



TUFTS UPDATE – DECEMBER 18, 2018
PREPARED BY LEWIS-BURKE ASSOCIATES LLC

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Introduction

This edition of the Tufts Washington Update includes December policy updates, agency updates, and funding opportunities. Faculty, staff, and researchers are welcome to schedule calls with the Lewis-Burke Tufts team or meet with the team when they visit Washington, DC. Contact Amber Cassady, Lewis-Burke Associates LLC, at amber@lewis-burke.com with any questions or comments related to the Update's content or for more information on updates and opportunities.

Policy Updates

Congress Approves 2018 Farm Bill Conference Report

On December 10, Congress released the long awaited 2018 farm bill conference report, H.R. 2 *The Agriculture Improvement Act of 2018*, a bipartisan compromise package that authorizes farm programs and agricultural research through fiscal year (FY) 2023. The final farm bill package, totaling 807 pages, is budget neutral. Title VII, the Research Title, largely reflects the Senate bill, reauthorizing signature programs and creating several new competitive research opportunities such as the Agriculture Advanced Research and Development Authority and urban agriculture. On December 11, the Senate passed the bill 87-13 and on December 12, the House passed the bill 369-47.

Controversial provisions unrelated to the research programs that had derailed conference negotiations earlier in the Fall were not included in the final package, namely the House provision to increase work requirements for Supplemental Nutrition Assistance Program (SNAP) and the Senate provision limiting farm subsidies.

The explanatory statement contains additional report language on the importance of human nutrition research, specifically on the aging population. This is a direct reference to the Agricultural Research Service (ARS) human nutrition research program and facilities, although ARS is not directly authorized in the farm bill.

The final package provides \$185 million in mandatory funding for the Foundation for Food and Agriculture Research (FFAR), a compromise between the Senate bill that reauthorized FFAR at the current level of \$200 million and the House bill which did not provide funding. The farm bill also includes several of the Senate bill's provisions that requires FFAR to annually publicize upcoming research priorities, as well as posting its annual report online to improve transparency at the Foundation. The explanatory statement indicates funding will be contingent upon FFAR's submission of a strategic plan that focuses on financial sustainability and fundraising. Additionally, the conference committee directs FFAR to coordinate research planning with other federal research agencies and that the strategic plan documents consultation with the Secretary of the US Department of Agriculture to avoid duplication.

The final farm bill package would reauthorize several programs at the current levels until 2023, including: the Agriculture and Food Research Initiative (AFRI); aquaculture assistance program; the rangeland research program; and the non-land grant college of agriculture (NLGCA) capacity building grants program. Other programs, like the biosecurity planning and response initiative, were reauthorized at an increase of \$10 million for a total of \$30M annually and expanded to permit the use of cooperative agreements to coordinate tactical sciences research. Additionally, the agricultural genome initiative was expanded to include the phenome and is authorized at \$40 million annually, a level which is \$10 million more than the House and Senate bills provided.

Title VII of the final farm bill package includes several new competitive research programs, most of which were included in the Senate bill:

- Authorizes a New Beginning for Tribal Students program at \$5 million per year;
- Authorizes a new Next Generation Agriculture Technology Challenge competition at \$1 million annually to incentivize the development of mobile technology on bridging the gap between new farmers and ranchers;
- Authorizes the Agriculture Advanced Research and Development Authority (AGARDA) through the USDA Office of Chief Scientist. The conference report broadens the Senate’s proposed pilot program, directing AGARDA to utilize other transaction authority (OTA), as well as contracts and grants and increasing the annual authorization to \$50M per year from the Senate bill which provided \$10 million. The explanatory statement emphasizes that the establishment of AGARDA is not intended to change how existing agricultural research programs are funded and implemented.
- Authorizes a new Urban, Indoor, and Other Emerging Agricultural Production Research, Education, and Extension Initiative, “Urban AG” pilot program, including competitive research and extension grants, as included in the Senate bill. Additionally, it creates a new Office and Director of Urban Agriculture and Innovative Production, as well as an advisory committee consisting of 12 members. With respect to funding, the conference report authorizes \$10 million in mandatory funding from the Commodity Credit Corporation and \$10 million in annual discretionary funding.
- Authorizes a new program to build international agricultural research, extension and teaching capacity for developing countries working with international partner institutions at \$10 million annually.
- Establishes a new International Agricultural Education Fellowship program for eligible countries authorized at \$5 million annually.
- Creates an emergency citrus disease research and development trust fund that would be funded by the Commodity Credit Corporation at \$25 million annually. Additionally, the specialty crop research initiative was expanded to include pollinators, microbiome, emerging and invasive species.
- Authorizes a research equipment competitive grants program authorized at \$5 million annually and a limitation of \$500,000 max award per institution.
- Establishes the Pollinator Health Task Force, which was originally established through Executive Order during the Obama Administration. The final bill directs the enhanced coordination of pollinator research health by the USDA Chief Scientist, including establishing a coordinator to oversee and coordinate federal research as recommended by the Pollinator Health Task Force and develop annual research priorities in several categories identified in the bill.
- Establishes a new competitive extension design and demonstration initiative authorized at \$5 million annually to support grants on “adaptive prototype systems for extension and education.”

Several administrative changes were also included in the compromised bill. These include provisions from the House bill to increase the limitation on indirect costs from 22% to 30%, as well as a time and effort reporting requirement exemption for land-grant institutions. The final bill removes the universal matching requirement for competitive grants implemented in the 2014 farm bill instead reinstates the matching requirements in place prior to the 2014 farm bill. Note that the matching requirement is

typically waived through appropriations and processes USDA has in place for research of national significance. The explanatory statement addresses the need to preserve the capability of the land-grant system through prohibiting the designation of additional land-grants, with minor exceptions.

Sources and Additional Information:

- The bill and joint explanatory statement are available at:
<https://docs.house.gov/billsthisweek/20181210/CRPT-115hrpt1072.pdf>.

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National Institute for Standards and Technology Releases Draft Report on Return on Federal Research Investments

The U.S. Department of Commerce (DOC) National Institute for Standards and Technology (NIST) recently released a draft “Green Paper” detailing its strategy to implement its Return on Investment (ROI) Initiative, which aims to improve technology transfer and ROI on the federal government’s \$150 billion annual investment in research and development (R&D). The Green Paper is a discussion draft, which outlines key challenges facing the federal technology transfer enterprise, based in part on stakeholder input, and suggests policies intended to improve the impact and efficiency of federal R&D investments. As the report notes, implementation of any of the suggested improvements “that require specific policy, legislative, and/or regulatory actions will be advanced via formal proposals subject to appropriate interagency review, and public comment.” This Green Paper is also subject to additional public comment and a finalized draft is expected to be released in February 2019.

Findings in the report are heavily supported by responses to an earlier request for information (RFI) released by NIST in May and a series of stakeholder meetings that solicited public comment on policies that may help improve the commercialization of federally-funded R&D. Several quotes from individual universities’ responses to the RFI are provided throughout the report, as well as joint comments submitted by major higher education associations.^[1] Again, the policy solutions provided in the report are merely suggestions until they are adopted by Congress and/or undergo rulemaking or proper agency review. Still, the report provides useful insight into NIST’s positions on a number of major technology transfer issues, many of which directly impact universities and research organizations.

