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On February 12, NASA released its new Strategic Plan, a 64-page document outlining the direction for the agency from 2018 through 2021 and beyond. The new strategic plan is an important document for research offices and faculty whose research interests align, or may align, with NASA’s scientific mission over the coming years. As the strategic plan of a new administration, it represents some changes in mission priorities (see NASA’s FY19 Budget Request: Astrophysics and Earth Science Lose Out as NASA Pivots to Exploration) related to the agency’s vision, mission, strategic goals and objectives, priority goals, and implementation.

As is the case with other mission agencies, NASA’s new strategic plan gives further insight into how research funding from an annual budget of around $20 billion is allocated internally based on strategic priority areas. Keep in mind there is no such thing as 100% certainty about how the future funding landscape will unfold at federal research agencies when it comes to federal budgets and internal funding priorities within any agency’s budget, especially at mission agencies like NASA.

However, this new strategic plan is one key source of strategic information that will help faculty write more competitive research narratives to NASA and better prepare research offices to support them in that effort by offering information about the agency’s current goals and objectives and the strategic framework for implementing those goals over the coming three years. NASA’s current strategic goals, objectives, and priority implementation plans are listed in detail in this strategic report. They can serve as the first step for review by a potential applicant who can use them to better identify where the applicant’s research interests and expertise might best fit the agency’s research funding plans over the coming years. Moreover, the strategic plan notes the importance of Cross-Agency Priority Goals (CAP) to accelerate progress on a limited number of Presidential priority areas where implementation requires active collaboration among multiple agencies.

Most importantly, the new strategic plan reports that (emphasis added) “NASA is restructuring the Agency to align with the new focus on exploration. As a first major step, the former Space Technology Mission Directorate and advanced technology work in the Advanced Exploration Systems program will be merged into a new Exploration Research & Technology organization. Two further options for the next step in aligning NASA’s organizational structure with the Agency’s focus on exploration are currently under review:

- Option 1: Creating two new exploration-focused mission directorates and eliminating the current HEOMD and STMD structure.
  - Exploration Operations Mission Directorate, which will focus on the ISS, commercial low Earth orbit operations, and crosscutting support areas required to support exploration, such as communications, and rocket propulsion.
  - Exploration Systems and Technology Mission Directorate, which will focus on deep space mission elements and technology development needs for sustainable human exploration.
Option 2: Creating a single ‘super’ exploration-focused mission directorate by pulling together all the exploration-focused areas in the current HEOMD and STMD organizations. NASA will **choose one of these two options (or potentially a hybrid option) this spring** and prepare for implementation with the FY 2019 budget, meaning October 1, 2018."

The agency’s goals and objectives are largely met within the following mission directorates that represent **NASA’s structure as of early 2018:**

- **The Science Mission Directorate (SMD)** expands the frontiers of Earth science, heliophysics, planetary science, and astrophysics. Using robotic observatories, explorer craft, ground-based instruments, and a peer-reviewed portfolio of sponsored research, SMD seeks knowledge about our solar system, the farthest reaches of space and time, and our changing Earth.

- **The Aeronautics Research Mission Directorate (ARMD)** transforms aviation with research to dramatically reduce the environmental impact of flight, and improves aircraft and operations efficiency while maintaining safety in increasingly crowded skies. ARMD also generates innovative aviation concepts, tools, and technologies for development and maturation by the aviation community.

- **The Space Technology Mission Directorate (STMD)** pursues transformational technologies that have high potential for offsetting future mission risk, reducing cost, and advancing existing capabilities. STMD uses merit-based competition to conduct research and technology development, demonstration, and infusion of these technologies into NASA’s missions and American industry. This mission directorate is being refocused as a new Exploration Research & Technology (ER&T) organization to support exploration as a primary customer.

- **The Human Exploration and Operations Mission Directorate (HEOMD)** leads human exploration in and beyond low Earth orbit by developing new transportation systems and performing scientific research to enable sustained and affordable human life outside of Earth. HEOMD also manages space communication and navigation services for the Agency and its international partners.

- **The Mission Support Directorate (MSD)** enables the Agency’s missions by managing institutional services and capabilities. MSD is actively reducing institutional risk to NASA’s current and future missions by improving processes, stimulating efficiency, and providing consistency and uniformity across institutional standards and practices."

Keep in mind that while proposals may be submitted through Grants.gov, NASA “highly recommends” that proposals be submitted through NSPIRES. NSPIRES is the NASA **Solicitation and Proposal Integrated Review and Evaluation System.** This web-based system supports NASA research from the release of solicitation announcements through the peer-review and selection processes. However, funding opportunities are posted to both Grants.gov and NSPIRES. This is complemented by the [NASA Proposers Guidebook](#). This 54 page document is a stepwise guide...
(pdf file here), or, as NASA notes, “This Guidebook describes the policies and process for submitting responses to the Broad Agency Announcement known as the National Aeronautics and Space Administration (NASA) Research Announcement (NRA) and the Cooperative Agreement Notice (CAN), that are used by the program offices to request proposals for basic and applied science and technology research and for science, technology, engineering, and mathematics (STEM) education.”

However, the **take away message here** is not so much about the NSPIRES process information on submitting proposals to NASA noted above, but the fact that a new administration will change the vision and mission of NASA. These changes will require both researchers and the research offices that support them to ensure that their proposals fit the **new NASA mission objectives**. This new strategic plan is one place to start learning about what NASA will “look like” as a funding agency over the coming four years so that research narratives can emphasize a tight fit to the agency’s mission objectives and hence result in a more competitive proposal being submitted with a higher likelihood of funding success.
In the early stages of proposal development, writing often begins before the Project Description has developed a clear organizational order clearly understood by all contributors to the research narrative. This happens frequently on team proposals in which multiple researchers contribute to the research narrative, many of them from several disciplinary backgrounds and institutions.

Regardless, in this less-than-perfect-world, advising team members to use the funding solicitation itself to create an organizational template for the draft narrative either falls on deaf ears, is not communicated to the proposal author(s), or is made only when the proposal is nearing its final form. In those cases where the near final draft narrative has successfully followed the solicitation guidelines by answering specific research questions in specific sections of the proposal, this last minute request is not too onerous.

In this case, the review of the document is largely one requiring editing. The editing may extend to rewriting sentences for clarity and usage and inserting new text to help better integrate narrative sections, ensuring that the proposal reads like a single-authored document.

In practice, however, research narratives too often arrive in research offices with requests for editing and review support in the final few days prior to the due date. In these situations, there may be a strong urge to quote Dilbert by Scott Adams: “A lack of planning on your part doesn’t constitute an emergency on mine.” But however tempting that retort may be, the fact remains that a research team struggling with the task of writing a competitive proposal needs to be thrown a lifeline.

However, the most serious problem that can occur in these situations is one where the organizational structure of the proposal narrative itself is deeply flawed. It may be that the solicitation guidelines for the project description have largely been ignored, or it may be that the funding solicitation leaves the organizational structure of the narrative largely up to the proposal authors, or it may be that the solicitation references a separate document that details the organization of the narrative. For example, this is the case in many NSF proposals that reference PAPPG Chapter II - Proposal Preparation Instructions. While the GPG clearly dictates the structure for the project summary and narrative section, it will come as no surprise to research offices that many PIs submitting to NSF have created draft proposals that fail to respond, to various degrees, to the proposal narrative guidelines.

Again, the most serious problem in a last-minute narrative, and the one that most resists correction, is a flawed narrative organization. Correcting this can be a major challenge that likely will fall to the members of the writing team and not to the person providing editorial reviews from a research office. Only rarely can this problem be corrected by moving text around under different section headings; more typically, it requires a major renovation of the narrative text, and a deep re-ordering of the information and arguments being made. This takes time and can be a very dispiriting process. Unfortunately, research office staff will most often have to explain to the PI that the proposal draft as written fails to comply with the agency’s narrative guidelines and must therefore be rewritten on a short timeline.
Of course the solution to this problem ideally should be in place months before the proposal due date in the form of an organizational edit for the research narrative. This edit will ensure that the narrative follows the proposal guidelines, uses the required section and subsection headings, and responds fully, in both content and ordered sequence, to the research questions to ensure funding success. This is because the appropriate ordering of the proposal narrative sections and the content within them required by the funding agency intertwines inexorably with the stepwise logic of the arguments being made in the research narrative. These arguments assert the significance of the proposed research to the funding agency and explain why this proposal should number among those (typically, one out of every five) recommended for funding rather than among the four not funded.

Rest assured that, among the (typically) 80% of proposals declined for funding in any competition, organizational flaws in the research narrative are a major contributing factor. Of the 20% funded, every single one benefitted from a well organized project description. Therefore, the benefits of an organizational edit of the proposal’s narrative structure prior to writing are enormous, both in funding success and in saving a lot of heart ache in the few final days prior to a proposal’s due date.
About Performance.gov
According to Performance.gov, this site “is a window into Federal agencies’ efforts to deliver a smarter, leaner, and more effective government. This site fulfills the statutory requirements for an online centralized performance reporting portal required by the Government Performance and Results Act (GPRA) Modernization Act of 2010. The site provides the public, agencies, members of Congress, and the media a view into the progress underway to cut waste, streamline government, and improve performance.”

However, don’t let this bureaucratic mumbo-jumbo discourage you from visiting the site because it does have some excellent background information on federal research agencies (top menu bar tab “agencies”) nicely organized with links to key agency documents, such as an agency’s annual budget request, budget justification, strategic plan, performance plan, mission statement, and related documents. For example, you can find detailed information at this site on the proposed 2019 budgets and justifications on all the federal agencies that make up the typical university portfolio of research funders, including NSF, NIH, DoD, DOE, DoED, USDAS, DHS, NASA, etc.

A lot of the key background information on federal research agency priorities and the budget allocations to support those priorities can be found at this site. This is particularly important information for university research offices that assist faculty with proposals across colleges, departments, and disciplines. It gives a better understanding of the future funding landscape and how faculty and research offices can best position themselves for funding success at a time when a new administration is defining new strategic priorities for all of the mission agencies.

Bottom line, as often noted in this newsletter, a basic requirement of funding success is to match a specific faculty research expertise and interest to the research priorities of the funding agency. If this match of faculty research to the agency research mission is not made knowledgeably, correctly, and convincingly in the proposal, then a “not recommended for funding” review summary is a foregone conclusion. This site is just one more helpful source in a research development toolbox to ensure that your proposed research maps tightly to the agency research mission.

