LEWIS–BURKE ASSOCIATES LLC

TUFTS UPDATE – OCTOBER 12, 2018
PREPARED BY LEWIS-BURKE ASSOCIATES LLC

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Introduction

This edition of the Tufts Washington Update includes late September and early October 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 Passes, President Signs Federal Aviation Administration Reauthorization Act

On October 5, President Trump signed into law the *Federal Aviation Administration (FAA) Reauthorization Act* (H.R. 302) which authorizes funding for programs through fiscal year (FY) 2023 and sets policy priorities at FAA. The legislation secured final passage in the Senate by a vote of 93-6, capping a multi-year effort by Congress to pass a long-term and comprehensive authorization. The law creates mechanisms for stakeholders to shape future research priorities at FAA while providing updated guidance on unmanned aircraft systems (UAS) and funding for workforce development activities, among other topics of interest to the research and education communities.

The UAS subtitle of the safety title reauthorizes all seven UAS test ranges through FY 2023 and authorizes the FAA to leverage the Other Transactional Authorities (OTAs) funding mechanism to engage in collaborative research and enhance the effectiveness of test ranges. Utilized by the Department of Defense (DOD) to expedite prototype procurement, OTAs have become an increasingly popular mechanism for non-defense related agencies like the Department of Energy (DOE) and the National Institutes of Health (NIH) because of their flexibility and reduced competition requirements. Furthermore, the statute would set a new framework for UAS activities by institutions of higher education. Under new guidance that FAA will be required to issue, universities and researchers would not require certification or operating authority from FAA to ensure that future regulatory actions do not impair research and innovation.

The UAS subtitle also codifies the Department of Transportation's (DOT) UAS Integration Pilot Program (IPP). This program is DOT's attempt to engage with various stakeholders – including institutions of higher education – on the integration of UAS capabilities into the national airspace (NAS). These capabilities are present in a broad range of fields such as emergency management, public safety, precision agriculture, and infrastructure inspections. While it remains unclear how the program will evolve in the future, DOT will have to notify Congress prior to any future iterations of the IPP.

The law provides opportunities for stakeholders to directly engage with FAA on future extramural research priorities. Additionally, there are several opportunities for stakeholders, including institutions of higher education and research organizations, to provide input to FAA as it develops priorities regarding NextGen research, future workforce needs, and regulation of emerging technologies like UAS. Among these are provisions requiring FAA to submit a report updating its UAS Comprehensive Plan, "Integration of Civil UAS in the National Airspace," to best leverage capabilities and another specifying its top five priority areas for NextGen research.

The law also supports direct workforce training by universities. This includes an authorized grant program providing $5 million per year for workforce development programs that educate pilots, aerospace engineers, UAS operators or provide additional educational infrastructure, teacher training, etc. in support of this workforce development initiative.

The research and development title further authorizes FAA to provide funding for cooperative agreements and grants supporting research and development of airfield pavement technologies by

institutions of higher education or nonprofit organizations. Additionally, the aviation workforce title authorizes a cooperative agreement to develop continuous low energy, emissions, and noise (CLEEN) aircraft and engine technologies.

Rounding out research provisions, the bill authorizes an FAA Center of Excellence for Advanced Materials. The Advanced Materials Center of Excellence was established in 2004 but was reorganized in 2016. Additionally, the reauthorization directs FAA to develop an integrated testbed for cyber research, development, testing, evaluation, and validation with the primary purpose of serving as a 'sandbox' for identifying and solving cybersecurity-related challenges for the National Airspace and Air Traffic Control modernization. While this provision does not explicitly outline a role for universities, it presents an opportunity for universities to engage with FAA in the development of this program.

Sources and Additional Information:

- The text for H.R. 302 can be found at https://docs.house.gov/billsthisweek/20180924/HR302.pdf.
- The UAS Comprehensive Plan can be found at https://www.faa.gov/uas/resources/uas_regulations_policy/media/Second_Edition_Integration_of_Civil_UAS_NAS_Roadmap_July%202018.pdf.