The paper lays out five strategies, which include suggested actions intended to improve federal technology transfer processes. Overviews of some of the most relevant provisions provided under the individual strategy sections are below.

While several of NIST’s proposals seem to align with the research community’s priorities for enhanced technology transfer processes, the report makes over a dozen broad recommendations and there could be unintended consequences involved in any attempts to reform the *Bayh-Dole Act of 1980* and other provisions critical to the research-commercialization enterprise. Technology transfer offices are

^[1] <https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Intellectual-Property/Higher-Ed-Associations-RFI-Response-Federal-Technology-Transfer-Authorities-and-Processes.pdf>

encouraged to review the full draft report to better understand NIST's priorities going forward. Lewis-Burke will closely monitor actions by NIST, Congress, and federal agencies in response of this report, including proposed rulemaking procedures with public comment periods.

Strategy 1. Identify regulatory impediments and administrative improvements in federal technology transfer policies and practices

- *Clearly Defined March-In Rights Under Bayh-Dole*: Based on comments received from the community, responses by the National Institutes of Health (NIH) to formal requests, and comments by the original congressional sponsors of the *Bayh-Dole Act*, NIST formally recommends clarifying the government's authority to reassign a patent derived from federally-funded research ("march-in rights") so that it is applied clearly and consistently. To this end, NIST suggests regulatory changes to clarify that march-in be used primarily as a last resort to address compelling national emergencies or issues and *not as a mechanism to control the market price of goods and services*. NIST's position on this issue comes as some Members of Congress and advocates have suggested leveraging march-in rights to control rising prescription drug costs, a proposal which could erode industry confidence in intellectual property (IP) stemming from federally-funded research.
- *Preference for U.S. Manufacturing*: The *Bayh-Dole Act*, which is the main statute for the transfer of federally-funded innovations, requires efforts to manufacture technologies derived from federal investments in the United States; however, institutions can get a waiver from this requirement under certain circumstances. The university community has noted agencies have inconsistent waiver policies and that responses to requests are slow. NIST agrees with this assessment and recommends policy guidance to develop a streamlined, government-wide waiver process. However, NIST also calls for policies to expand manufacturing preference provisions beyond current requirements for exclusive licenses to apply to all licenses. It's unclear how this would affect the university community or what the legislative and/or regulatory pathway would be for this provision. Although the suggestion includes an expansion of waiver options, this will likely be burdensome to impacted stakeholders as increased globalization has made it challenging to meet existing manufacturing standards.

Strategy 2. Increase engagement with private sector technology development experts and investors

- *R&D Tax Credit*: Several respondents submitted comments in support for an improved R&D tax credit that provides additional incentives for companies to partner with universities for R&D, among other provisions. However, NIST states that it is unrealistic for Congress to consider tax reform at this time, following its passage of a tax reform bill in 2017.
- *Establish New Research Transaction Authorities*: NIST proposes a legislative change for the creation of new Research Transaction Authorities (RTAs), which would be flexible agreements for translational research between national laboratories and outside partners, including incubators, university-based research parks, and other entities. The new RTAs would be based on Other Transaction Authorities (OTAs) currently available through some agencies, which allow for accelerated research and prototyping activities.

- *Expand Use of Nonprofit Foundations:* NIST proposes legislation to authorize all federal R&D agencies to establish foundations, where outside funding can be solicited to accelerate technology transfer. This model would be based in part on the Foundation for the National Institutes of Health (FNIH). It is uncertain whether additional federal funding would be authorized to support said foundations or where the funding would originate under NIST's proposal.
- *Technology Maturation Funding:* The report notes responses by small businesses and universities about the costs they bear to bring technologies to market, including developing technologies to the proof-of-concept stage to lower risk and attract industry investment, filing for patents, conducting market research, etc. Respondents further stated that the commercialization of federal technologies presents an unfunded mandate and requested that the federal government provide funding for the maturation of technologies. NIST was sympathetic to the usefulness of a new technology maturation fund but rejected further appropriations for its development. Instead, NIST proposes regulatory reforms that would allow up to three percent of a federal research grant be set aside for patenting a technology. This proposed reform is somewhat troubling as it would further limit R&D grant funding to address only one of several costs faced by organizations looking to commercialize research.
- NIST also collected a number of responses for administrative improvements to the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs to better ensure technologies are matured and sent the comments to the Small Business Administration (SBA) for consideration.

Strategy 3. Build a more entrepreneurial R&D workforce

- *Strengthen the Innovation Corps (I-Corps) Program:* NIST was supportive of comments received from universities and other stakeholders in support of strengthening the I-Corps program, which provides entrepreneurial training and market support for researchers seeking to commercialize new technologies. NIST intends to forward comments on the success of I-Corps to federal agencies and suggestions for improvements, including the expansion of the program, customized I-Corps programs for priority technologies, entrepreneurial training included in large awards, and formal programs for tech-based startups that need more time to develop a product.
- *Managing Conflicts of Interest:* The research community also expressed frustration over increasingly burdensome regulations from federal agencies to monitor perceived financial conflicts of interest and challenges associated with managing individual conflict of interest policies across agencies. In response, NIST suggests the implementation of consistent, government-wide conflict of interest policies for recipients of funding and intends to work with nonfederal organizations to develop best practices. It is uncertain whether NIST has the authority to develop this mechanism on its own or if additional rulemaking would be required.

Strategy 4. Support innovative tools and services for technology transfer

- *Federal IP Data Reporting:* University stakeholders noted that reporting requirements for inventions stemming from federal funding are highly burdensome, as individual agencies rely on

their own platforms with differing requirements. To address this, NIST suggests policy changes to implement streamlined, government-wide reporting requirements and practices. While consolidating these entities would seemingly align with university requests in their responses to the RFI, any development of new requirements should be closely monitored to ensure they will not pose additional undue burden for technology transfer offices.

Strategy 5. Improve understanding of global science and technology trends and benchmarks

- To accomplish this strategy, NIST suggests an assessment of metrics to better capture federal R&D outcomes and impacts. The report notes challenges to developing said metrics, due to the complexity and differing criteria of measuring outcomes from federal R&D investments across stakeholders in academia, industry, and government. While NIST has the authority to assess said metrics, it will require an act of Congress to formalize any future suggestions.

NIST will consider additional feedback on the draft paper until **January 9, 2019**. Comments may be submitted via email to roi@nist.gov.

Sources and Additional Information:

- The draft Green Paper can be found at <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1234.pdf>.
- NIST's plans for the report's implementation can be found at <https://www.nist.gov/tpo/return-investment-roi-initiative/green-paper>.
- Higher education associations' joint response to the NIST ROI RFI can be found at <https://www.aau.edu/sites/default/files/AAU-Files/Key-Issues/Intellectual-Property/Higher-Education-Associations-RFI-Response-Federal-Technology-Transfer-Authorities-and-Processes.pdf>.