NSF Policy Office
As noted by NSF, “The Policy Office in the Division of Institution and Award Support is responsible for developing, implementing and issuing proposal and award policy for the programs of the National Science Foundation and is available to assist you with questions involving policy related issues. Questions related to specific awards should be directed to the Division of Grants and Agreements.”

In many cases, research offices working with faculty on NSF proposals will need to be knowledgeable about a significant portion of the information posted to this part of the NSF website. This is not because members of the proposal development team always ask questions...
specific to the policy information posted by the NSF Policy Office (in most cases they do not), but more likely that a person from a research office assisting on the proposal recognizes that the proposal would benefit competitively from current policy postings by this office. The link to Frequently Asked Questions (FAQs) On Proposal Preparation and Award Administration Effective January 2017 and the link to Prospective New Awardee Guide (January 2018), or the link to the recently released Grants.gov Application Guide, A Guide for the Preparation and Submission of Proposals to NSF via Grants.gov, are cases in point.

Knowing about this information in real time from the NSF Policy Office will ensure that faculty working with research office support will have timely information that contributes to the competitiveness of the proposal. Another case in point is the recent NSF posting stating that “The National Science Foundation (NSF) announced that beginning on April 30, 2018, proposers will be able to prepare and submit full, research non-collaborative proposals in Research.gov. The initial release of this new Research.gov capability will run in parallel with existing FastLane proposal preparation and submission capabilities, so proposers can choose to prepare and submit full, research non-collaborative proposals in Research.gov or in FastLane starting on April 30, 2018.”

What is HDR?

This is important information for members of research offices that assist faculty with strategic planning to better position themselves long term for NSF funding. Harnessing the Data Revolution (HDR) touches on two key strategic funding directions at NSF, specifically, Big Data and 10 Big Ideas. In this case, they are interwoven, which makes this landscape important to research offices that identify future funding and match that funding to their institution’s capacity to respond. As NSF has noted:

- “Harnessing the Data Revolution (HDR) is one of the “10 Big Ideas for Future NSF Investments” and provides a profound opportunity to transform research across all fields of science and engineering through new insights gained from data.
- Harnessing the Data Revolution aims to engage NSF’s research community in the pursuit of a cohesive, federated, national-scale approach to advance fundamental data-centric research and data-driven domain discoveries, build data infrastructure for research, and develop a 21st-century data-capable workforce.
- Harnessing the Data Revolution builds on NSF’s legacy of data science investments. As the only federal agency supporting all fields of S&E, NSF is uniquely positioned to help ensure that our country’s future is one enriched and improved by data.”

NSF is laying the foundation for Harnessing the Data Revolution Big Idea through a number of active funding opportunities.

- Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)
- Cyberinfrastructure for Sustained Scientific Innovation (CSSI) - Data and Software: Elements and Frameworks
- Resource Implementations for Data Intensive Research in the Social, Behavioral and Economic Sciences (RIDIR)
The Heilmeier Catechism

The Heilmeier Catechism is iconic advice for anyone writing a research proposal to a federal agency, and, by extension, to any foundation or other agency whose mission is to advance research in a particular area or discipline. The important take away point here is that successful proposals are those that answer some generic questions common to all agencies and disciplines. The questions, as noted by DARPA below, are simple and easily committed to memory. Consequently, they serve as an important framework for proposal organization and ensure that the research narrative responds fully to the questions asked by the funding agency. While the specific questions asked by a funding agency in its solicitation may differ somewhat from those described below, they will certainly encompass their intent.

As a case in point, compare NSF’s advice on the research narrative from the current Grant Proposal Guide (section d, project description) and note how fundamentally alike it is to the Heilmeier quote below (emphasis added): “[NSF] The Project Description should outline the general plan of work, including the broad design of activities to be undertaken, and, where appropriate, provide a clear description of experimental methods and procedures. Proposers should address what they want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified. These issues apply to both the technical aspects of the proposal and the way in which the project may make broader contributions.”

DARPA notes the following in discussion of the Heilmeier Catechism: “DARPA operates on the principle that generating big rewards requires taking big risks. But how does the Agency determine what risks are worth taking? George H. Heilmeier, a former DARPA director (1975-1977), crafted a set of questions known as the ‘Heilmeier Catechism’ to help Agency officials think through and evaluate proposed research programs.

- What are you trying to do? Articulate your objectives using absolutely no jargon.
- How is it done today, and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares? If you are successful, what difference will it make?
- What are the risks?
- How much will it cost?
- How long will it take?
- What are the mid-term and final ‘exams’ to check for success?”

Planning, organizing, and writing your research narrative to any agency, regardless of disciplinary focus or mission, with these key questions in mind will go a long way towards helping you answer them in a compelling way in your proposal and thereby significantly increase the chances of your proposal being recommended for funding by reviewers. Keep in mind, too, that these are not just questions the agency wants answered but will be questions on the minds of those who read your proposal and make a funding recommendation to the agency program officers.
In the December 2016 issue of this newsletter, we ran an article titled “NSF’s Big Ideas for Future NSF Investments.” That “future investment” is starting to take budgetary shape and so the “Big Ideas” are worth revisiting now in light of NSF’s FY 2019 Proposed Budget Request to Congress. That request, while essentially flat at roughly $7.47 billion for FY 2019, does include $282.50 million for funding the Big Ideas as noted in below screen capture from the FY 2019 Budget Request. Since this is a proposed 2019 budget, rough estimates comparing the FY 2019 NSF budget to the prior two years is about as accurate as possible at this point in budget negotiations.

However, the key point here is that the below funding request for Big Ideas gives a heads up to those who will seek NSF funding in 2019, as well as giving research offices key information for strategic research planning and development purposes. The 10 Big Ideas associated with the 2019 budget request below are fully elaborated in the NSF publication NSF’s 10 Big Ideas. More detail on the Big Ideas is also provided in the 22-page 2019 Budget Overview Description by NSF available in pdf.

<table>
<thead>
<tr>
<th>Big Ideas</th>
<th>Request Amount (in Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harnessing the Data Revolution for 21st-Century Science and Engineering - HDR (CISE/ITR)</td>
<td>30.00</td>
</tr>
<tr>
<td>Navigating the New Arctic - NNA (GEO/ICER)</td>
<td>30.00</td>
</tr>
<tr>
<td>The Future of Work at the Human-Technology Frontier - FW-HTF (ENG/EFMA)</td>
<td>30.00</td>
</tr>
<tr>
<td>The Quantum Leap - QL (MPS/OMA)</td>
<td>30.00</td>
</tr>
<tr>
<td>Understanding the Rules of Life - URoL (BIO/EF)</td>
<td>30.00</td>
</tr>
<tr>
<td>Windows on the Universe - WoU (MPS/OMA)</td>
<td>30.00</td>
</tr>
<tr>
<td>Growing Convergence Research - GCR (IA)</td>
<td>16.00</td>
</tr>
<tr>
<td>Inclusion across the Nation of Communities of Learners of Underrepresented</td>
<td>20.00</td>
</tr>
<tr>
<td>Discoverers in Engineering and Science - NSF INCLUDES (EHR)</td>
<td>20.00</td>
</tr>
<tr>
<td>Mid-Scale Research Infrastructure (IA)</td>
<td>60.00</td>
</tr>
<tr>
<td>NSF 2020 Fund (IA)</td>
<td>6.50</td>
</tr>
<tr>
<td><strong>Total, NSF Big Ideas</strong></td>
<td><strong>$282.50</strong></td>
</tr>
</tbody>
</table>

1Convergence Accelerator funding will also support the Big Ideas HDR and FW-HTF in the amount of $30 million for each, in addition to the amounts above. The Convergence Accelerator funding will be managed by IA, and the Research Ideas funding will be managed by CISE and ENG, respectively, as shown above. For more information on Convergence Accelerators, refer to the Agency Reform section of the Overview chapter. For more information on NSF’s Big Ideas, refer to the Big Ideas section of the Overview chapter.
In summary, NSF notes that “Through its Big Ideas Stewardship Funding Model, NSF would commit $30 million to each of six research-focused Big Ideas, for a total of $180 million. Those Big Ideas are: Harnessing the Data Revolution (HDR); The Future of Work at the Human Technology Frontier (FW-HTF); Windows on the Universe (WoU): The Era of Multi-messenger Astrophysics; The Quantum Leap (QL): Leading the Next Quantum Revolution; Understanding the Rules of Life (URoL): Predicting Phenotype; and Navigating the New Arctic (NNA).”

Moreover, according to NSF “The budget request also calls for NSF to invest $60 million in two Convergence Accelerators -- new vehicles to leverage resources across the agency to support the most innovative science, pursuant to the HDR and FW-HTF Big Ideas. The remaining four Big Ideas, which focus on enhancing processes and practices to improve U.S. science and engineering, are emphasized in the budget request as well. This emphasis includes $20 million for NSF INCLUDES, which focuses on creating networks to broaden participation in science, technology, engineering and mathematics (STEM).”

As NSF notes in the 22-page 2019 Budget Overview Description (emphasis added), “Research Big Ideas. An investment of $30.0 million is requested for each of the six research Big Ideas, for a total investment of $180.0 million. These investments are in addition to the significant investments already being made by individual NSF directorates and offices in these areas. This additional investment for each of the Big Ideas will support convergent research that transcends traditional disciplinary boundaries of individual NSF directorates and offices. The research directions for a Big Idea will be overseen and managed collaboratively by the multi-directorate/office leadership of the corresponding Big Idea. Budget management and reporting will be the responsibility of the directorate to which the $30.0 million is assigned for a given Big Idea, with the multi-directorate/office leadership providing oversight. Process Big Ideas. The process Big Ideas are also emphasized in this Budget Request:

- NSF INCLUDES will be funded at $20.0 million. The program will establish the NSF INCLUDES Alliances, as NSF begins to move the NSF INCLUDES program to national-scale collaborations;
- NSF 2026 will initiate mechanisms to catalyze new research areas that may become future research Big Ideas;
- GCR will support research programs that transcend two or more of the research Big Ideas, as NSF continues to break down barriers;
- An increased investment in mid-scale research infrastructure will be used to continue to span the midscale gap noted above.”