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White House Releases National Biodefense Strategy

On September 18, the White House released its new *National Biodefense Strategy*, which will coordinate interagency efforts to address biological threats in alignment with the Trump Administration's *National Security Strategy.* The White House notes that advances in science and technology, while creating significant opportunities, may expose the U.S. to risks and vulnerabilities to naturally-occurring, accidental, and man-made biological threats.

To carry out the *National Biodefense Strategy*, an accompanying National Security Presidential Memorandum (NSPM)-14 signed by President Trump establishes a Cabinet-level Biodefense Steering Committee. The Steering Committee will be chaired by the Secretary of Health and Human Services (HHS), with participation from the Secretary of Defense, State, Agriculture, Veterans Affairs (VA), and Homeland Secretary, as well as the Attorney General and the Environmental Protection Agency (EPA) Administrator. In a briefing before the report's release, HHS Secretary Alex Azar stated that the Committee's first action would be to assess resources and current efforts to support biodefense in each federal agency and identify capability gaps. Some recommendations from the Committee may be addressed in the fiscal year (FY) 2020 President's budget request, though further emphasis on priorities will be reflected in the FY 2021 budget request, according to Secretary Azar. The Committee will also assess its efforts to carry out the Strategy on an annual basis.

The Strategy aims to strengthen the national biodefense enterprise to prepare for, mitigate, and respond to biological threats. The White House aims to achieve this in coordination and collaboration with state, local, territorial, and tribal entities, as well as academia, industry, and other non-

governmental stakeholders. The Strategy lays out five major goals for the biodefense enterprise, each with its own set of objectives:

- Enable risk awareness to inform decision-making across the biodefense enterprise
- Ensure biodefense enterprise capabilities to prevent bioincidents
- Ensure biodefense enterprise preparedness to reduce the impacts of bioincidents
- Respond to limit the impacts of bioincidents rapidly
- Facilitate recovery to restore the community, economy, and environment after a bioincident

Science and technology play a significant role in supporting all five goals in the Strategy, which notes that the White House will seek to encourage industry and the "innovative technology community" to strengthen the biodefense enterprise in researching and developing capabilities such as new medical countermeasures (MCMs), biosensors and diagnostics, and biosurveillance tools. The Strategy underscores the importance of research and a strong science and technology base to support its goals in forecasting, preventing, responding to, and reducing the impact of bioincidents.

The Blue Ribbon Study Panel on Biodefense, a non-government organization established in 2014 to assess the current biodefense efforts and offer recommendations, praised the release of the study as an integral step to supporting U.S. National Security. Panel Co-Chair and former Governor Tom Ridge (R-PA) noted that the strategy was one of the Panel's top recommendations in its 2015 report, *A National Blueprint for Biodefense* and a requirement into the enacted FY 2017 *National Defense Authorization Act (NDAA).* Governor Ridge noted that he hoped the White House would quickly assign roles to agencies and lay out timelines for agencies to implement the strategy.

HHS Assistant Secretary for Preparedness and Response (ASPR) Dr. Robert Kadlec, who has been appointed by Secretary Azar to lead the day-to-day coordination team, supporting the Steering Committee, emphasized the importance of bringing together public and private partners to plan for current and emerging biological threats. As the Steering Committee develops recommendations and federal agencies consider implementation, Lewis-Burke will continue to monitor opportunities to engage and shape the process.

Additional Sources and Information:

- The National Biodefense Strategy can be found at https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Biodefense-Strategy.pdf.
- The Presidential Memorandum on the Support for National Biodefense can be found at https://www.whitehouse.gov/presidential-actions/presidential-memorandum-support-national-biodefense/.
- The Blue-Ribbon Study Panel on Biodefense's report, "A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts" can be found at https://www.biodefensestudy.org/a-national-blueprint-for-biodefense.
- The National Security Strategy can be found at https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf.

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Agency Updates

National Institutes of Health Release RFI on Future Data Management and Sharing Policy

On October 10, the National Institutes of Health (NIH) released a Request for Information (RFI) seeking input on proposed guidelines for the agency's data management and sharing policy. NIH hopes to allow data to be shared as freely as possible while respecting participants' privacy and protecting confidential information. Feedback obtained through this RFI will be used to inform the development of NIH's draft policy for data management and sharing. This draft policy is expected to be released for additional public comment once it is developed. In addition, the topics on which NIH wishes to obtain feedback include:

- "The definition of scientific data;
- The requirements for data management and sharing plans; and
- The optimal timing, including possible phased adoption, for NIH to consider implementing various parts of a new data management and sharing policy and how possible phasing could relate to needed improvements in data infrastructure, resources, and standards."