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Administration Releases Update to STEM Strategic Plan

The National Science and Technology Council (NSTC) recently released the federal government's five-year strategic plan for STEM education. The report, *Charting A Course For Success: America's Strategy For STEM Education*, represents a plan for science, technology, engineering, and mathematics (STEM) education programs, investments, and activities that are implemented by federal agencies. The 2018 plan is a five-year update of the initial 2013 plan released under the Obama Administration. In addition to guiding federal activities and investments, the strategic plan notes its intention to serve as a "North Star" for the broader STEM community.

The strategic plan states the key role the federal government has in working with stakeholders to further STEM education. The plan supports three overarching goals:

- "Build Strong Foundations for STEM Literacy;
- Increase Diversity, Equity, and Inclusion in STEM; and
- Prepare the STEM Workforce for the Future."

In setting out to achieve these goals, the plan identifies four pathways. These include:

- *“Develop and Enrich Strategic Partnerships.”* This pathway is focused on strengthening and creating relationships between educational institutions, employers, and communities. For institutions of higher education, this involves contributing to STEM ecosystems that engage students in work-based learning, including internships, apprenticeships, and research experiences. The plan notes, “Having strategic partnerships also means exploring opportunities within the education community to blend formal and informal learning, and to blend curricula to enable students to complete both core academic and applied technical curricula in preparation for higher education.”
- *“Engage Students where Disciplines Converge.”* On this pathway, students are encouraged to engage with “real-world problems... using knowledge and methods from across disciplines.” This pathway also issues a call to address the barrier mathematics often creates in accessing STEM careers.
- *“Build Computational Literacy.”* This pathway acknowledges the importance of digital literacy, while calling for the advancement of computational thinking, which the plan notes “means solving complex problems with data.” Additionally, this platform calls for expanded use of digital platforms for teaching and learning.
- *“Operate with Transparency and Accountability.”* This pathway calls for the federal government and stakeholders to utilize “open, evidence-based practices and decision-making” in monitoring progress towards the strategic plan’s goals.

Each pathway in the plan has associated objectives for federal agencies and departments with STEM programs. These objectives are:

- “Foster STEM Ecosystems that Unite Communities; Increase Work-Based Learning and Training through Educator-Employer Partnerships; Blend Successful Practices from Across the Learning Landscape;
- Advance Innovation and Entrepreneurship Education; Make Mathematics a Magnet; Encourage Transdisciplinary Learning;
- Promote Digital Literacy and Cyber Safety; Make Computational Thinking An Integral Element of All Education; Expand Digital Platforms for Teaching and Learning; and
- Leverage and Scale Evidence-Based Practices Across STEM Communities; Report Participation Rates of Underrepresented Groups; Use Common Metrics to Measure Progress; Make Program Performance and Outcomes Publicly Available; Develop a Federal Implementation Plan and Track Progress.”

The plan’s vision is, “All Americans will have lifelong access to high-quality STEM education and the United States will be the global leader in STEM literacy, innovation, and employment.” This vision, and the details set forth in the plan, are in-line with themes many policymakers have been sounding, including a global competition for scientific and technical talent and the relationship between STEM and economic prosperity and national security. The plan recognizes education and research organizations as stakeholders who will engage federal agencies in supporting STEM education. The plan notes, “The United States has a higher education system that is the envy of the world, providing undergraduate and graduate degrees in STEM and conducting research that is an engine for American prosperity and security.” Areas specifically mentioned in the plan, where further STEM education is needed to support

training future researchers, include national security, artificial intelligence, cybersecurity, quantum information science, and advanced manufacturing.

Next Steps

Federal agencies engaged in STEM education will collaborate to develop a consolidated implementation plan that will include additional actions needed to meet the goals and objectives identified in the strategic plan. Some agencies have already announced commitments related to the release of the strategic plan. The National Science Foundation (NSF) announced it will be working with other federal agencies in support of the NSF *Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES)* National Network, a program focused on diversifying the STEM workforce. Progress tracking is a major component of the strategic plan and will entail ongoing review of evidence from current programs, an annual inventory of STEM programs, and publication of rates of participation by women, underrepresented minorities, and persons in rural areas in programs and activities. To support the use of evidence-based STEM practices, agencies will be encouraged to identify and share effective STEM education programs, practices, and policies, including those at the postsecondary level and in lifelong learning. The plan encourages institutions of higher education to use “the objectives as fruitful lines of scholarship, useful guidelines for course design, and touchpoints for teacher preparation programs.”

The strategic plan notes, “There can be no doubt that STEM education continues to be a significant priority for the United States.” It remains to be seen whether this sentiment will translate into increased funding and support for federal programs. Institutions of higher education and research organizations should use the goals, pathways, and objectives in this plan to identify areas of strengths and expertise, and leverage those in identifying and shaping future federal STEM opportunities. The language and themes employed in this plan should be incorporated when interfacing and engaging with policymakers. Efforts around rural communities, extension projects, increasing participation by women and underrepresented minorities, digital platforms, and work-based learning will continue to be priorities for agencies engaged in STEM education. Lewis-Burke will continue to monitor opportunities to engage and shape the implementation of the strategic plan.

Sources and Additional Information:

- The *Charting A Course For Success: America’s Strategy For STEM Education* document can be found at <https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>.
- A White House factsheet accompanying the strategic plan can be found at <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-is-working-to-ensure-all-americans-have-access-to-stem-education/>.
- Examples of agency support for the 2018 Federal STEM Education Strategic Plan can be found at http://www.lewis-burke.com/sites/default/files/federal_agency_statements.pdf.

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Agency Updates

National Institutes of Health Advisory Committee to the Director Holds Wide-Ranging Meeting

On December 13-14, the National Institutes of Health (NIH) Advisory Committee to the Director (ACD) held its last meeting of 2018. The ACD provides advice to NIH Director Francis Collins to further biomedical research and medical science. During the meeting, the ACD covered topics such as foreign influence on biomedical research, the Next Generation Researchers Initiative (NGRI), NIH's sexual harassment policies, the Helping to End Addiction Long-term (HEAL) Initiative, and the launch of a new working group focused on artificial intelligence and machine learning applications to biomedicine.

Foreign Influence on Biomedical Research

The Foreign Influences on Research Integrity ACD Working Group reported that the NIH identified three types of inappropriate activity that negatively affects U.S. biomedical research: undisclosed foreign financial conflicts of interest or conflicts of commitment, peer review violations, and the diversion of intellectual property to foreign entities. The Working Group emphasized that NIH is seeking to mitigate and prevent these actions, rather than criminalize them. The Working Group recommended that future actions should be performed through a partnership between NIH and grantee institutions and also emphasized the value of foreign collaboration and the participation of foreign nationals in U.S. research.

Moving forward, the working group recommends that NIH improve the communication regarding disclosure and information sharing expectations with grantees; more closely coordinate with the Office of Research Integrity; and improve controls within the peer review system to enhance security and limit the ability to share confidential materials (e.g. grant proposals and preliminary, unpublished data).