Finally, NSF notes that Convergence Accelerators “will be time-limited structural entities intended to leverage external partnerships to facilitate convergent and translational activities in areas of national importance.” Two are proposed for funding at $60 million under the FY 2019 budget: Harnessing the Data Revolution and Future of Work at the Human–Technology Frontier. NSF notes that the funding of the 10 big ideas and two convergence accelerators “are elements of a new multidisciplinary, NSF-wide funding model, noting that collaboration and convergence are required across NSF in order to achieve the agency’s mission and support the maximum number of researchers. No longer is any one research directorate at NSF the sole NSF funder of science in a given field. Science and engineering today requires innovative approaches.”
Faculty and research offices alike will want to be informed on this new NSF funding model to ensure long-term proposal success, as these new directions take shape at the agency. This is yet another example of the importance of incorporating agency strategic plans and new priority research directions into your own institutional strategic research development funding plans, both at the level of individual investigator and at research offices at the university and college level, in order to secure future funding.

Finally, we often quote the wisdom of Wayne Gretzky in this newsletter: “Skate to where the puck is going, not where it has been.” This is your opportunity to skate to where the NSF puck is going.
Research development—helping universities increase research activity and faculty develop competitive grant proposals—requires special skills and information, but for a long time there was no professional organization devoted specifically to research development. The National Organization of Research Development Professionals (NORDP), established in 2010, has filled that gap, providing opportunities for university administrators and staff who are involved in research development to network, share best practices, provide training, and share information. As we visit universities across the country, we often encounter pre-award and research development staff who aren’t familiar with NORDP. NORDP’s 10th annual conference will be held in Arlington, Virginia on May 7-9th. If you’re involved in research development and haven’t attended the NORDP conference, we strongly recommend that you consider going this year. Below, we provide an overview of NORDP and the conference.

What is NORDP?

NORDP is a peer network of research development professionals. That includes administrators and staff responsible for research development strategic planning, assisting faculty and teams with preparing proposals, and training faculty on how to prepare more competitive proposals. NORDP membership ranges from staff in research development offices at large universities to those who comprise a “one-person shop” at small institutions, responsible for all pre-award and post-award services. NORDP differs from the Society of Research Administrators (SRA) International and the National Council of University Research Administrators (NCURA) in its singular focus on the pre-award stages of pursuing extramural research funding. In general, NORDP focuses more on strategy (e.g., helping faculty to be more competitive for grant funding) than on process (e.g., developing budgets, etc.).

Areas of emphasis at NORDP include supporting large-scale collaborative proposals, enhancing research collaborations, understanding the directions of funders, facilitating grant development, enhancing research capacity, technical writing development, and supporting university research initiatives. NORDP discussions also address various models for organizing research development offices, and how to deal with challenges of overseeing or working in those offices.

What resources does NORDP provide?

Members of NORDP can subscribe to their listserv, which provides access to research development administrators across the country. The listserv can be very helpful in cases where you have a specific question, as well as to just monitor news and trending topics in research development. NORDP also provides professional development, including a mentor program. This can be extremely valuable to staff and administrators who are new to research development, as well as those who are taking on new responsibilities. The member list can help
you identify and connect with your counterparts at other universities, for example, to help develop collaborations with that university.

The NORDP website, available to NORDP members, also includes special interest “circles” that facilitate more focused discussions. Example circles include “Non-STEM RD,” Facilitating Innovative Research,” “EPSCoR States,” and “Digital Tools for Research Development,” among others. The NORDP Job Board provides a useful venue for recruiting research development staff and for searching for a new research development position. The “Resources” tab on the website includes lists of books, guides, and articles on research development-relevant topics. It also includes lists of people and companies who provide services such as program evaluators and grant writers.

What topics will be covered in the upcoming NORDP Conference?

This year’s 10th Annual NORDP Research Development Conference will be held in Arlington, VA on May 7 -9, 2018. Early bird registration rates are available until March 16th. The theme this year is Resilience in a Shifting Funding Landscape. Session topics are wide-ranging and include mentoring faculty, developing research resilience through international collaborations, understanding agency trends in project evaluation, and strategies to grow research at a branch campus, to name just a few.

For those new to research development, a pre-conference short course, “Foundations of Research Development,” will be offered. Pre-conference workshops include:
- Enhancing Effectiveness of Collaborative Teams by Engaging Individual Motivation
- Large Proposals 101
- Taking the Research Development Professional to the Next Level through Effective Mentoring
- Strengthening Capacity for Diverse Research Teams through Research Development
- Understanding the Name of the Game: Inside an National Science Foundation (NSF) Panel Review

Who should attend the NORDP Conference?

This conference is ideal for anyone involved in research development, whether you’re working directly with the university’s top research administrators to promote new research initiatives, you’re involved in training or assisting faculty in developing proposals, you help faculty identify funding opportunities, or you edit proposal drafts. Whether you feel isolated in a one-person grants office or you are part of a large research development office and would like to meet and share your experiences with others, the NORDP conference is a great opportunity.

In addition, if your university is thinking about setting up a research development office, this is a great way to explore various structures and strategies for setting up a new office through discussions with those who have been there and can share their experiences. And in general, it’s a great way to get new ideas for research development strategies, hear the latest funding news, and make connections across the field.
If a federal research agency program officer were to give you the following how-to advice for submitting a successful proposal in response to a specific solicitation at her agency, which research agency and program area would you guess she was talking about?

- Provide reviewers sufficient information in the proposal narrative so they do not have to guess at what you are planning to do and why you are planning to do it.
- Reviewers hate “trust me” proposals!
- Make the purpose of your research clear very early on in the proposal narrative
- Describe a vision for advancing your research goals
- Describe how your research will make a difference
- **Reviewers will judge your proposal on** —
  - How well you describe the importance of your research
  - How well you justify the importance of your research
  - How well you convince them you understand what is required to achieve your research goals
  - How well you describe how your research has been informed by prior research

- **Reviewers will want to know** —
  - What you propose to do
  - Whether your research is carefully laid out and organized in the proposal narrative
  - Whether your proposed research is novel and innovative
  - Whether your research advances the field
  - Whether your research is informed by existing research
  - How well your research serves as a research model or represents new research directions
  - The starting point and process plan that will achieve the purpose of your research
  - Whether your research questions advance theory

- **What reviewers are looking for** —
  - The research question(s) you will address
  - How carefully your research questions have been formulated (PIs are often confused by the relationship between research hypotheses and research questions—hypotheses help you develop research questions that tell reviewers exactly how you will explore your hypotheses)
  - How thoroughly your research questions are informed by the literature
  - The importance of the literature that informs your research
  - How significantly your research will contribute to the literature
  - Whether your research methods, design, and content are appropriate
Research Development & Grant Writing News

- How well your research methods are **matched** to answering your research questions
- How well your research questions and methods are matched to the stage of innovation of your research
- Whether your research adds to theory in such a way that it also adds to knowledge
- How easily reviewers **can find answers** in your proposal to all questions asked in the solicitation.

**Your team – what will reviewers be looking for?**
- To what extent does your team have the expertise to carry out the project?
- To what extent has that expertise clearly been used in putting the proposal together?
- What is your plan for using that expertise while carrying out the project?
- How well have you articulated team member expertise, roles, collaboration, and coordination in your Collaboration and Management Plan?

Well, one response to the opening question is that the above advice on submitting a successful research proposal is sufficiently generic that it could apply to all federal research agencies and any program they fund. In this case, however, the advice came during a February 18 Cyberlearning Webinar by Dr. Janet Kolodner, a program officer for the NSF Cyberlearning and Future Learning Technologies program. She is a Regents' Professor of Computing and Cognitive Science at Georgia Tech. Her points offer you a secret decoder ring for cracking the funding success cipher at NSF and other federal research agencies as well, similar to the key research questions that must be answered according to Heilmeier's Catechism.

The above observations were made during the last 30 minutes of the 90-minute webinar, but their relevance goes well beyond the Cyberlearning program. While some webinars can be tedious repetitions of information easily gleaned from a close reading of the solicitation, this was an unusually informative webinar rich in detail, specificity, and program officer observations that provide an excellent insight not only into the Cyberlearning solicitation but into the culture of NSF’s Cross-Directorate programs as a whole.

Specific to the Cyberlearning program, there are multiple upcoming due dates for its four program areas. Cyberlearning is a Cross-Directorate program. **It is worth noting that the program also seeks projects outside of STEM learning, with webinar examples including projects related to language learning or history.** The bottom line, however, is that any proposed project must be informed by prior research. The webinar emphasized repeatedly the importance of reading the **scholarly (not lay!)** literature(s), particularly the extensive list of references in the solicitation that informs this program.

Also, be aware of the information available at The Center for Innovative Research in Cyberlearning (CIRCL). CIRCL works with projects in the emerging field of cyberlearning to support, synergize, and amplify their efforts. CIRCL is supported by NSF grant IIS-1233722. Information on this site will help you place your proposed project within the context of NSF’s overall objectives for the Cyberlearning program. Here again, proposers are encouraged to make use of the Common Guidelines for Education Research and Development, published jointly by the National Science Foundation and the Institute of Education Sciences in the U.S.
Department of Education, in developing their research methodology. However, the webinar noted that the Common Guidelines do not exactly fit the Cyberlearning objectives because the Guidelines assume a sequential or linear approach to research and development and NSF assumes foundational research in the context of Cyberlearning development. This is an important distinction, not just for this program, but for other NSF programs as well.
How to Prepare an NSF Proposal: The Good, the Bad and the Ugly Spring

Did you know that the eRA Commons allows principal investigators the ability to grant permission to have others at their institution help with some grants administration tasks? You might want to consider whether delegating any or all of the following tasks is right for you:

- Maintaining your personal profile
- Tracking the status of your grant application and award
- Preparing interim and final progress reports
- Completing trainee appointments and terminations
- Creating research training tables for inclusion in progress reports and institutional training grant applications

Did you miss the Fall 2017 NSF Grants Conference? View its webcasts and see the presentations.

NSF Research.gov Proposal Preparation and Submission Site
The National Science Foundation (NSF) announced that beginning on April 30, 2018, proposers will be able to prepare and submit full, research non-collaborative proposals in Research.gov. The initial release of this new Research.gov capability will run in parallel with existing FastLane proposal preparation and submission capabilities, so proposers can choose to prepare and submit full, research non-collaborative proposals in Research.gov or in FastLane starting on April 30, 2018.