This RFI follows the release of the 2015 *Plan for Increasing Access to Scientific Publications and Digital Scientific Data from NIH Funded Scientific Research*, and a 2017 workshop with the National Science Foundation (NSF) which focused on the importance of sharing research data. These activities reflect NIH's commitment to making the results of agency-funded research available to the public. Individuals must submit comments by **December 10, 2018.** In addition, for those interested in participating in the RFI, NIH will conduct a webinar on the guidelines in question on **November 7, 2018** at **11:30 AM ET**.

Additional Sources and Information:

- The RFI can be found at https://grants.nih.gov/grants/guide/notice-files/NOT-OD-19-014.html.
- The proposed data sharing and management provisions can be found at https://osp.od.nih.gov/wp-content/uploads/Data_Sharing_Policy_Proposed_Provisions.pdf.
- Webinar information can be found at
- The 2015 *Plan for Increasing Access to Scientific Publications and Digital Scientific Data from NIH Funded Scientific Research* can be found at https://grants.nih.gov/grants/nih-public-access-plan.pdf.
- Comments can be submitted at https://osp.od.nih.gov/provisions-data-managment-sharing/.
- The webinar can be found at https://nih.webex.com/mw3200/mywebex/default.do.

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Department of Labor Informational Webinar for Higher Education Institutions

The Department of Labor (DOL) is hosting an informational webinar for institutions interested in learning more about DOL opportunities for higher education. DOL has indicated interest in working with institutions of higher education, in particular four-year institutions. This webinar will be an opportunity to learn more about DOL initiatives, resources, and opportunities. Information about how institutions

can encourage work-based learning opportunities, including apprenticeships, will be provided. Participants will also have the opportunity to ask questions.

This webinar builds on DOL's July 2018 release of a funding opportunity to scale apprenticeships in several high-tech sectors including information technology (IT) and IT-related industries, healthcare, advanced manufacturing, financial services, and educational services. Lead applicants for the grants were required to be institutions of higher education.

Interest by the Administration in involving institutions of higher education in workforce development has also been evident in several policy pronouncements. This includes the establishment of the American Workforce Policy Advisory Board, which is to include representatives from the education sector, the Task Force on Apprenticeship Expansion, the DOL scaling apprenticeship grant, and other initiatives. Interest from Congress and the Administration in pairing higher education and workforce development is likely to continue.

Webinar Date: November 1, 2018

Time: 3pm-4pm EST

Webinar Link: https://dol.webex.com/dol/j.php?MTID=mf2e0c1f0278a544d690a812dd9b44c6a

Audio: 1-866-919-3594 Participant Code: 7697723

Additional Sources and Information:

- The funding opportunity can be found at https://www.doleta.gov/grants/docs/FOA-ETA-18-08.pdf.

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Department of Energy Research Priorities for Advanced Scientific Computing Research

On September 17-18, the U.S. Department of Energy's (DOE) Advanced Scientific Computing Advisory Committee (ASCAC) met to discuss current and future research directions for the Office of Advanced Scientific Computing Research (ASCR) within the DOE Office of Science. Presenters included ASCR Director Barb Helland, Acting Office of Science Director Steve Binkley, and various ASCR program managers. The top priority remains the development and procurement of the first exascale computing system by 2021. The exascale computing initiative has fueled the growth in ASCR's budget by 45 percent over the last two years. However, ASCR plans to grow the mathematical, computational, and computer science research budget over the next few years. ASCR has also started to invest in two new strategic priorities—quantum computing and artificial intelligence/machine learning tools for discovery science—and there will be additional funding calls in FY 2019 focused on these two priority areas. ASCR will also be one of the lead DOE offices helping to shape the scale and scope of DOE's future multi-disciplinary quantum science centers.

