe.gov/Preparedness/mcm/phemce/Documents/2014-phemce-sip.pdf The Pandemic and All Hazard Preparedness Act Pub. L. No. 109-417, 42 U.S.C. § 241 et seq. (PAHPA; http://www.gpo.gov/fdsys/pkg/PLAW-109publ417/pdf/PLAW-109publ417.pdf) and The Pandemic and All Hazard Preparedness Reauthorization Act Pub. L. No. 113-5, (PAHPRA: http://www.gpo.gov/fdsys/pkg/PLAW-113publ5/pdf/PLAW-113publ5.pdf) authorizes BARDA to (i) conduct ongoing searches for, and support calls for, potential qualified countermeasures and qualified pandemic or epidemic products; (ii) direct and coordinate the countermeasure and product advanced research and development activities of the Department of Health and Human Services; (iii) establish strategic initiatives to accelerate countermeasure and product advanced research and development (which may include advanced research and development for purposes of fulfilling requirements under the Federal Food, Drug, and Cosmetic Act or section 351 of this Act) and innovation in such areas as the Secretary may identify as priority unmet need areas; and (iv) award contracts, grants, cooperative agreements, and enter into other transactions, for countermeasure and product advanced research and development. Development Area of Interest: The purpose of this BAA is to solicit proposals that focus on one or more of the following area of interest as listed below: Development Area of Interest; Personal Protective Equipment (Mask and Respirators) for Influenza Infection for All- Hazards; Full-Featured Continuous Ventilators for Influenza and All-Hazards; Influenza Test Systems and Diagnostic Tools; Influenza Therapeutics; Influenza Vaccines BARDA anticipates that research and development activities awarded from this Broad Agency Announcement (BAA) will serve to advance the knowledge and scientific understanding of candidates' to protect the civilian population of the United States against pandemic influenza and serve to advance candidate medical countermeasures towards licensure or approval by the Food and Drug Administration (FDA). **Open to Oct. 24, 2017.**

AFRL Research Collaboration Program

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

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

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

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

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

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

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**.

PAR-16-242 Bioengineering Research Grants (BRG) (R01) Department of Health and Human Services National Institutes of Health

The purpose of this funding opportunity announcement is to encourage collaborations between the life and physical sciences that: 1) apply a multidisciplinary bioengineering approach to the solution of a biomedical problem; and 2) integrate, optimize, validate, translate or otherwise accelerate the adoption of promising tools, methods and techniques for a specific research or clinical problem in basic, translational, or clinical science and practice. An application may propose design-directed, developmental, discovery-driven, or hypothesis-driven research and is appropriate for small teams applying an integrative approach to increase our understanding of and solve problems in biological, clinical or translational science. **Open to May 9, 2019.**

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

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

Sensing Systems: - Sensor and sensing system concept development, design, integration and prototyping - Data integration and exploitation. **Open to July 12, 2019.**

HDTRA1-14-24-FRCWMD-BAA Fundamental Research to Counter Weapons of Mass Destruction

** Fundamental Research BAA posted on 20 March 2015.** Potential applicants are strongly encouraged to review the BAA in its entirety. **Please note that ALL general correspondence for this BAA must be sent to HDTRA1-FRCWMD-A@dtra.mil. Thrust Area-specific correspondence must be sent to the applicable Thrust Area e-mail address listed in Section 7: Agency Contacts.** **Open to Sept. 30, 2019.**

BAA-RQKH-2015-0001 Methods and Technologies for Personalized Learning, Modeling and Assessment Air Force -- Research Lab

The Air Force Research Laboratories and 711th Human Performance Wing are soliciting white papers (and later technical and cost proposals) on the following research effort. This is an open ended BAA. The closing date for submission of White Papers is 17 Nov 2019. This program deals with science and technology development, experimentation, and demonstration in the areas of improving and personalizing individual, team, and larger group instructional training methods for airmen. The approaches relate to competency definition and requirements analysis, training and rehearsal strategies, and models and environments that support learning and proficiency achievement and sustainment during non-practice of under novel contexts. This effort focuses on measuring, diagnosing, and modeling airman expertise and performance, rapid development of models of airman cognition and specifying and validating, both empirically and practically, new classes of synthetic, computer-generated agents and teammates. An Industry Day was held in November 2014. Presentation materials from the Industry Day and Q&A's are attached. If you would like a list of Industry Day attendees, send an email request to helen.williams@us.af.mil **Open until November 17, 2019.**

BAA-AFRL-RQKMA-2016-0007 Air Force Research Laboratory, Materials & Manufacturing Directorate, Functional Materials and Applications (AFRL/RXA) Two-Step Open BAA

Air Force Research Laboratory, Materials & Manufacturing Directorate is soliciting White Papers and potentially technical and cost proposals under this two-step Broad Agency Announcement (BAA) that is open for a period of five (5) years. Functional Materials technologies that are of interest to the Air Force range from materials and scientific discovery through technology development and transition, and support the needs of the Functional Materials and Applications mission. Descriptors of Materials and Manufacturing Directorate technology interests are presented in the context of functional materials core technical competencies and applications. Applicable NAICS codes are 541711 and 541712. **Open to April 20, 2021.**

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

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