Research.gov Proposal Preparation Site Preview
The other exciting news that we want to share is that starting today (Feb. 26), NSF is previewing the new Research.gov proposal preparation functionality to the research community to collect preliminary feedback and to provide the community an opportunity to acclimate to the new technology. The preview can be accessed by selecting the “Prepare & Submit Proposals” tab on the top navigation bar after signing in to Research.gov and then choosing “Prepare Proposal.” This preview will continue until 8:00PM EDT on April 27, 2018, and will allow any research community user with a FastLane or Research.gov account to sample the following proposal preparation features prior to the initial release on April 30, 2018:

- Initiate full, research non-collaborative proposals (other proposal types are planned for future releases);
- Add Principal Investigators (PIs), Co-PIs, Senior Personnel, and Other Authorized Users;
- Upload required proposal documents;
- Create budgets;
- Check compliance; and
• Enable Sponsored Project Officer (SPO)/Authorized Organizational Representative (AOR) access for review.

Please be aware of the following important items as you test the new functionality during the preview period:

• All test data entered on the Research.gov proposal preparation site from February 26, 2018, until the preview concludes at 8:00PM EDT on April 27, 2018, will be deleted at the end of the preview period.
• NSF will not be able to recover any proposal test data entered during the preview period and deleted by NSF after the preview period concludes.
• Information entered on the Research.gov proposal preparation site during the preview period will not be submitted to NSF.
• Test data can be entered on the Research.gov proposal preparation site but actual proposals cannot be submitted to NSF via Research.gov during the preview period.
• Additional information will be available on a Research.gov “About Proposal Preparation & Submission Site” page accessible on the Research.gov homepage.

Feedback on the New Research.gov Proposal Preparation and Submission Site

Your feedback on the new Research.gov proposal preparation functionality during the preview period (February 26, 2018 through April 27, 2018) and on the full Research.gov proposal preparation and submission functionality after the initial release on April 30, 2018, is vital to NSF. The survey link will soon be available on the Research.gov “About Proposal Preparation & Submission Site” page. Feedback from the community and NSF staff will be used to implement enhancements and expand functionality incrementally, with the goal of eventually transitioning all proposal preparation and submission functionality from FastLane to Research.gov.

NSF’s goals for the new Research.gov proposal preparation and submission functionality are to:

• Modernize the applications supporting the proposals submission and merit review processes and improve the user experience via the development of a new application;
• Reduce the administrative burden to the research community and NSF staff associated with preparation, submission, and management of proposals;
• Increase efficiencies in proposal preparation, submission, and management;
• Improve data quality and capture proposal content in a way that supports data analytics; and
• Improve availability, security, and flexibility of proposal preparation and submission IT systems.

We invite you to keep these goals in mind as you prepare and submit your feedback on the new functionality, so that we may improve the new Research.gov interface and develop additional available features. For IT system-related questions, please contact the NSF Help Desk at 1-800-381-1532 or rgov@nsf.gov. Policy-related questions should be directed to policy@nsf.gov.

New to eRA Commons?

Sometimes when you are trying something for the first time, it can appear to be somewhat confusing, intimidating, and possibly overwhelming. eRA is continuously developing new resources for our applicants and grantees to eliminate that perception. Recently eRA has
focused on ways to help people new to navigating eRA Commons for the NIH grant application, award, and reporting processes. Because these processes require attention to detail and patience, it can often be overwhelming for those who have never done it before.

With that in mind, a new link has been added to the eRA home page that asks, simply, are you New to eRA Commons? This link takes you to an infographic that highlights the major steps of navigating eRA Commons for the NIH grant process, from tracking an application to closeout. This high level overview will help new users understand the scope of eRA Commons and the NIH grant process without overloading them with details.

And while that infographic looks at the overall process, an additional resource that you will find at the bottom of that page, SO and PI Privileges in eRA Commons, helps outline who is responsible for completing the steps highlighted in the New to eRA Commons steps. While not all-inclusive, this will help many new Signing Officials (SOs) and Principal Investigators (PIs) understand their different responsibilities for managing NIH grant applications and awards via eRA Commons. So take a look today and pass on these resources to any newbies. It might just help them along the way.

Resources for Global Health Researchers
Resources that may be helpful for global health researchers interested in applying for NIH funding:

- Review information for foreign grants from the NIH Office of Extramural Research (OER)
- Subscribe to receive weekly updates from the NIH Guide for Grants and Contracts from the NIH Office of Extramural Research (OER)
- Access NIH Research Portfolio Online Reporting Tools (RePORT) reports, data and analyses of NIH research activities, including information on NIH expenditures and the results of NIH supported research, including awards by location, categorical spending and special reports.
- View all Fogarty funding opportunities
- Search all NIH funding opportunities and notices
Cultivating Minority Scientists: Undergraduate Research Increases Self-efficacy and Career Ambitions for Underrepresented Students in STEM

“In this study, Social Cognitive Career Theory (SCCT) is used to explore changes in the career intentions of students in an undergraduate research experience (URE) program at a large public minority-serving college. Our URE model addresses the challenges of establishing an undergraduate research program within an urban, commuter, underfunded, Minority-Serving Institution (MSI). However, our model reaches beyond a focus on retention and remediation toward scholarly contributions and shifted career aspirations. From a student's first days at the College to beyond their graduation, we have encouraged them to explore their own potential as scientists in a coordinated, sequential, and self-reflective process. As a result, while the program's graduates have traditionally pursued entry-level STEM jobs, graduates participating in mentored research are increasingly focused on professional and academic STEM career tracks involving post-graduate study. In addition to providing an increasingly expected experience and building students’ skills, participation in undergraduate research is seen to have a transformative effect on career ambitions for many students at MSIs. While undergraduate research is often thought of in context of majority-serving institutions, we propose that it serves as a powerful equalizer at MSIs. Building on the institutional characteristics that drive diversity, our students produce scholarly work and pursue graduate degrees, in order to address the long-standing under-representation of minorities in the sciences.”

A Longitudinal Study of How Quality Mentorship and Research Experience Integrate Underrepresented Minorities into STEM Careers

“African Americans, Latinos, and Native Americans are historically underrepresented minorities (URMs) among science, technology, engineering, and mathematics (STEM) degree earners. Viewed from a perspective of social influence, this pattern suggests that URMs do not integrate into the STEM academic community at the same rate as non-URM students. Estrada and colleagues recently showed that Kelman’s tripartite integration model of social influence (TIMSI) predicted URM persistence into science fields. In this paper, we longitudinally examine the integration of URMs into the STEM community by using growth-curve analyses to measure the development of TIMIS’s key variables (science efficacy, identity, and values) from junior year through the postbaccalaureate year. Results showed that quality mentorship and research experience occurring in the junior and senior years were positively related to student science efficacy, identity, and values at that same time period. Longitudinal modeling of TIMSI further shows that, while efficacy is important, and perhaps a necessary predictor of moving toward a STEM career, past experiences of efficacy may not be sufficient for maintaining longer-term persistence. In contrast, science identity and values do continue to be predictive of STEM career pathway persistence up to 4 years after graduation.”
Dear Colleague Letter: Achieving New Insights through Replicability and Reproducibility

The National Science Foundation’s (NSF) Directorate for Social, Behavioral and Economic Sciences (SBE) encourages submission of proposals that target reproducibility and replicability efforts in data-intensive domains and that specifically rely on analysis of neuroimaging or neuroelectric data, including but not limited to electroencephalography, magnetoencephalography, electrocorticography and functional neuroimaging. SBE considers these areas as targets for support across several content domains, given increased cognizance of potential concerns about analytic assumptions and derived workflows and increased community awareness of the need to define and publicize best practices for analyzing, documenting, managing and disseminating large datasets. These activities are consistent with SBE’s long-term mission of stimulating research and other activities to enhance the robustness and reliability of research as mentioned in NSF’s DCL 16-137, "Robust and Reliable Research in the Social, Behavioral, and Economic Sciences.", which highlights the importance of reproducibility, replicability and generalizability. The proposed projects should target core questions in the content domains considered by the NSF programs mentioned below, as described in the relevant program guidelines. They should also be consistent with DCL 16-137, but address the specific interests of communities whose work involves the study of the human brain function.

The current DCL encourages the submission of proposals that use replication, reproduction and generalization for the purpose of testing new ideas. Research questions should fall within the content domain of any of the following NSF programs: Cognitive Neuroscience, Perception, Action, and Cognition, and Science of Learning. NSF expects that these activities will aid in verification of prior findings, disambiguate among alternative hypotheses and serve to build a community of practice that engages in thoughtful reproducibility and replicability efforts. The suggested research must demonstrate clear potential for generating new scientific advances and discoveries, beyond simply rejecting or corroborating prior findings.

SBE particularly encourages the submission of proposals for the following types of projects:

1. Replication of several different studies with the same individuals in order to discover shared latent structures (of brain activity and behavior) within individuals and across tasks. Collection of new behavioral, neural, physiological or other data will be viewed positively.

2. Replication of pivotal or controversial studies but with sample sizes substantially larger than in the original studies or using different sampling strategies. Such proposals should clarify the relationship between sample size and measurement stability and should enable understanding or modeling of individual differences related to psychological strategies and neural systems underlying the task. Ideally, these activities should provide insights into eventual replication failures.
3. Generalization of findings to other populations or contexts, e.g., from participants to populations, across measures, contexts, circumstances, or cultures.
4. Evaluation of the impact of parameter choice, analysis toolchain, and workflows on the results reported and conclusions drawn.

**Specific guidance to proposers responding to this DCL**

All proposals should: (1) make a strong case for the studies chosen for replication, reproduction or generalization; (2) substantiate the chosen analytic strategy; and (3) present a plan or template for evaluating, documenting, and communicating the lessons learned during the work. Ideally, submitted proposals should consider various analytic criteria for determining successful replication and argue which is most applicable in the context of the suggested research.

Successful research proposals will set a standard for rigor in conducting data intensive research and serve as models for further replication and reproducibility projects. Proposers should therefore describe how data, analysis code and results from these experiments will be shared with the community. Use of tools that enable automated capture and recording of experimental and analysis details, such as workflow languages or engines, is encouraged. To allow replication of the supported work, researchers are encouraged to use interoperable data formats, consider establishing interfaces, and to leverage existing open-source analysis environments. Pre-registration of data collection and analysis are also encouraged.