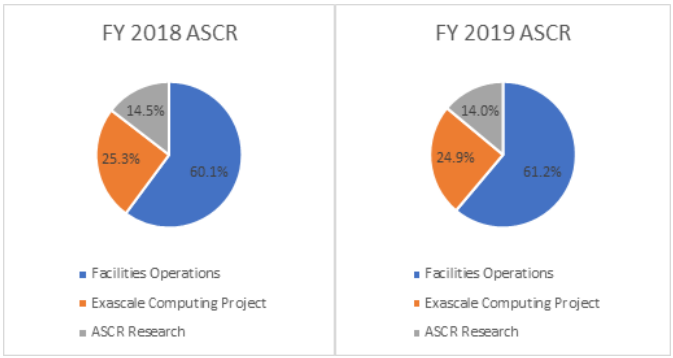
Funding Overview

ASCR's FY 2018 budget is $810 million. Nearly half of that amount—$377.5 million—is dedicated to achieving exascale computing through upgrades to existing ASCR computing facilities and activities related to hardware, software, and applications development through the Exascale Computing Project (ECP). The department-wide Exascale Computing Initiative is one of the Trump Administration's top strategic priorities for DOE.

Within the overall ASCR amount, $118 million has been allocated to Mathematical, Computational, and Computer Science Research (ASCR Research). While this account does provide grant funding to university PIs in base programs like Applied Mathematics, most of the ASCR Research budget has lately been devoted to supporting larger scale efforts through the Mathematical Multifaceted Integrated Capability Center (MMICC) and Scientific Discovery through Advanced Computing (SciDAC) programs. ASCR Research has also heavily invested in quantum information science (QIS) through recently awarded Quantum Algorithm Teams (QATs), Quantum Computing Application Teams (QCATs), and Quantum Testbeds. University researchers are participants in these programs but, with some exceptions, the funded projects have been led by the National Laboratories.

In addition to these larger opportunities, ASCR also funded six Early Career Researchers in FY 2018. Four out of the six are based at universities while the other two are from National Laboratories. Nearly all of the research funded through the Early Career Research program this year shared a common emphasis on machine learning and data analytics.

Moving into FY 2019, the funding distribution for ASCR is expected to remain largely unchanged despite a large increase of $126 million or 16 percent for a total of $936 million. ASCR Research is expected to receive an increase of $13 million for a total of $131 million while funding for ECP and other exascale-related activities will increase by $95 million for a total of $473 million. The two charts below illustrate the stable distribution of funding across ASCR's various obligations even as the ASCR topline continues to experience significant growth.



Research Priorities

The growth of ASCR's budget—which is expanding at a faster rate than any other Office of Science program—is a reflection of the alignment between Congress and the Administration on realizing exascale and pursuing emerging areas like QIS and artificial intelligence (AI). ASCR has already begun funding research in QIS, but its investment in this area is expected to grow by $13 million for a total of $33 million in the coming year. This is part of a larger, Office of Science-wide QIS investment of $105 million that was included in the FY 2019 request and appropriated by Congress in the final FY 2019 Energy and Water bill, and is being implemented as part of a whole-of-government quantum initiative being coordinated by the White House.

ASCR will also implement a $13 million AI and big data initiative to support the development of machine learning algorithms for scientific applications and analysis of data generated at Office of Science user facilities. These funds will also support the DOE-Veterans Affairs partnership aimed at improving health outcomes for veterans through the application of high performance computing (HPC). This initiative will be implemented in concert with a similar, equally funded effort in the National Nuclear Security Administration (NNSA) Advanced Simulation and Computing (ASC) program that applies specifically to the agency's national security mission.

Presenters at ASCAC also provided an update on DOE's ongoing partnership with the National Cancer Institute (NCI). This partnership was established in 2016 to help advance the Precision Medicine Initiative and the National Strategic Computing Initiative. The goal of the DOE-NCI partnership is to use HPC and AI capabilities to advance precision oncology. The three pilot programs supported under this partnership are led by the National Laboratories with some involvement by universities. There may be greater opportunities for the academic community to participate as the program matures and new research directions are identified.