Next Generation Researchers Initiative

The ACD spent considerable time discussing potential changes to NGRI. The NGRI was formally announced on August 31, 2017 and established NIH's plan to enhance support for early stage investigators (ESI) and early established investigators (EEI) by prioritizing awards for these groups. Under the original NGRI policy, an ESI was defined as an investigator who is within 10 years of their terminal degree and who has not previously competed successfully for a substantial independent NIH research award (e.g. R01 or equivalent). An EEI was defined as an investigator within 10 years of receiving their first substantial, independent NIH R01-equivalent research award as an ESI.

Of the note for the NIH grantee community, the NGRI Working Group's recommendations would discontinue the EEI definition, in favor of a new category of applicants, "at-risk" investigators. These at-risk investigators would be those with meritorious grant proposals who are in danger of losing all NIH support if the application under consideration is not funded. Importantly, an investigator could be considered at risk at any career stage as long as they meet the merit criteria. This new category would eliminate the time constraint and potentially allow special consideration for those who have taken time off for personal matters or other professional opportunities.

The topic of salary support on grants was also discussed at length. Members of the Working Group expressed concern that some investigators were responsible for funding most of their salary through grants and that system could dissuade students from entering the field. One additional issue of concern for the NGRJ working group is the role that salary support on grants plays for early career investigators. Of note, the Working Group recommends that, within one year, the NIH conduct “a detailed analysis of salary support derived from NIH grants.” The Working Group indicates that this analysis should assess whether research positions would be lost and how any changes to salary support policies might affect individuals at different career stages, with the goal of gradually introducing a salary cap limit over a period of seven to ten years. This recommendation follows a similar recommendation in 2012 from another ACD working group on the biomedical research workforce.

Other recommendations from the committee included: developing sustainable training opportunities that promote diversity and inclusion, creating a plan to evaluate the impact of the NGRJ and early career investigator programs, and continuing efforts to improve the transparency of NIH and engage with scientists regarding policy decisions.

Sexual Harassment Policy

The ACD also discussed recent steps the NIH has taken to update their policies to address and prevent sexual harassment, both in academia (i.e. the extramural community) and at the NIH itself (the agency’s own employees). The ACD agreed that it needs to better understand the climate at NIH to mitigate cases of sexual harassment. Part of the discussion centered around the role, or absence thereof, NIH has to incentivize culture change at its grantee organizations. Some argued that the way NIH gives money to grantees could potentially contribute to the problem because it could reinforce power structures. The discussion also reinforced the importance of increasing the number of women in leadership positions and including men in the advocacy efforts against systems that perpetuate sexual harassment.

To continue efforts in this space, the ACD has created a new Working Group on Sexual Harassment. The working group plans to examine NIH’s harassment policies and grant systems and produce preliminary findings and recommendations no later than June 2019. Its final report is due to the full committee by December 2019.

Helping to End Addiction Long-term Initiative

Dr. Nora Volkow, Director of the National Institute on Drug Abuse (NIDA), and Dr. Walter Koroshetz, Director of the National Institute of Neurological Disorders and Stroke (NINDS), provided an update on the HEAL Initiative, NIH’s program to address the opioid public health crisis. HEAL is a \$1.1 billion initiative over fiscal years (FY) 2018-2019. NIH has steadily rolled out funding opportunities related to the HEAL Initiative over the past several months, with a total of 36 funding opportunities now available for FY 2019.

Broadly defined, these opportunities include improving prevention and treatment for opioid misuse and addiction; expanding therapeutic options; optimizing effective treatment strategies; developing new and

improved prevention and treatment strategies; and enhancing treatments for infants with Neonatal Opioid Withdrawal Syndrome (NOWS). In addition, NINDS is focused on enhancing pain management and is seeking to fund research related to understanding the biological underpinnings of pain, accelerating the discovery and pre-clinical and clinical development of non-addictive pain treatments, and establishing the best pain management strategies for acute and chronic pain conditions.

In addition, NIH announced the governance structure for the HEAL Initiative moving forward. This structure will include: the HEAL Executive Committee, composed of the NIH, NIDA, and NINDS directors, plus five additional institute and center directors; the HEAL Federal Workgroup, composed of the representatives from the Department of Health and Human Services, as well as other federal agency partners focused on interagency coordination; the HEAL Multidisciplinary Working Group, composed of members of the NIDA and NINDS Advisory Councils and focused on prioritizing HEAL research projects; and Trans-NIH Scientific Teams, senior NIH staff focused on leading individual HEAL projects.

Artificial Intelligence Working Group

Dr. Larry Tabak, Principal Deputy Director at the NIH, announced the formation of a new ACD Working Group on artificial intelligence (AI) and biomedicine. Dr. Tabak noted the recent exponential growth in biological and life sciences data and the need to better organize and consider AI tools to leverage large data sets. The Working Group will consider the challenges associated with big data in biomedicine and identify how AI and machine learning can advance biomedical research. Also included in their effort will be a consideration of ethics related to AI. The Working Group will identify opportunities for trans-NIH opportunities in AI and identify how NIH can incentivize better, more collaborative engagements between computer science and biomedical researchers. The AI Working Group will provide interim recommendations at the June 2019 ACD meeting, with final recommendations due in December 2019.

Sources and Additional Information:

- The webcast of the ACD meeting and all the reports from the working groups can be found at <https://acd.od.nih.gov/meetings.html>.

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National Science Foundation Releases Request For Information for Integration Institutes for Cross-cutting Biology

On December 6, the National Science Foundation's (NSF) Directorate for Biological Sciences (BIO) published a Dear Colleague Letter (DCL) requesting "high-level ideas" from the research community on potential research topics and fundamental biological questions that could instigate transformative, cross-cutting research. Responses to this request for information (RFI) will influence topics for "integration institutes," long-term NSF awards that are intended to unite subdisciplines of the biological sciences and foster a degree of interdisciplinary collaboration that does not exist in most of NSF's core programs.

The idea of these integration institutes was originally discussed during the last NSF BIO Advisory Committee meeting in September. Responses to the RFI will be used “to inform strategies for supporting a number of Integration Institutes over the next several years.” The DCL does not provide information on how many or how large these institutes would be, but during the BIO Advisory Committee meeting NSF described these as smaller than center awards but larger than individual grants through core programs. The DCL encourages researchers to consider the following questions when submitting their response:

- “What fundamental biological research question is poised for breakthroughs by collaboration across biological subdisciplines? Why is this question important?”
- Why is now a particularly good time to address this question?
- What types of resources, in terms of expertise and infrastructure, would facilitate answers to this question?”

This call is part of a larger effort by BIO to better integrate convergence into the Directorate and begin training the next generation of biological scientists to pursue interdisciplinary research questions in an integrated environment. Additional information on the requirements and specifications for submissions is included in the full RFI.

Deadline: The submission deadline for this RFI is **March 1, 2019**.

Sources and Additional Information:

- The full RFI is available at <https://www.nsf.gov/pubs/2019/nsf19027/nsf19027.jsp>.

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National Oceanic and Atmospheric Administration Announces Public Comment Period for Research and Development Plan

The National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR), the main extramural research arm of the agency, has published a notice for public comment on the 2019 Research and Development (R&D) plan. The R&D plan guides strategic research investments by NOAA and informs the NOAA Research Council, which is the advisory body for major research initiatives including any new Cooperative Institutes.