Proposals submitted in response to this DCL should be submitted to the June 11, 2018 target date for the Cognitive Neuroscience program (PD 15-1699). The proposal title should include the prefix NeuroDataRR. It is anticipated that awards will provide three to four years of support for projects whose total budget does not exceed $600,000. Awards are anticipated to be made in Fiscal Year 2018. Potential proposers are strongly encouraged to contact one of the Program Officers listed below prior to submission to ensure that the research topic falls within the scope of the program.

**Dear Colleague Letter: Signals in the Soil (SitS)**

The National Science Foundation (NSF) Directorate for Engineering (ENG) in collaboration with its Directorates for Biological Sciences (BIO), Computer and Information Science and Engineering (CISE), and Geosciences (GEO), aims to encourage convergent research that transforms existing capabilities in understanding dynamic near-surface processes through advances in sensor systems and dynamic models. The goal of this Dear Colleague Letter (DCL) is to encourage submission of Early-Concept Grants for Exploratory Research (EAGER) proposals for early-stage, high-risk, high-reward research on technologies, models, and methods to better understand dynamic soil processes, including interactions of the macro- and microbiomes with soil nutrients, the rhizosphere, and various abiotic and biotic processes within the soil. In addition, for proposals that include topics relevant to both this DCL and the NSF "Rules of Life" Big Idea, submissions of Research Advanced by Interdisciplinary Science and Engineering (RAISE) proposals are encouraged. Researchers who are interested in submitting a SitS EAGER or RAISE proposal must first submit a SitS Research Concept Outline, as described below. Selected submitters of these Outlines will be invited to submit full EAGER or RAISE proposals for funding consideration.
This DCL encourages research concepts that integrate fundamental science and engineering knowledge in different disciplines with the aim of developing a next generation of sensor systems capable of in situ measurement of dynamic soil biological, physical, and chemical variables over time and space in managed and unmanaged soils. These sensor systems will also require associated advances in data transmission, ground penetration, data analytics, dynamic models, and visualization tools. If successful, these research concepts will enable scientists to advance basic understanding of dynamic processes in soils and provide the underlying science and engineering to enable others to develop new ways of managing soils and natural resources. Advances in measurement systems, understanding, and models will provide new capabilities that will enable practitioners to use new sensors, models and time series data to achieve higher efficiencies of resource use to help meet societal goals such as less contamination of soil and water supplies and greater food security, as well as address the "National Academy of Engineering Grand Challenge" of managing the Nitrogen cycle. Research Concept Outlines are encouraged.

**NEH Increases Award Amount for NEH Fellowships**

The National Endowment for the Humanities (NEH) has increased the monthly stipend awarded through its fellowships program to $5,000 a month, for a maximum stipend award of $60,000 for a twelve-month fellowship project. [NEH Fellowships](#) support advanced research in the humanities toward the production of articles, books, digital materials, archaeological site reports, translations, editions, or other scholarly resources in the humanities.

The program accepts applications from individual researchers, teachers, and writers to pursue full-time, continuous humanities research projects for a period of six to twelve months. All successful applicants will receive a $5,000-a-month stipend—an increase of $800 a month over previous years—for a minimum stipend of $30,000 for a six-month project, and a maximum award of $60,000 for a twelve-month research period. The increased stipend also applies to [NEH-Mellon Fellowships for Digital Publication](#), a fellowship program sponsored jointly by NEH and The Andrew W. Mellon Foundation to support individual scholars pursuing interpretive research projects that require digital expression and digital publication.

“NEH Fellowships are among the agency’s oldest and most important grant programs, supporting crucial research in the humanities,” said NEH Senior Deputy Chairman Jon Peede. “We are pleased to be able to increase the amount available to individual researchers to help support their significant contributions to our understanding of history, literature, philosophy, and other fields.”

NEH awards approximately 80 NEH Fellowships and 10 NEH-Mellon Fellowships for Digital Publication a year. [Recent NEH Fellowship awards](#) supported research for a book on the Nazi-era plunder of musical instruments and manuscripts in Europe, a translation and critical edition of a newly discovered manuscript of Descartes’s *Meditations on First Philosophy*, a digital architectural history of the ancient Greek Temple of Hera at Olympia, and a study of the history of the U.S. Army during peacetime.

Application guidelines for [NEH Fellowships](#) and the [NEH-Mellon Fellowships for Digital Publication](#) are available at the NEH website. The next application deadline for both fellowship programs is April 11, 2018. Applicants may contact program staff in NEH’s Division of Research.
Dear Colleague Letter: Enabling Quantum Leap in Chemistry (QLC)

NSF recently unveiled 10 Big Ideas — bold, long-term research and process ideas at the frontiers of science and engineering. Among these ideas, Quantum Leap aims to exploit quantum mechanical phenomena such as superposition and entanglement to develop next-generation technologies for sensing, computing, modeling, and communication. In the Fall of 2016, the Division of Chemistry (CHE) sponsored a workshop entitled "Quantum Information and Computation for Chemistry", led by Alán Aspuru-Guzik of Harvard University and Michael Wasielewski of Northwestern University to explore the relevance of Quantum Leap to the field of chemistry. The workshop identified areas where chemists can contribute to Quantum Leap and areas where advances in Quantum Leap can enable the solution of intractable chemical problems. To follow up on the recommendations of the workshop, the CHE invites submission of supplemental funding requests and EAGER (EArly-Concept Grants for Exploratory Research) proposals on Quantum Leap.

This Dear Colleague Letter (DCL) emphasizes molecular approaches towards problems in quantum computing, sensing, communicating, etc. Suitable topic areas to address in EAGER proposals and supplemental funding request include (but are not limited to):

- quantum algorithms for the simulation of chemical systems, including hybrid quantum-classical algorithms;
- identification and exploration of the boundaries between classical and quantum computation in relation to chemical applications;
- quantum machine learning for chemistry;
- quantum optical tools for chemistry;
- bottom-up design, synthesis, and application of chemical qubits;
- quantum control of chemical processes;
- advanced quantum readout techniques for molecular quantum systems;
- topologically-protected molecular excitations that control and probe molecular energy transfer pathways via strong-coupling;
- control and monitoring of chemical reactions using optical cavities and single-molecule polaritons; and
- multidimensional optical spectroscopy for quantum information processing.

Proposals or supplemental funding requests with a focus on solid state materials are outside the scope of this DCL.

The most competitive proposals and supplemental funding requests will harness existing expertise in the chemistry community to explore innovative approaches and novel phenomena in order to break new ground in quantum chemical and molecular science. These proposals and supplemental funding requests will also contain convincing evidence of the Principal Investigator's (PI's) competence in the proposed area of research and a clear path to future competitive research projects in Quantum Leap. Collaboration with experts in industry, national laboratories, and/or international researchers is encouraged, but not required.

Supplemental funding requests must enhance existing projects by incorporating or exploring the concepts described in this DCL. The upper limit of a supplemental funding request

Contact NSF at 202-606-8200 or fellowships@neh.gov to discuss proposed research projects and questions about the application process.
in response to this DCL is $80,000 for a maximum of twelve months. EAGER proposals are
limited to the funding amount and duration specified in the NSF Proposal and Award Policies
and Procedures Guide. They should be submitted to the CHE research program that is most
closely aligned with the subject matter of the proposal.

In all cases, Principal Investigators are strongly encouraged to contact the cognizant
program officers prior to submission to determine the appropriateness of the work for
consideration by sending email to QLChem@nsf.gov. For EAGER proposals, the title of the
proposal should specify the title as: "QLC: EAGER: (title)". Supplemental funding requests and
EAGER proposals must be submitted by May 1, 2018, 5:00 pm, submitter’s local time.

Dear Colleague Letter: Stimulating Research Related to Navigating the New Arctic (NNA), One
of NSF's 10 Big Ideas
The Navigating the New Arctic (NNA), one of NSF's 10 Big Ideas, embodies NSF's far-sighted
response to this profound challenge. NSF recognizes that broad engagement between existing
programs throughout the Foundation will be needed to meet this challenge. NSF will build on
its leadership in supporting Arctic science and observations to advance understanding of and
predict the rapid and complex environmental and social changes in the Arctic region and to
provide the tools and knowledge that will enable resilience for a globally-significant part of our
world.

NSF will leverage its support of fundamental geoscience, engineering, computing,
information, biological and social, behavioral, and economic research to achieve NNA
objectives. NSF seeks, through its ongoing investment in the basic sciences and education, to
amplify understanding of these changes by the public and the next generation of Polar
scientists. In this way, NSF will enhance the Nation's strategic and economic advantages in an
international context while safeguarding human welfare and environmental sustainability in the
Arctic.

This Dear Colleague Letter (DCL) invites proposals in FY 2018 that will advance NNA
research through convergent approaches to emerging scientific, engineering, societal, and
education challenges, and builds upon the NNA awards resulting from the FY 2017 DCL on
Growing Convergence Research at NSF. A systems-based approach is strongly encouraged,
including research that both contributes to, and leverages, large data sets from enhanced
observational technology and networks. Knowledge co-production with local and indigenous
communities, advancing public participation in research, and international partnerships are also
strongly encouraged as possible means to achieve NNA objectives.

Dear Colleague Letter: Space Weather Operations-to-Research Proposals
The Atmospheric and Geospace Sciences and Astronomical Sciences Divisions are supporting
the National Space Weather Action Plan (SWAP) by calling for proposals to either of two
existing programs as part of a 1-year pilot program that will facilitate operations to research
(O2R) activities needed to improve space weather prediction. O2R covers a broad range of
activities designed to ultimately improve operational capabilities and fundamental research
related to these needs. This can include testing, evaluating, and enhancing operational models.

The National Space Weather Action Plan (SWAP) released by the National Science and
Technology Council describes actions that are needed to improve the understanding of,
forecasting of, and preparedness for space weather events. An overarching theme of the SWAP is the need for collaboration amongst the research and operational communities. A key aspect of this collaboration is the research to operations (R2O) and operations to research (O2R) pipeline. Recognizing the challenges related to this pipeline, SWAP Actions 5.6.1 and 5.6.2 call upon agencies, including the National Science Foundation (NSF), to support efforts to facilitate the transition of space weather data and modeling capabilities to the Nation's space weather prediction providers and provide feedback from prediction providers to the research community on new research activities needed to improve the operational models.