ASCR is working in concert with the Office of Basic Energy Sciences (BES) and the Office of High Energy Physics (HEP) to host a joint workshop on Basic Research Needs in Microelectronics on October 23-25. Workshop participants will be tasked with evaluating the "critical scientific challenges, fundamental research opportunities, and priority research directions that require further study as a foundation for future advances in microelectronics over the next decade and beyond." Particular emphasis will be placed on activities relevant to the continuation of conventional CMOS systems as well as "beyond CMOS" architectures, though QIS and quantum computing will be outside the planned scope of the workshop. Ultimately, DOE hopes to use this workshop as a foundation for building a codesign innovation ecosystem wherein "materials, chemistries, devices, systems, architectures, and algorithms are researched and developed in aa closely integrated fashion." A report summarizing the outcomes of the workshop is expected in early 2019.

Future Research Directions

As DOE prepares to deploy its first exascale computer in 2021, ASCR leadership is beginning to plan for the ramp-down of activities geared toward that effort and the eventual reallocation of resources. To that end, ASCR Director Barb Helland has charged ASCAC with identifying activities currently within ECP that should be transitioned into the ASCR Research account. The subcommittee tasked with producing

the recommendations has been advised to consider "ECP lessons learned for managing large collaborations, ASCR's historic fundamental research investments in applied mathematics, computer science, and computational partnerships at the National Labs, the Administration's new Research and Development priorities in artificial intelligence, quantum information systems and strategic computing."

ASCAC members were generally supportive of the review, especially since much of the ASCR Research budget was shifted into ECP when the latter was established in FY 2017. However, ASCAC members also cautioned that the reallocation of resources from ECP (which will reach its funding peak in FY 2019 and decrease thereafter) toward emerging areas like QIS and AI should not inadvertently degrade any research activities that are critical to the health of the ongoing exascale initiative. Some members also emphasized the need to retain the talent that has been assembled for ECP, especially since its multidisciplinary codesign activities will be crucial to regular maintenance and upgrades to future exascale systems. Helland noted that recent workshops on extreme heterogeneity and scientific machine learning demonstrate that ASCR is still committed to pursuing research activities relevant to exascale even as the office seeks to explore new research areas.

Additional Sources and Information:

- The agenda and presentations from this ASCAC meeting are available at https://science.energy.gov/ascr/ascac/meetings/201809/.

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Funding Opportunities

Accelerating Research through International Network-to-Network Collaborations

On October 9, the National Science Foundation (NSF) released a new agency-wide solicitation titled, *Accelerating Research through International Network-to-Network Collaborations (AccelNet)*. The goal of the AccelNet program is to accelerate scientific discoveries by connecting U.S. research networks with complementary networks abroad to address grand research challenges that will benefit from coordinated international cooperation. AccelNet also aims to better prepare U.S. scientists for international collaborations.

This solicitation is coordinated by the NSF Office of International Science and Engineering (OISE) and follows a consultation process with the U.S. research community. AccelNet is part of a broader NSF effort to restructure how the agency supports international collaboration and follows the closure earlier this year of the NSF International Offices in China, Japan, the European Union.

The solicitation targets proposals aligned with either an NSF Big Idea or a "community-identified challenge with international dimensions." While proposals are accepted across any field of science or engineering supported by NSF, the Accelnet program is intended to facilitate connections between research networks rather than support fundamental research as a primary activity. In addition to collaborative activities, these international collaborations are expected to provide professional development for students, postdoctoral scholars, and early career researchers. The "networks of networks" must have or plan to develop the following characteristics:

- "International engagement that is integral to the success of the activities of the research network;
- Aligned mission and goals among the participating networks to foster research innovation and scientific discovery;
- Development of professional skills and global research perspectives for students, particularly graduate students, postdoctoral scholars, and/or early-career researchers;
- Leveraged resources across participating networks for the mutual benefit of the network of networks; and
- Protocols for communication, collaboration, data management, intellectual property, shared-use infrastructure, and other network activities, facilities, or products that reduce the barriers to international collaboration."

The AccelNet solicitation offers two proposal categories: **Catalytic** and **Full-Scale Implementation**.