The key topics of this plan include:

1. “Reduced societal impacts from severe weather and other environmental phenomena;
2. Sustainable use of ocean and coastal resources; and
3. A robust and effective research, development, and transition enterprise.

Comments may address the proposed vision statements as well as key questions, objectives, document structure, and other content and formatting aspects to consider for a draft R&D Plan.”

Due Dates: Comments are due **February 8, 2019** and should be emailed to noaa.rdplan@noaa.gov.

Sources and Additional Information:

- The prior NOAA R&D plan can be found at <https://nrc.noaa.gov/CouncilProducts/ResearchPlans/5YearRDPlan/NOAA5YRPHome.aspx>.

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Intelligence Advanced Research Projects Activity Releases RFI on Deep Learning

The Intelligence Advanced Research Projects Activity (IARPA) released a request for information (RFI) soliciting input on machine learning with a focus on deep learning. Responses to the RFI will inform IARPA's future approach to machine and deep learning efforts and provide researchers an opportunity to advertise their capabilities and ability to contribute to IARPA's mission.

Responses to the RFI will be used by IARPA to create a potential program and list of sources for research efforts in machine and deep learning. RFI responses should answer the following points:

1. "Respondent's capabilities in the realm of machine and deep learning. Of specific interest is the respondent's knowledge of, and experience implementing, current, cutting-edge machine learning techniques.
2. Respondent's ability to perform research and development at the TOP SECRET//SCI level. This includes the presence of qualified, cleared personnel as well as appropriate network access."

Important Deadlines: Responses to the RFI should be sent electronically as a PDF to dni-iarpa-rfi-19-04@iarpa.gov no later than **January 17, 2019 at 5:00pm ET**. Further instructions are included in the RFI.

Sources and Additional Information:

- The full RFI is available at <https://www.iarpa.gov/index.php/working-with-iarpa/requests-for-information/deep-learning>.

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Funding Opportunities

National Science Foundation Releases HDR Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs

On Thursday, December 13, the National Science Foundation (NSF) released a solicitation for its newest program under the Harnessing the Data Revolution (HDR) Big Idea, titled *Institutes for Data Intensive Research in Science and Engineering – Ideas Labs* (I-DIRSE-IL). This solicitation is part of the first phase of creating new HDR Institutes, which are intended to accelerate data-intensive science and engineering through convergence between science and engineering researchers and researchers with expertise in data science foundations, systems, and applications. The Ideas Lab will facilitate the creation of teams that can compete for two-year conceptualization awards that will build towards a full Institutes competition. NSF expects to release a second solicitation for researchers that don't participate in the Ideas Lab to compete for a different type of phase I conceptualization award.

NSF aims to develop innovative projects at the Ideas Lab by facilitating engagement of participants across different backgrounds and areas of expertise. Therefore, this solicitation is open to participants from a wide range of disciplines across science and engineering as well as those with expertise in data science disciplines like computer science, computational science, and mathematics. The Ideas Lab will be facilitated by Directors and Mentors who function as real-time peer reviewers, and it will take place April 22- April 26, 2019 near the NSF headquarters in Alexandria, VA. NSF plans to run at least one Ideas Lab, and more may be held concurrently depending on responses to the solicitation and funding availability.

In the solicitation announcement, NSF elucidated a series of upcoming opportunities that build towards the establishment of multidisciplinary and interconnected HDR Institutes. In fiscal year (FY) 2019, in addition to the I-DIRSE-IL, there will also be a solicitation for developing data science frameworks for integrated data science solutions for science and engineering challenges. Awards resulting from both of these solicitations will constitute the first, or “conceptualization” phase, of the HDR Institutes that NSF notes is “aimed at building communities, defining research priorities, and developing interdisciplinary prototype solutions.” As mentioned above, following the two-year conceptualization awards, NSF will begin phase two, a “convergence and co-design phase,” to scale up and integrate efforts into institutes.

NSF states that the Ideas Labs will concentrate on areas that:

1. “are at a ‘tipping point’ where a timely investment in data-intensive approaches has the maximum potential for a transformative effect;
2. have needs that can benefit from interdisciplinary investments in data analytic infrastructure; and
3. represent investment priorities for the participating NSF directorates during, and beyond, the lifetime of the HDR Big Idea.”

The DIRSE program is part of NSF's cross-cutting 10 Big Ideas initiative and advances the HDR big idea. The intention of HDR is to utilize data to “transform research across all fields of science and engineering” to help the nation. Goals also include expanding research data infrastructure and

preparing the workforce to be responsive to 21st century data needs. Other HDR investments include the *Transdisciplinary Research in Principles of Data Science (TRIPODS) Institutes, Partnerships between Science and Engineering Fields and NSF TRIPODS Institutes (TRIPODS +X), Data Science Corps, and Big Data Regional Innovation Hubs and the Critical Techniques, Technologies and Methodologies for Advancing Foundations and Applications of Big Data Sciences and Engineering (BIGDATA)* programs. Ideas Lab outcomes are expected to advance both HDR and the Growing Convergent Research big ideas.

Due to the multidisciplinary nature of this solicitation, submissions will be managed by program officers across the agency, though proposals should be submitted to the Office of Advanced Cyberinfrastructure in the Directorate for Computer and Information Science & Engineering (CISE). NSF notes that the Ideas Labs should leverage NSF investments and work with communities that don't typically collaborate.

Total Funding and Award Size: Up to \$20 million is available for 10-15 awards for full proposal topics generated from the Ideas Lab. NSF states that "participation in an Ideas Lab is required to be eligible to submit a full conceptualization proposal pursuant to this solicitation."

Due Dates: Preliminary proposals, which are required, are due **January 28, 2019** by 5:00 PM submitter's local time. Full proposals are by invitation only after the Ideas Lab and are due **June 19, 2019** by 5:00 PM submitter's local time.

Eligibility: Individuals at institutions of higher education, non-academic nonprofit organizations such as professional societies and research labs, and NSF-sponsored Federally Funded Research and Development Centers (FFRDCs) are eligible to submit proposals. There are no limits on the number of preliminary proposals that can be submitted by a single organization or individual. Each preliminary proposal must only come from a single Principal Investigator, as teams will be facilitated at the Ideas Lab. This solicitation is open to individuals "at any stage of their research career." Those submitting proposals are expected to be able to attend the full Ideas Lab but may only attend if invited in response to a preliminary proposal. Participants in the HDR I-DIRSE Ideas Lab will not be eligible as a PI or co-PI for the upcoming HDR DIRSE Frameworks solicitation.

Sources and Additional Information:

- The program page for HDR I-DIRSE-IL is available at https://nsf.gov/funding/pgm_summ.jsp?pims_id=505614.
- The full solicitation can be found at <https://www.nsf.gov/pubs/2019/nsf19543/nsf19543.htm>.
- Information on the TRIPODS program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505347.
- Information on the TRIPODS + X program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505527.
- Information on the Data Science Corps program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505536.
- Information on the BIGDATA program is available at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504767.

- More information about NSF's Big Ideas can be found at https://www.nsf.gov/news/special_reports/big_ideas/index.jsp.