NSF, the National Aeronautics and Space Administration (NASA), and the National Oceanic and Atmospheric Administration (NOAA), are conducting independent pilot activities to support O2R investigations. For this initial 1-year pilot program the agencies have identified the following focus area for research and development to advance solar wind and solar wind disturbance models:

- Improve forecasts of the background solar wind, solar wind structures, and coronal mass ejections using solar and solar wind data and models, if possible employing data assimilation techniques.

The models used by NOAA are available for this research and development. NOAA currently uses the Wang-Sheeley-Arge (WSA) and the Enlil model for its operational forecasts of the solar wind and the propagation of coronal mass ejections from the Sun to Earth. Research is solicited that targets improved forecasting capabilities. This could involve, for example (but not exclusively), using observations to improve the initialization of the models (e.g., the background solar wind and coronal mass ejections), to update model runs during their execution, or to select from a set of ensemble runs. This research could utilize existing versions of the models, available either at NOAA Space Weather Prediction Center or the NASA-NSF funded Community Coordinated Modeling Center (CCMC), or collaborations could potentially be formed with the WSA and/or Enlil model owners to investigate modifications to the model source code. Proposed research involving modifications to the models must be arranged with the model owners, and the details of the arrangements must be clearly described in the proposal. Any modifications to the WSA and/or Enlil models must be made available to the CCMC, which is the current repository for the development versions of these models, and for use in NOAA operations.

Investigators are reminded that NSF's primary role in developing space weather readiness for the nation is in the support of basic research that advances fundamental understanding of space weather and related processes. This includes the generation of solar storms, their propagation through the interplanetary medium, and their impact on the near-Earth space environment. NSF-supported community members draw upon that research in the development of models for these space weather processes. These models often utilize observations from NSF's persistent ground-based observational platforms, among others, to test and further refine our community's understanding of space weather. Among the goals of these NSF-funded research activities are to benefit society and contribute to the achievement of specific desired societal outcomes, such as improving space weather predictive capabilities. As previously mentioned, NASA is conducting on behalf of itself and NOAA an independent program supporting space weather O2R investigations related to the focus area. Investigators
are encouraged to see if their proposed research topic is better aligned with NASA and NOAA's role and goals before submitting proposals to the NSF. Program officers at NSF will check with counterparts at NASA to ensure that no duplicative awards are made.

NSF will begin initial consideration of proposals 60 days after the release of this Dear Colleague Letter. Proposals addressing the focus area and aligned with NSF's role in the space weather program can be submitted to either the Solar Terrestrial Research (STR) Program or the Solar and Planetary Research Grants (SPG) Program, as appropriate. All proposal titles should begin with the words "Space Weather O2R.". Funding may be requested for one year and a maximum amount of $250K. It is anticipated that in FY2018 the total amount of funding for this pilot program will be $500K. It is anticipated that up to two awards will be supported with an average award size of $250K. Proposals will be reviewed using standard NSF procedures per the NSF Proposal and Award Policies and Procedures Guide.
NAS President Co-Authors PNAS Perspective
“In keeping with the growing movement in scientific publishing toward transparency in data and methods, we propose changes to journal authorship policies and procedures to provide insight into which author is responsible for which contributions, better assurance that the list is complete, and clearly articulated standards to justify earning authorship credit. To accomplish these goals, we recommend that journals adopt common and transparent standards for authorship, outline responsibilities for corresponding authors, adopt the Contributor Roles Taxonomy (CRediT) (docs.casrai.org/CRediT) methodology for attributing contributions, include this information in article metadata, and require authors to use the ORCID persistent digital identifier (https://orcid.org). Additionally, we recommend that universities and research institutions articulate expectations about author roles and responsibilities to provide a point of common understanding for discussion of authorship across research teams. Furthermore, we propose that funding agencies adopt the ORCID identifier and accept the CRediT taxonomy. We encourage scientific societies to further authorship transparency by signing on to these recommendations and promoting them through their meetings and publications programs.”

Envisioning the Data Science Discipline: The Undergraduate Perspective: Interim Report
The need to manage, analyze, and extract knowledge from data is pervasive across industry, government, and academia. Scientists, engineers, and executives routinely encounter enormous volumes of data, and new techniques and tools are emerging to create knowledge out of these data, some of them capable of working with real-time streams of data. The nation’s ability to make use of these data depends on the availability of an educated workforce with necessary expertise. With these new capabilities have come novel ethical challenges regarding the effectiveness and appropriateness of broad applications of data analyses.

The field of data science has emerged to address the proliferation of data and the need to manage and understand it. Data science is a hybrid of multiple disciplines and skill sets, draws on diverse fields (including computer science, statistics, and mathematics), encompasses topics in ethics and privacy, and depends on specifics of the domains to which it is applied. Fueled by the explosion of data, jobs that involve data science have proliferated and an array of data science programs at the undergraduate and graduate levels have been established. Nevertheless, data science is still in its infancy, which suggests the importance of envisioning what the field might look like in the future and what key steps can be taken now to move data science education in that direction.

This study will set forth a vision for the emerging discipline of data science at the undergraduate level. This interim report lays out some of the information and comments that the committee has gathered and heard during the first half of its study, offers perspectives on the current state of data science education, and poses some questions that may shape the way
data science education evolves in the future. The study will conclude in early 2018 with a final report that lays out a vision for future data science education.

**Indicators for Monitoring Undergraduate STEM Education**

Science, technology, engineering and mathematics (STEM) professionals generate a stream of scientific discoveries and technological innovations that fuel job creation and national economic growth. Ensuring a robust supply of these professionals is critical for sustaining growth and creating jobs growth at a time of intense global competition. Undergraduate STEM education prepares the STEM professionals of today and those of tomorrow, while also helping all students develop knowledge and skills they can draw on in a variety of occupations and as individual citizens. However, many capable students intending to major in STEM later switch to another field or drop out of higher education altogether, partly because of documented weaknesses in STEM teaching, learning and student supports. Improving undergraduate STEM education to address these weaknesses is a national imperative.

Many initiatives are now underway to improve the quality of undergraduate STEM teaching and learning. Some focus on the national level, others involve multi-institution collaborations, and others take place on individual campuses. At present, however, policymakers and the public do not know whether these various initiatives are accomplishing their goals and leading to nationwide improvement in undergraduate STEM education. **Indicators for Monitoring Undergraduate STEM Education** outlines a framework and a set of indicators that document the status and quality of undergraduate STEM education at the national level over multiple years. It also indicates areas where additional research is needed in order to develop appropriate measures. This publication will be valuable to government agencies that make investments in higher education, institutions of higher education, private funders of higher education programs, and industry stakeholders. It will also be of interest to researchers who study higher education.
New Funding Opportunities

Content Order
New Funding Posted Since February 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 February 15 Newsletter

Developing Technologies To Advance The Understanding Of State Of Stress And Geomechanical Impacts Within The Subsurface
The U.S. Department of Energy’s (DOE) Office of Fossil Energy (FE) announced up to $10.4 million, subject to availability of appropriations, in federal funding for cost-shared research and development projects. DOE seeks projects under funding opportunity announcement (FOA) DE-FOA-0001826, Developing Technologies to Advance the Understanding of State of Stress and Geomechanical Impacts within the Subsurface. Selected projects will support the FE’s Carbon Storage Program by developing technologies that will provide a better understanding of the subsurface, enabling improved measurement and prediction of geomechanical impacts. This will help to ensure safe and permanent geologic storage of carbon dioxide, reduce risks, and inform policy associated with carbon storage operations. The National Energy Technology Laboratory (NETL) will manage the selected projects, which focus on two areas of interest (AOI):

Tools and Methods for Determining Maximum Principal Stress in the Deep Subsurface
FE seeks projects under this AOI to develop tools and methods for determining in-situ stress state in the deep subsurface. This includes the maximum principal stress, as well as the spatial variation, both laterally and vertically, of the magnitude and orientation of in-situ stress. Tools and methods will undergo laboratory-equivalent testing and initial validation at a relevant field site, and they must demonstrate reduced uncertainty of proposed methodologies for measuring in-situ stress compared to current state-of-the-art methods.

Methods for Understanding Impact of Vertical Pressure Migration Due to Injection on the State of Subsurface Stress
FE seeks projects under this AOI that will predict and compare with field observations the temporal and spatial stress and pressure changes in the underburden (particularly in the basement), which often result from injection. The projects will also assess the impacts related to these changes, including activation of difficult-to-resolve faults and the occurrence of seismic or aseismic slip. Projects must use tools and methods including, but not limited to, advanced
The Office of Fossil Energy funds research and development projects to reduce the risk and cost of advanced fossil energy technologies and further the sustainable use of the Nation’s fossil resources. To learn more about the programs within the Office of Fossil Energy, visit the [Office of Fossil Energy website](https://www.energy.gov/eere/fossil) or [sign up](https://energy.gov/newsletter-sign-up) for FE news announcements. More information about the National Energy Technology Laboratory is available on the [NETL website](https://www.netl.doe.gov). Concept Paper due March 26; full proposal May 9.

**Transformational Pre-combustion Carbon Capture Technologies**

The U.S. Department of Energy’s Office of Fossil Energy (FE) has announced up to $7 million in federal funding for cost-shared research and development (R&D) projects under the funding opportunity announcement (FOA) DE-FOA-0001830, *Transformational Pre-Combustion Carbon Capture Technologies*. Projects selected under this FOA will support FE’s [Carbon Capture Program](https://www.energy.gov/eere/fossil) by advancing carbon dioxide (CO₂) capture and separation systems to help meet overall fossil energy performance goals. Transformational carbon capture technologies, for use with the gasification fleet, will help reduce the overall costs for both power and fuels applications. FE is seeking projects that will make progress in meeting overall fossil energy performance goals for CO₂ capture—such as 95 percent CO₂ purity at a cost of electricity that is 30 percent less than the baseline cost that capture approaches. The National Energy Technology Laboratory (NETL) will manage the selected projects, which will focus on two areas of interest (AOIs):

- **Lab-Scale CO₂ Capture Development and Testing of Simulated Syngas**  
  FE seeks projects under this AOI to conduct laboratory-based applied R&D of transformational CO₂ capture technologies that are capable of transcending the cost and performance limitations imposed by state-of-the-art capture technologies.

- **Bench-Scale CO₂ Capture Development and Testing on Actual Syngas**  
  FE seeks projects under this AOI to conduct field testing to advance the science and technology of transformational CO₂ capture technologies. This testing will help progress technologies to a maturity level that will enable existing or future industrial partners to adopt the technology for future pilot-scale testing.