Catalytic proposals will support developing or otherwise immature networks of networks and should focus on:

- "community building and linkages, such as exploring common missions and goals;
- developing gap analyses and logic models;
- exchanging ideas, people, and resources; or
- establishing a community of practice."

Catalytic networks should have a specific limited term goal that has the potential to catalyze a breakthrough for the network, for example, a new research approach, networking strategy, or collaborative technology.

Full-Scale Implementation proposals are "envisioned as consisting of a core of networks in the U.S. and abroad that are operational, have established an understanding of the status of the research and researchers across their fields, and are well-positioned to engage each other to advance research." Examples of projects that Full-Scale proposals can pursue include:

- "coordinating goals among networks;
- developing and disseminating products and practices;
- engaging in synthesis efforts to integrate and transfer knowledge; and
- expanding effective professional development activities for students and postdoctoral scholars in international networks."

Eligibility: While there are no limits on institutions, an individual PI or co-PI can only appear on one proposal per fiscal year.

Due Date: Letters of Intent are due December 21, 2018, with full proposals due February 28, 2019. For the next competition, Letters of Intent are due October 30, 2019, with full proposals due January 31, 2020.

Total Funding and Award Size: NSF anticipates between $3 and $6 million per year to fund between seven and nine awards. Catalytic proposals will be funded for three years with a total budget of $750,000 and Full-Scale Implementation proposals will be funded up to five years with a total budget of $2 million.

Additional Sources and Information:

- The solicitation for AccelNet can be found at https://www.nsf.gov/pubs/2019/nsf19501/nsf19501.htm?WT.mc_id=USNSF_25&WT.mc_ev=click#pgm_desc_txt.
- Additional information on the NSF Big Ideas can be found at https://www.nsf.gov/news/special_reports/big_ideas/.
- Background information on the AccelNet community consultation can be found at https://www.nsf.gov/news/news_summ.jsp?cntn_id=245668&org=OISE.
- The NSF OISE Advisory Committee Report of the Subcommittee on International Network-to-Network Collaboration can be found at https://www.nsf.gov/od/oise/OISE-AC/Report/InputOnAcceleratingResearchThroughInternationalNetwork-to-NetworkCollaboration.pdf.

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National Science Foundation Directorate for Biological Sciences Releases Two Solicitations for Rules of Life Big Idea

The National Science Foundation (NSF) has released two new solicitations for one of its 10 Big Ideas, Understanding the Rules of Life (URoL): Epigenetics; and Building a Synthetic Cell – An Ideas Lab Activity. Led by the Directorate for Biological Sciences (BIO), URoL goals are to better understand the "rules" of how life functions; to develop research tools and infrastructure to advance this field; to train the next generation of researchers; and to foster convergent research across NSF. Although proposals for both new solicitations must be submitted to BIO Division of Emerging Frontiers, a cross-foundational team of program officers will oversee the program. Researchers who have not previously engaged on URoL are encouraged to participate. Both solicitations limit individuals to serve as PI or Co-PI on only one proposal, although there is no limit on proposals per institution. Additional information on the two URoL solicitations is presented below:

Understanding the Rules of Life: Epigenetics

The *URoL: Epigenetics* program is intended to support and promote multidisciplinary research, education, and workforce training in the field of epigenetics. The solicitation calls on proposals to use "complementary, interdisciplinary approaches to investigate how epigenetic phenomena lead to emergent properties that explain the fundamental behavior of living systems," explaining that successful projects should "identify general principles ("rules") that underlie a wide spectrum of biological phenomena across size, complexity (e.g., molecular, cellular, organismal, population) and temporal scales (from sub-second to geologic) in taxa from anywhere within the tree of life." Furthermore, these projects must integrate multiple research perspectives, approaches, and disciplines: examples listed include "biology, chemistry, computer science, engineering, geology, mathematics, physics, social and behavioral sciences."

Through this solicitation, NSF seeks to explore the impact of epigenetic inheritance and the broader consequences of this biological phenomenon across living systems (e.g., populations, communities, and ecosystems). NSF is focused on "understanding the relationship between epigenetic mechanisms associated with environmental change, the resultant phenotypes of organisms, and how these mechanisms lead to robustness and adaptability of organisms and populations."