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National Science Foundation Releases Mid-Scale Research Infrastructure-2 Solicitation

On December 12, the National Science Foundation (NSF) released the second of two new funding opportunities for mid-scale research infrastructure, Mid-scale Research Infrastructure-2 (mid-scale RI-2). Through this solicitation, NSF expects to support a wide range of implementation activities for construction and acquisition of unique equipment, instrumentation, upgrades to major research facilities, and computational hardware and software for the advancement of fundamental science and engineering, as well as science, technology, engineering, and mathematics (STEM) education research.

This solicitation is the larger of the two research solicitations and will support projects between \$20 million and \$70 million for up to five years. In contrast to Mid-scale Research Infrastructure-1 (mid-scale RI-1), mid-scale RI-2 will not support any pre-implementation design or development and will only support projects at a "high state of readiness." Proposals will be evaluated on their response to an identified need of the research community and potential to enable transformative advances in science and engineering. Additionally, NSF emphasizes the role of mid-scale infrastructure as incubators for the next generation of STEM leaders, and as such, projects should include a strong student training component.

The mid-scale RI-2 solicitation will support infrastructure acquisition and construction, commissioning, as well as limited advanced development needed for construction or procurement. The solicitation will not support the operations or maintenance of infrastructure built under the program. For all projects, NSF expects proposals for infrastructure that would serve a wide community and would lead to public access to new data resources. As with the mid-scale RI-1 solicitation, proposals should feature demonstrations of major community support for the project, such as inclusion in decadal surveys, workshop reports, or community roadmaps, or connections to one of NSF's six Big Ideas for Future Investment.

Proposals will also be evaluated on their project management plans, technical readiness for implementation and pre-implementation design and development activities already accomplished, involvement of a diverse workforce in development, operations planning, and the extent of their ability to enable innovative student training experiences. In addition, NSF expects proposals to outline planning for the operations phase of the infrastructure, including identifying anticipated sources of support for operation and maintenance of any infrastructure awarded under the solicitation.

Total Funding and Award Size: NSF anticipates making between four and six awards worth a total of \$150 million, depending on the availability of funds. After this solicitation, NSF intends to compete this program every two years.

Due Dates: Letters of intent, which are required, are due by **February 8, 2019**. Preliminary proposals are due **March 11, 2019**, by **5:00 PM** local time to the submitter. Full proposals are by invitation only and will be due **August 2, 2019**.

Eligibility: Institutions of higher education, nonprofit organizations, and nonprofit consortia are all eligible to submit proposals. Proposals for infrastructure which would support an MREFC project currently under construction will not be accepted. There are no limits on the number of preliminary proposals that can be submitted by a single lead organization. An individual can serve as a PI or Co-PI on up to two proposals.

Sources and Additional Information:

- The full solicitation can be found at <https://www.nsf.gov/pubs/2019/nsf19542/nsf19542.pdf>.
- More information on the program, including a list of FAQs, can be found at https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505550.
- [The mid-scale RI-1 solicitation can be found at https://www.nsf.gov/pubs/2019/nsf19537/nsf19537.pdf](https://www.nsf.gov/pubs/2019/nsf19537/nsf19537.pdf).
- The Dear Colleague Letter which first announced this solicitation can be found at <https://www.nsf.gov/pubs/2019/nsf19013/nsf19013.jsp>.
- More information about NSF's Big Ideas can be found at https://www.nsf.gov/news/special_reports/big_ideas/index.jsp.

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National Science Foundation Releases Dear Colleague Letter on STEM Workforce Development Utilizing Flexible Personal Learning Environments

On December 4, the National Science Foundation (NSF) issued a Dear Colleague Letter (DCL) titled *STEM Workforce Development Utilizing Flexible Personal Learning Environments*. Through this DCL, NSF announced funding opportunities that seek evidence-based proposals to support flexible personalized learning in science, technology, engineering, and mathematics (STEM) to prepare the future workforce. NSF seeks to fund projects that apply to learners of any age through new proposals and supplemental funding requests to existing grants. NSF's STEM workforce DCL corresponds with the federal government's five-year STEM education strategic plan that was also released on December 4, which includes a focus on preparing the STEM workforce for the future. This DCL also follows one that came out in June, *STEM Education for the Future*, that solicited cross-disciplinary proposals to improve STEM education as technology becomes widespread.

This DCL invites proposals to support STEM workforce development that "will broadly inform development of personalized learning systems or generalize the research results generated during the deployment of online courses." The use of data generated by personalized learning systems or the systems themselves should help educate the future STEM workforce.

NSF recommends proposals that address, but are not limited to, the topics below:

- “Effective design of personalized learning systems for STEM education at any level;
- Factors that increase persistence, motivation, self-efficacy, and retention of learners;
- The influence of public/private partnerships on workforce preparation;
- The design of educational interventions that meet workplace expectations for knowledge and competencies; and
- Measuring the effectiveness of these interventions for different audiences.”

NSF also notes that research proposals are encouraged to complement an anticipated funding opportunity enabled by an \$11 million gift from Boeing. The new partnership between NSF and Boeing seeks to “accelerate training in crucial skill areas,” including workforce development in engineering, mechatronics, robotics, data science and sensor analytics, program management, and artificial intelligence.

Proposals and supplemental funding requests must be made through one of the following existing NSF programs. This DCL has involvement from the Directorates for Education and Human Resources (EHR); Computer & Information Science & Engineering (CISE); Engineering (ENG); and Social, Behavioral & Economic Sciences (SBE).

- EHR Core Research; Full proposals are due January 24, 2019 and October 3, 2019.
- Cyberlearning for Work at the Human-Technology Frontier; Full proposals are due January 14, 2019.
- Discovery Research PreK-12; Full proposals are due November 23, 2019.
- Improving Undergraduate STEM Education; Full proposal window is October 1, 2018 through September 30, 2019.
- Improving Undergraduate STEM Education: Hispanic-Serving Institutions; Full proposals are due March 6, 2019 and September 18, 2019.
- Secure and Trustworthy Cyberspace; Full proposals are accepted at any time.

Of note, NSF encourages “synergistic efforts” and proposals that utilize other NSF investments.

Sources and Additional Information:

- The full DCL can be found at <https://www.nsf.gov/pubs/2019/nsf19025/nsf19025.jsp?>
- The announcement of Boeing and NSF’s partnership can be found at https://www.nsf.gov/news/news_summ.jsp?cntn_id=296700.
- The June *STEM Education for the Future* DCL is available at <https://www.nsf.gov/pubs/2018/nsf18084/nsf18084.jsp>.
- The new federal STEM education strategic plan can be found at <https://www.whitehouse.gov/wp-content/uploads/2018/12/STEM-Education-Strategic-Plan-2018.pdf>

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DARPA Announces Proposers Day for Materials, Architectures, and Characterization for Hypersonics (MACH) Program

The Defense Advanced Research Projects Agency (DARPA) is launching a new program to develop and demonstrate revolutionary new design and material solutions for “sharp, shape-stable, cooled leading edges for hypersonic vehicles.” DARPA’s Defense Sciences Office (DSO) will host a Proposers Day for the Materials, Architectures, and Characterization for Hypersonics (MACH) program on **January 22, 2019**, at the **Executive Conference Center in Arlington, VA**. The Proposers Day will support a planned Broad Agency Announcement (BAA), to be released in mid-January.