The Office of Fossil Energy funds research and development projects to reduce the risk and cost of advanced fossil energy technologies and further the sustainable use of the Nation’s fossil resources. To learn more about the programs within the [Office of Fossil Energy](https://www.energy.gov/eere/fossil), visit the Office of Fossil Energy website or [sign up](https://energy.gov/newsletter-sign-up) for FE news announcements. More information about the National Energy Technology Laboratory is available on the [NETL website](https://www.netl.doe.gov). [Due April 19](https://www.energy.gov/eere/fossil).

**HR001118S0025 Friend or Foe DARPA - Biological Technologies Office**

The Friend or Foe (FoF) program will develop the capability to rapidly identify potential bacterial pathogens in complex environments through analysis of their behavior (i.e., their phenotype). New pathogens, both naturally occurring and adversary-engineered, are increasingly likely to emerge due to changes in the environment, rising global population, and the wide availability of genetic engineering tools to both state and non-state actors. These factors, coupled with faster potential dispersal due to increasing global travel and population density, have significantly increased the danger posed by bacterial pathogens. Current
detection strategies based on biochemical markers would not work on previously undiscovered bacteria or on bacteria designed to evade detection. Moreover, genetic sequencing and omics analyses are insufficient to address this growing challenge, since the phenotype of a pathogen might not be determinable from the genetic make-up (i.e., the genotype) alone. The novel capability developed under FoF will provide detailed, high-throughput phenotype-based characterization of unknown bacteria through identification of pathogenic traits. Specifically, the technology should reliably extract representative samples of bacteria from complex environments, maintain their viability while they are repeatedly interrogated to identify virulence factors, and then analyze them using an omics approach that leverages external pathogen and gene databases. Ultimately, this technology will detect bacterial pathogens as, or even before, they emerge as a threat to the public. Due April 25.

USDA-NIFA-SLBCD-006537 AgrAbility - Assistive Technology Program for Farmers with Disabilities
The AgrAbility program increases the likelihood that farmers, ranchers, farm workers and farm family members with disabilities will experience success in agricultural production. The program supports projects between State Cooperative Extension System and private, non-profit disability organizations who work in partnership to provide agricultural education and assistance directed at accommodating disability in farm operations for individuals with disabilities, and their families, who engage in farming and farm-related occupations. Due April 30.

Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)
The BIGDATA program seeks novel approaches in computer science, statistics, computational science, and mathematics leading towards the further development of the interdisciplinary field of data science. The program also seeks innovative applications in domain science, including social and behavioral sciences, education, physical sciences, and engineering, where data science and the availability of big data are creating new opportunities for research and insights not previously possible. Due May 7.

DE-FOA-0001826 Developing Technologies to Advance the Understanding of State of Stress and Geomechanical Impacts Within the Subsurface Department of Energy
The objective of this Funding Opportunity Announcement is to solicit and competitively seek applications for the development of tools and methods needed to improve the measurement and reduce the uncertainty in the measurement of in-situ maximum principal stress in the deep surface and understand and predict the geomechanical impact of pressure migration due to injection on the storage complex including the underburden and basement formations. The Areas of Interest of this Announcement are Tools and Methods for Determining Maximum Principal Stress in the Deep Surface and Methods for Understanding Impact of Vertical Pressure Migration due to Injection on State of Subsurface Stress. Due May 7.

USDA-NIFA-CPPM-006536 Crop Protection and Pest Management Competitive Grants Program
The purpose of the Crop Protection and Pest Management program is to address high priority issues related to pests and their management using IPM approaches at the state, regional and national levels. The CPPM program supports projects that will ensure food security and respond effectively to other major societal pest management challenges with comprehensive IPM approaches that are economically viable, ecologically prudent, and safe for human health. The CPPM program addresses IPM challenges for emerging issues and existing priority pest concerns that can be addressed more effectively with new and emerging technologies. The outcomes of the CPPM program are effective, affordable, and environmentally sound IPM practices and strategies needed to maintain agricultural productivity and healthy communities. Due May 8.

**Smart and Connected Health (SCH): Connecting Data, People and Systems**

The goal of the interagency Smart and Connected Health (SCH): Connecting Data, People and Systems program is to accelerate the development and integration of innovative computer and information science and engineering approaches to support the transformation of health and medicine. Approaches that partner technology-based solutions with biomedical and biobehavioral research are supported by multiple agencies of the federal government including the National Science Foundation (NSF) and the National Institutes of Health (NIH). The purpose of this program is to develop next-generation multidisciplinary science that encourages existing and new research communities to focus on breakthrough ideas in a variety of areas of value to health, such as networking, pervasive computing, advanced analytics, sensor integration, privacy and security, modeling of socio-behavioral and cognitive processes and system and process modeling. Effective solutions must satisfy a multitude of constraints arising from clinical/medical needs, barriers to change, heterogeneity of data, semantic mismatch and limitations of current cyberphysical systems and an aging population. Such solutions demand multidisciplinary teams ready to address issues ranging from fundamental science and engineering to medical and public health practice. Due May 22.

**NSF/VMware Partnership on Edge Computing Data Infrastructure (ECDI)**

This solicitation seeks to advance the state of the art in end-to-end networked systems architecture that includes edge infrastructures. The central challenge is to design and develop data-centric edge architectures, programming paradigms, runtime environments, and data sharing frameworks that will enable compelling new applications and fully realize the opportunity of big data in tomorrow's mobile and IoT device environments. Researchers are expected to carefully consider the implications of edge computing's multi-stakeholder context, and the need for security and privacy as first order design and operational considerations. Due May 22.

**Air Force Fiscal Year 2019 Young Investigator Research Program (YIP)**

The Fiscal Year 2019 Air Force Young Investigator Research Program (YIP) intends support for scientists and engineers who have received Ph.D. or equivalent degrees 1 April 2012 or later that show exceptional ability and promise for conducting basic research. The program objective is to foster creative basic research in science and engineering; enhance early career development of outstanding young investigators; and increase opportunities for the young
investigator to recognize the Air Force mission and related challenges in science and engineering. Individual awards are made to U.S. institutions of higher education, industrial laboratories, or non-profit research organizations where the principal investigator is employed on a full-time basis and holds a regular position. YIP primary investigators must be a U.S. citizen, national, or permanent resident. Researchers working at a Federally Funded Research and Development Center or DoD Laboratory are not eligible for this competition. Most YIP awards are funded at $150,000 per year for three years, for a total of $450,000. Exceptional proposals will be considered individually for higher funding levels and/or longer duration. Please review the remainder of this announcement for additional information. We anticipate approximately fifty (36) awards under this competition if funds are available. Due June 1.

Planning Grants for Engineering Research Centers (ERC)
The ERC program is placing greater emphasis on research that leads to societal impact, including convergent approaches, engaging stakeholder communities, and strengthening team formation, in response to the NASEM study recommendations. The ERC program intends to support planning activities leading to convergent research team formation and capacity-building within the engineering community. This planning grant pilot initiative is designed to foster and facilitate the engineering community’s thinking about how to form convergent research collaborations. To participate in the upcoming ERC competition, one is not required to submit a planning grant proposal nor to receive a planning grant. Due June 6.

URL Links to New & Open Funding Solicitations
Links verified Tuesday, May 23, 2017

- SAMHSA FY 2017 Grant Announcements and Awards
- 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
- 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 2017 Science To Achieve Results (STAR) Research Grants
- NASA Open Solicitations
- CDMRP FY 2017 Funding Announcements
- Office of Minority Health
- DOE/EERE Funding Opportunity Exchange
Research Development & Grant Writing News

- New Funding Opportunities at NIEHS (NIH)
- National Human Genome Research Institute Funding Opportunities
- Army Research Laboratory Open Broad Agency Announcements (BAA)
- Office of Naval Research Currently Active BAAs
- HRSA Health Professions Open Opportunities
- Foundation Center RFP Weekly Funding Bulletin

Solicitations Remaining Open from Prior Issues of the Newsletter

**Hispanic-Serving Institutions Education Grants Program (HSI)**
This competitive grants program is intended to promote and strengthen the ability of Hispanic-Serving Institutions to carry out higher education programs in the food and agricultural sciences. Programs aim to attract outstanding students and produce graduates capable of enhancing the Nation's food and agricultural scientific and professional work force. **Due April 5.**

**DE-FOA-0001842 Support of Fossil Energy Research at United States Colleges and Universities**
This Funding Opportunity Announcement (FOA) is for the solicitation of applications from United States Colleges and Universities for Fossil Energy Research. It encompasses two distinct programs with their own dedicated funding, requirements, and restricted eligibility: the University Coal Research (UCR) Program; and the Historically Black Colleges & Universities and Other Minority Institutions (HBCU/OMI) Program. Both programs seek to educate the next generation of scientists and engineers while advancing the frontiers of fossil energy science and technology. The HBCU/OMI program has the additional goal of increasing the participation of under-represented populations of students in such research. **Due April 9.**

**New NIJ Solicitation: Research and Evaluation on Violence Against Women**
Through this solicitation, NIJ seeks to fund multiple projects on criminal justice responses across major violence against women content areas including intimate partner and dating violence, sexual violence, stalking, and violence against American Indians and Alaska Natives. Although proposals broadly related to violence against women topics are acceptable under this solicitation, NIJ has outlined the following priority areas:

- Investigation and/or prosecution of the crimes of intimate partner violence, teen dating violence, sexual violence, or stalking pertaining to case flow and attrition, decision-making, training, case management, and coordination with criminal justice systems and community-based entities;
- Programs or interventions aimed at enhancing law enforcement, prosecutorial, or judicial responses to intimate partner violence, teen dating violence, sexual violence, or stalking; and/or programs or interventions aimed at enhancing victim engagement with the criminal justice system;
- Research and evaluation of policies, procedures, protocols, trainings, or interventions that address officer safety when responding to domestic violence/intimate partner violence calls and incidents;
• Use of technology including digital devices/evidence in the investigation, prosecution, and/or court-based decision-making, including offender management, pertaining to the crimes of intimate partner violence, teen dating violence, sexual violence, or stalking. Of particular interest to NIJ are body-worn cameras, crime mapping applications, location-based technologies, and machine learning techniques.

All applications are due by 11:59 p.m. Eastern Time on April 12, 2018.