Due Date: Full proposals are due by February 1, 2019.

Total Funding and Award Size: NSF anticipates between approximately $15 million and $18 million in available funding to support six to 12 new awards. There are 2 submission tracks: Track 1 up to $500,000 over three years and Track 2 up to $3 million over five years.

Understanding the Rules of Life: Building a Synthetic Cell – An Ideas Lab Activity

The goal of the *URoL: Building a Synthetic Cell Ideas Lab* is to facilitate new transformative research proposals that bring together multidisciplinary expertise to work towards "designing, fabricating, and validating synthetic cells that express specified phenotypes." The Ideas Lab mechanism is an intensive process that aims to leverage advances in "biophysics, chemistry, computer science, geosciences,

materials, soft condensed matter, and biology with progress in engineering and social sciences." Proposals that address education in existing and future technologies, as well as bioethics, are also important considerations for NSF. NSF welcomes preliminary proposals from a range of disciplines including mathematics, physics, biology, chemistry, geosciences, ethics and statistics, engineering, and graduate and undergraduate education.

Due Date: Preliminary proposals are due December 28, 2018. "Participation in the Ideas Lab requires an invitation in response to a preliminary proposal. Submission of a full proposal derived from the Ideas Lab requires both participation in the Ideas Lab and an invitation to submit a full proposal." Full proposals (by invitation only) are due May 13, 2019. The Ideas Lab will take place from Monday, February 25th to Friday, March 1, 2019, at a location close to NSF headquarters in Northern Virginia.

Total Funding and Award Size: NSF anticipates approximately $10 million in available funding to support between four and six new awards in FY 2019.

Additional Sources and Information:

- The Understanding the Rules of Life: Epigenetics solicitation can be found at https://www.nsf.gov/pubs/2018/nsf18600/nsf18600.htm?WT.mc_id=USNSF_25&WT.mc_ev=click.
- Understanding the Rules of Life: Building a Synthetic Cell – An Ideas Lab Activity can be found at https://www.nsf.gov/pubs/2018/nsf18599/nsf18599.htm?WT.mc_id=USNSF_25&WT.mc_ev=click.
- More information on the Rule of Life Big Idea can be found at https://www.nsf.gov/news/special_reports/big_ideas/life.jsp.

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National Oceanographic Partnership Program Releases FY 2019 Broad Agency Announcement

The National Oceanographic Partnership Program (NOPP) released is fiscal year (FY) 2019 Broad Agency Announcement (BAA) that includes seven different topics and has $27.3 million available. NOPP is an interagency funding program led by the Office of Naval Research (ONR) and 20 federal research partners including the National Oceanic and Atmospheric Administration (NOAA), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), Bureau of Ocean Energy Management (BOEM), and U.S. Geological Survey (USGS). It provides extramural funding to support projects between federal agencies, academia, and industry to advance ocean science research and technology.

The FY 2019 topics include:

1. CubeSat sensors for investigating littoral ocean & atmosphere dynamics
2. Sustained observations of marine biodiversity for improved understanding of marine ecosystem responses to changing environmental conditions
3. Advanced sensor technology

4. Autonomous profiling floats for investigating tropical pacific biogeochemistry
5. Improve arctic operational forecasts; arctic observing system simulation experiments using year of polar prediction data (Arctic OSSE)
6. New approaches for data assimilation to improve operational ocean prediction
7. Autonomous mapping

Proposals are evaluated by NOPP, ONR, and a panel, but ultimately funded by individual agencies. Most of the BAA topics have deadlines for Letters of Intent at the beginning of November 2018 and deadlines for Full Proposal in December 2018 or January 2019.

NOPP is an excellent opportunity for researchers that are trying to break into NOAA, USGS, BOEM, and other mission-driven agencies that have limited extramural research programs. In addition, NOAA is planning to utilize NOPP to fund its new Blue Economy research priorities: aquaculture, unmanned systems, and precision navigation.

Sources and Additional Information:

- The full BAA is available at: https://www.nopp.org/2018/national-oceanographic-partnership-program-nopp-fy2019-broad-agency-announcement/.

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