In its special notice announcing the MACH Proposers Day, DARPA emphasized that proposed research should offer revolutionary rather than evolutionary advances in the materials, design, and implementation of shape-stable, high heat flux capable leading edge systems for hypersonics. The DARPA DSO Program Manager leading the MACH program is William Carter, a physicist and materials scientist who also leads the Materials for Transduction (MATRIX) Program, which seeks to extend materials breakthroughs to the device and systems level to accelerate transition into DOD platforms.

The goals of the MACH Proposers Day are to:

- “Introduce the research community to the MACH program vision and goals;
- Explain the mechanics of a DARPA program and the milestones of this particular effort; and
- Encourage and promote teaming arrangements among potential organizations that have the relevant expertise, facilities, and capabilities for executing a research and development program responsive to the MACH program goals.”

DARPA strongly encourages teaming before submitting a proposal to ensure teams have the necessary expertise to investigate innovative approaches to hypersonics. DARPA also promotes the participation of “non-traditional performers” at the Proposers Day, including but not limited to small businesses, academic and research institutions, and first-time government contractors.

Due Dates: Participants must register by **January 15, 2019 at 5:00 PM EST** or until the event reaches its capacity at 100 participants with no more than 2 representatives per organization. Proposers may also register to participate via webcast until **January 15, 2019 at 5:00 PM EST** or until the webcast reaches capacity at 500 participants.

Sources and Additional Information:

- The MACH Proposers Day announcement can be found at https://www.fbo.gov/index?s=opportunity&mode=form&id=4470614e4cfbfe13f94d383f82054640&tab=core&_cview=0.
- The registration website can be found at <https://events.sa-meetings.com/ehome/index.php?eventid=387730&>.
- The MACH BAA will be published in mid-January on <https://www.fbo.gov> and on <http://www.grants.gov>.

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Department of Energy Releases Funding Opportunity for Energy-Water Desalination Hub

On December 13, the Department of Energy (DOE) released a \$100 million Funding Opportunity Announcement (FOA) for a future Energy-Water Desalination Hub. The Hub will be funded and managed through the Advanced Manufacturing Office (AMO) within the Office of Energy Efficiency and Renewable Energy (EERE). DOE envisions the new Hub as a multidisciplinary effort comprised of teams from different sectors—academic, private industry, National Laboratories, nonprofit entities, and state and local authorities—that will support the development of low-cost, energy efficient water desalination technologies.

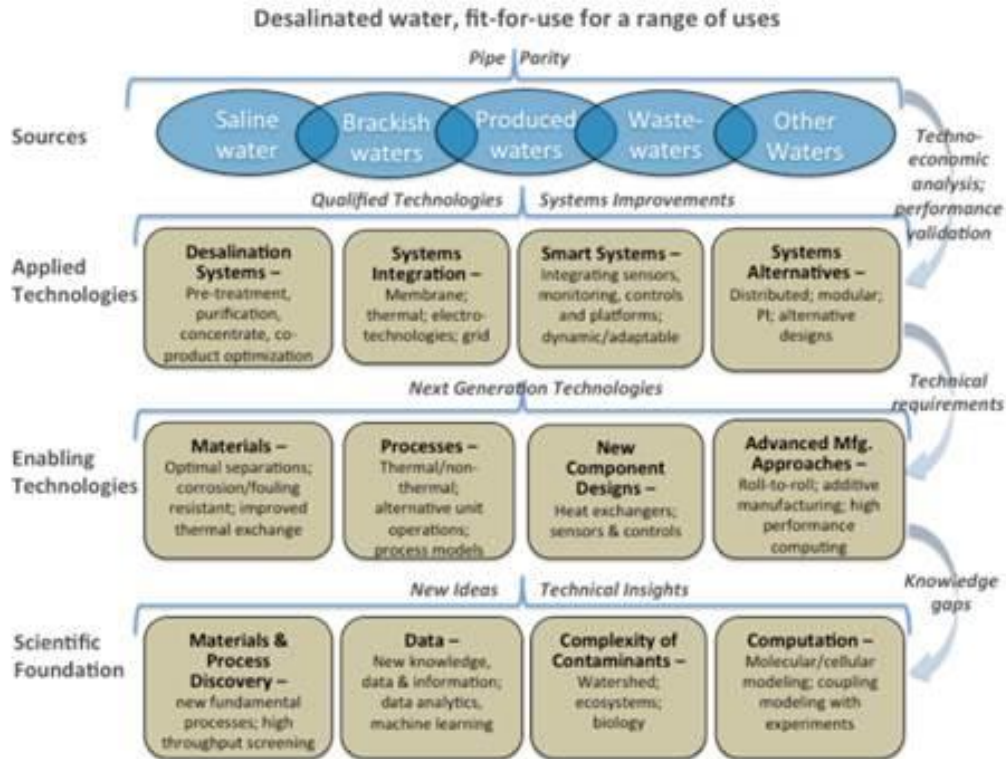
This solicitation represents the culmination of three years' worth of information gathering efforts through requests for information and several community workshops. As a result of stakeholder input, DOE intends to take a holistic approach to desalination. Notably, DOE interprets "desalination" to include a suite of technologies with applications beyond seawater, and that could treat other nontraditional sources of water such as brackish water and/or wastewater from utilities, industry, municipal systems, and agriculture. In addition, interested proposers should consider multiple end uses, including drinking water, industrial processes, and irrigation.

Feedback from the external community also led DOE to prioritize four specific topic areas, with the intention that the ideal proposal will address all of them. These topics include:

- **Materials Research and Development:** "Materials R&D has the potential to improve materials used in specific components and in water treatment systems so as to improve energy efficiency and lower costs. Desalination and related water treatment technologies can benefit from materials improvements for a range of products, including membranes, pipes, tanks and pumps that dramatically increase their performance, efficiency, longevity and are durable and corrosion resistant."
- **New Processes Research and Development:** "Novel technology processes and system design concepts are needed to improve energy efficiency and lower costs for water treatment, including new technologies related to water pre-treatment systems (e.g., upstream from the desalination unit operation). New process technologies are also needed to address associated challenges such as water reuse, water efficiency, and high-value co-products."
- **Modeling and Simulation Tools:** "Multi-scale models and simulation tools are needed to inform the R&D via performance forecasting, design optimization, and operation of desalination technologies and related water-treatment systems that will lead to improved energy efficiency and lower cost."
- **Integrated Data and Analysis:** "In order to consistently define, track, and achieve pipe parity in the highest impact areas, central, strategic, non-biased, integrated data and analysis is needed to align the Hub's project-level activities in each of the four topic areas to the Hub goals and to measure technical success of both project-level activities and the overall Hub. There is also a need to develop information resources, studies, and analysis tools necessary to guide the Hub's strategic R&D portfolio."