**USDA-NRCS-MULTI-STATE-CENTRAL-CCG-001 Conservation Collaboration Grants or Agreements Fiscal Year (FY) 2018**

The Natural Resources Conservation Service (NRCS), an agency under the United States Department of Agriculture (USDA), is announcing potential availability of grants and agreements for the purpose of leveraging NRCS resources, addressing local natural resource issues, encouraging collaboration and developing state- and community-level conservation leadership. **Proposals will be accepted for projects located in the following states:** Minnesota, Nebraska, North Dakota, South Dakota, and Wisconsin. NRCS anticipates that the amount available for support of this program in FY 2018 will be: STATE TOTAL MINIMUM MAXIMUM # of Minnesota $4,000,000 $25,000 $1,000,000 18 Nebraska $1,000,000 $20,000 $1,000,000 10 North Dakota $4,000,000 $10,000 $1,500,000 15 South Dakota $4,800,000 $20,000 $1,000,000 20 Wisconsin $2,500,000 $100,000 $2,500,000 10

Proposals are requested from Federally recognized tribal governments, State and local units of government, non-governmental organizations, and institutions of higher learning for competitive consideration of grant or agreement awards for projects between 1 and 3 years in duration. This notice identifies the objectives, eligibility criteria, and application instructions for projects. Proposals will be screened for completeness and compliance with the provisions of this notice. Incomplete and/or noncompliant proposals will be eliminated from competition, and notification of elimination will be sent to the applicant. **Due April 13.**

**Cyberinfrastructure for Sustained Scientific Innovation (CSSI) - Data and Software: Elements and Frameworks**

The Cyberinfrastructure for Sustained Scientific Innovation (CSSI) umbrella program encompasses the long-running Data Infrastructure Building Blocks (DIBBs) and Software Infrastructure for Sustained Innovation (SI2) programs, as NSF seeks to enable funding opportunities that are flexible and responsive to the evolving and emerging needs in data and software cyberinfrastructure. **Due April 18.**

**Preservation Assistance Grants for Smaller Institutions**

Preservation Assistance Grants help small and mid-sized institutions—such as libraries, museums, historical societies, archival repositories, cultural organizations, town and county records offices, and colleges and universities—improve their ability to preserve and care for their significant humanities collections. These may include special collections of books and journals, archives and manuscripts, prints and photographs, moving images, sound recordings, architectural and cartographic records, decorative and fine art objects, textiles, archaeological and ethnographic artifacts, furniture, historical objects, and digital materials. **Due May 1.**
**Computer Science for All (CSforAll:RPP): Researcher Practitioner Partnerships**

This program aims to provide all U.S. students the opportunity to participate in computer science (CS) and computational thinking (CT) education in their schools at the preK-12 levels. With this solicitation, the National Science Foundation (NSF) focuses on researcher-practitioner partnerships (RPPs) that foster the research and development needed to bring CS and CT to all schools. Specifically, this solicitation aims to provide high school teachers with the preparation, professional development (PD) and ongoing support that they need to teach rigorous computer science courses; preK-8 teachers with the instructional materials and preparation they need to integrate CS and CT into their teaching; and schools and districts the resources needed to define and evaluate multi-grade pathways in CS and CT. **Due May 9.**

**Fiscal Year (FY) 2018 Funding Opportunity Announcement (FOA) for the Office of Naval Research (ONR), N00014-18-S-F005, on behalf of the Office of the Secretary of Defense (OSD), for the Manufacturing Engineering Education Program**

The National Defense Authorization Act (NDAA) for Fiscal Year 2017 established the “Manufacturing Engineering Education Program,” (MEEP) (10 U.S.C. § 2196) which authorizes the Department of Defense to support industry-relevant, manufacturing-focused, engineering training at United States institutions of higher education, industry, nonprofit institutions, and consortia of such institutions or industry. The purpose of this program is to establish new or to enhance existing programs (or collections of programs) to better position the current and next-generation manufacturing workforce to produce military systems and components that assure technological superiority for the Department of Defense (DoD). Interested parties should focus programs on manufacturing education to support one or more distinct manufacturing technologies; e.g. manufacturing of lightweight structures, systems and materials; robotics for manufacturing; manufacturing to exploit nanotechnology; manufacturing of components and systems for power generation, storage, or distribution; manufacturing of multi-functional electronics and/or optical devices; or other manufacturing technologies of regional or industrial sector of interest. Proposed efforts should develop and enhance curricula and programs to effectively develop skills sets needed for students to operate in multidisciplinary design and manufacturing environments, including those for which manufacturing schema are informed by computational tools for modeling and simulation. Students also should be prepared to work effectively in environments where multiple engineering disciplines are engaged during design, development and manufacturing, and where the roles of manufacturers and suppliers in businesses of various sizes, from start-ups to major systems integrators, are optimized. **Open to May 16, 2018.**

**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.]
**DARPA Biological Technologies Office Open BAA, Department of Defense**

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative research proposals of interest to the Biological Technologies Office (BTO). Proposed research should investigate leading edge approaches that enable revolutionary advances in science, technologies, or systems at the intersection of biology with engineering and the physical and computer sciences. Specifically excluded is research that primarily results in evolutionary improvements to the existing state of the art. BTO seeks unconventional approaches that are outside the mainstream, challenge assumptions, and have the potential to radically change established practice, lead to extraordinary outcomes, and create entirely new fields.

The mission of BTO is to foster, demonstrate, and transition breakthrough fundamental research, discoveries, and applications that integrate biology, engineering, computer science, mathematics, and the physical sciences. BTO’s investment portfolio goes far beyond life sciences applications in medicine to include areas of research such as human-machine interfaces, microbes as production platforms, and deep exploration of the impact of evolving ecologies and environments on U.S. readiness and capabilities. BTO’s programs operate across a wide range of scales, from individual cells to the warfighter to global ecosystems. BTO responds to the urgent and long-term needs of the Department of Defense (DoD) and addresses national security priorities. A listing of priority areas includes but is not limited to below:

- Developing and leveraging new technologies that can be applied to agricultural ecosystems for production stabilization, by improving quality or reducing losses from pathogens or pests.
- Developing and leveraging new insights into non-human biology across and between populations of microbes, insects, plants, marine life, and other non-human biologic entities.
- Developing new technologies and approaches that ensure biosafety, biosecurity, and protection of the bioeconomy.
- Understanding emerging threats to global food and water supplies and developing countermeasures that could be implemented on regional or global scales.
- Developing new technologies to treat, prevent, and predict the emergence and spread of infectious diseases that have the potential to cause significant health, economic, and social burden.

**Proposal Abstracts and Full Proposals will be submitted on a rolling basis until April 26, 2018, 4:00pm ET**

**HR001117S0040 Defense Sciences Office (DSO) Office-wide DARPA**

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 disruptive 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 that explore Physical and Natural Systems, Human-Machine and Social Systems, and/or Math and Computational Systems through the lens of one or more of the following technical domains:
Complexity Engineering, Science of Design, Noosphere, Fundamental Limits, and New Foundations. 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 to July 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.

**Army Research Office Broad Agency Announcement for Basic and Applied Scientific Research**
This BAA sets forth research areas of interest to the ARO. This BAA is issued under FAR 6.102(d)(2), which provides for the competitive selection of basic and applied research proposals, and 10 U.S.C. 2358, 10 U.S.C. 2371, and 10 U.S.C. 2371b, which provide the authorities for issuing awards under this announcement for basic and applied research. The definitions of basic and applied research may be found at 32 CFR 22.105. 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 to April 30, 2022.
Expanded Editing Services

In response to numerous requests, we are now expanding our editing services to accommodate clients working on manuscripts as well as proposals. We are also offering editing only (as opposed to intensive grantsmanship assistance) at several levels:

- **Technical editing**: Editing for technical clarity as well as grammar, punctuation, etc.
- **Editing**: Editing for grammar, punctuation, etc.
- **Editing Especially for Non-native English Speakers**: Editing for grammar, punctuation, usage, etc. with special attention to mistakes commonly made by non-native English speakers.

These options will provide a more economical option for authors who don’t need our intensive review and editing services. More information will be posted on our website soon.

**Former NIH branch chief, Dr. John Williamson, joining ARFS**

We are excited to announce that Dr. John Williamson is joining Academic Research Funding Strategies as one of our consultants. He will work with clients applying to NIH, providing one-on-one mentoring as well as reviews of NIH proposal drafts. A short bio is provided below.

Dr. Williamson is an emeritus professor of medicinal chemistry at the University of Mississippi, a former NIH branch chief, and currently a research initiatives coordinator at the University of Dayton. During his tenure as a full professor he garnered millions in extramural funding from: federal agencies including the NIH, NSF, CDC, and DoD; pharmaceutical companies including Merck and Schering-Plough; as well as foundations and societies including the Elsa Pardee Foundation, Sigma Xi, the American Society of Pharmacognosy, and the Bill and Melinda Gates Foundation.

At NIH he served as a Branch Chief of Basic and Mechanistic Research, maintaining a branch grants and contract portfolio of approximately $50M/yr. The portfolio included projects associated with brain neuroscience, bioengineering of opiate pathways, mechanisms associated with chronic pain, brain microbiome connection mechanisms, pharmacodynamics and pharmacokinetics and methodologies associated with bioactive natural products, analgesic cannabinoids, various small business awards, complementary medical approaches, and training programs. While at NIH, Williamson’s portfolio contained a broad array of funding mechanisms including: DP1, DP2, F31, F32, K00, K01, K99, P01, P20, P30, P50, R01, R03, R13, R15, R21, R41, R42, R43, R44, R61, R61, R90, T32, T42, T90, and U01s. In addition, he was the named program contact on more than 75 published funding opportunity announcements (RFAs & PAs). Williamson also worked on interagency collaborative programs with the NSF, FDA, USDA, and FTC. He is currently associated with the University of Dayton where, as Research Initiatives Coordinator, he helps faculty and staff in developing and submitting competitive research proposals.
What We Do--

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

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

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

- Large proposals - Assistance in planning, developing and writing institutional and center-level proposals (e.g., NSF ERC, STC, NRT, ADVANCE, IUSE, Dept of Ed GAANN, DoD MURI, etc.)

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

- Assistance on your project narrative: in-depth reviews, rewrites, and edits

- Editing and proof reading of journal articles, book manuscripts, proposals, etc.

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

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

Workshops by Academic Research Funding Strategies

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

(View Index of Articles)

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