The below is a DOE chart illustrating "the types of wide-ranging activities that could be addressed by the Hub in each of the four topic areas" and how to coordinate the various research and development

activities. The Hub is also expected to cover a broad range of research from fundamental science, such as materials research, all the way to systems-level engineering of new devices. The ideal scope of work would cover Technology Readiness Levels 2 through 4, which range from a technology concept or application to component validation in a laboratory environment.



Award Information: DOE anticipates making \$100 million available for one five-year Hub award, with \$20 million being available annually. Congress has already appropriated \$60 million for the Hub. DOE plans to notify successful applicants of award decisions in Summer 2019 and make a final award announcement by Fall 2019.

Eligibility: Institutions of higher education; nongovernment entities, including both for-profit and non-profit organizations; and state or federal entities, including DOE National Laboratories are eligible to apply under this solicitation. All consortium members must be incorporated in the U.S.

Cost Share: Cost-sharing of 20 percent is required.

Due Dates: The informational webinar is on **January 7, 2019**. Concept papers are due on **February 7, 2019**. The deadline for full applications is on **May 7, 2019**

Sources and Additional Information:

- The full FOA is available at <https://eere-exchange.energy.gov/default.aspx#Foald4f2ad83a-6f54-4458-97d8-94e748cb2f14>.
- DOE's workshop report on clean water processing technologies is available at https://www.energy.gov/sites/prod/files/2018/03/f49/CW%20Workshop%20Series%20Report-Summary_0.pdf.

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National Institutes of Health Publishes Research Evaluation and Commercialization Hubs Funding Opportunity Announcement

On December 17, the National Institutes of Health (NIH) published a funding opportunity announcement (FOA) to establish five new awards for the Research Evaluation and Commercialization Hubs (REACH) program. Per a November 20 notice of intent, NIH is seeking centers to address problems that hinder the translation of scientific discoveries into commercially viable diagnostics, devices, therapeutics, and tools that improve patient care and health. This announcement is the second phase of the REACH program, which was launched by the Phase 0 Proof of Concept Partnership pilot program in the 2011 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) reauthorization bill. The REACH program was reauthorized through fiscal year (FY) 2022 and aligns with the Trump Administration's push for greater return on investment of federal funding and increased federal partnerships with industry and academia to advance research and development.

The five new hubs are expected to be unique public-private partnerships based at universities and to participate in a technology development consortium that incorporates best practices from the existing centers that are located at the University of Minnesota, University of Louisville, and Stony Brook University. These institutions are not eligible to apply for this announcement. The awardees will be expected to create an integrated environment of resources that includes funding, knowledge, and expertise, as well as foster the culture needed for sustained technology development.

The hubs will facilitate the development of early-stage technologies that address unmet medical needs through activities such as scouting for promising projects, funding projects with up to \$200,000 (50 percent federal and 50 percent matching funds), providing experienced industry-trained project managers, and delivering product development and entrepreneurship training. They also are expected to partner with other large NIH centers such as cancer centers, Clinical and Translational Science Awards (CTSAs), IDeA Networks of Biomedical Research Excellence (INBRE) and Centers of Biomedical Research Excellence (COBRE), and the current REACH and Centers for Accelerated Innovations (CAI).

Due Dates: Letters of intent are due **February 17, 2019**. Full applications are due by **March 19, 2019** at **5:00 PM** local time to the submitter.

Earliest Estimated Award and Start Date: The earliest start date for the awards will likely be September 2019 and awards will expire by March 20, 2019.

Total Funding and Award Size: \$1 million per year per hub for up to four years

Sources and Additional Information:

- The full notice of intent can be found at <https://grants.nih.gov/grants/guide/notice-files/NOT-OD-19-033.html>.
- More information on the NIH REACH program can be found at <https://ncai.nhlbi.nih.gov/ncai/>.

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National Aeronautics and Space Administration Releases Finalized Solicitation for DRIVE Science Centers

The National Aeronautics and Space Administration (NASA) Heliophysics Division (HPD) has released the finalized call for Phase I proposals for its inaugural *Diversify, Realize, Integrate, Venture, Educate* (DRIVE) Science Center competition. The solicitation is listed as Program Element B.13 of the Research Opportunities in Space and Earth Science-2018 (ROSES-2018) NASA Research Announcement (NRA). The release of this solicitation follows the release of a draft solicitation in September as well as a series of preliminary intelligence reports about the DRIVE Data Centers (DSCs) that Lewis-Burke circulated in 2017 and 2018. Step-1 proposals are due **January 15, 2019**. Proposers may be invited to submit a Step-2 proposal based on the outcome of reviews of their Step-1 proposals.

DSCs will address grand challenge research questions in solar and space physics through the cross-disciplinary application of theory, observation, data analysis, and computational modeling and simulation tools. The DSCs form a component of the broader DRIVE initiative, which is an integrated effort between NASA and the National Science Foundation (NSF) that utilizes a series of low-cost activities to maximize scientific returns on both ongoing and future missions and research programs. DSCs were identified as a top priority for the scientific community in the National Academies 2013 Solar and Space Physics Decadal Survey. The program was jointly formulated by NASA and NSF, but NASA will be responsible for administering it and for making the final selection decisions. NSF program officers will provide input during the selection process.

HPD envisions DSCs as being multi-institutional research centers that bring together diverse, multidisciplinary teams capable of executing ambitious research agendas that address scientific priorities outlined in the Decadal Survey. Successful DSCs will possess management systems, supporting infrastructures, and research plans capable of enabling transformative discovery science within an initial performance period of five years. Additionally, it is crucial that DSCs develop a “distinct and distinctive” portfolio of activities that augments but does not replace existing research programs. DSC proposals must have an emphasis on broader impacts to other fields and/or society in general, and include activities aimed at education and public outreach.

Central to a successful proposal will be the inclusion and active involvement of university students (both undergraduate and graduate) and postdocs in DSC research efforts. HPD views the DSC program as critical to improving the solar and space physics workforce development pipeline in “all four pillars of discovery: theory, observations, data analysis, and computer simulations.” Phase I DSC proposals must

also include Diversity Plans that would be implemented during the five-year performance period of the potential subsequent Phase II DSC.

Funding and Performance Period: DSC competitions will be dual-phase, with this initial call focusing only on Phase I. Subject to appropriations, HPD intends to allocate \$4 million to support roughly six Phase I DSCs each at \$650,000 annually for two years. Successful Phase I DSCs will be invited to submit applications for Phase II funding which will be provided under five-year cooperative agreements. The solicitation indicates that \$6 million will be available for one or two Phase II DSCs starting in 2021.

Eligibility: Eligibility is limited to non-government entities based in the U.S., though researchers at NASA centers may serve as co-investigators. HPD encourages collaborations between different types of entities in order to foster multiple and diverse approaches to research challenges.

Due Dates: Step-1 Proposals are due on **January 15, 2019**. If invited, Step-2 proposals are due on **March 5, 2019**

Sources and Additional Information:

- The finalized DSC solicitation is available at <https://nspires.nasaprs.com/external/solicitations/summary!init.do?solId=%7b1FE15C46-31FA-783D-4ED2-F77BC1A233C9%7d&path=open>.

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