

non-profit organizations (or consortia of such institutions or organizations) to—

- (1) support research to significantly advance our understanding of the food-energy-water system through quantitative and computational modeling, including support for relevant cyberinfrastructure;
- (2) develop real-time, cyber-enabled interfaces that improve understanding of the behavior of food-energy-water systems and increase decision support capability;
- (3) support research that will lead to innovative solutions to critical food-energy-water system problems; and
- (4) grow the scientific workforce capable of studying and managing the food-energy-water system, through education and other professional development.

(Pub. L. 117–167, div. B, title III, §10348, Aug. 9, 2022, 136 Stat. 1560.)

§ 19058. Biological field stations and marine laboratories

The Director shall continue to support enhancing, repairing and maintaining research instrumentation, laboratories, telecommunications and housing at biological field stations and marine laboratories.

(Pub. L. 117–167, div. B, title III, §10349, Aug. 9, 2022, 136 Stat. 1560.)

§ 19059. Sustainable chemistry research and education

In accordance with section 9303 of title 15, the Director shall carry out activities in support of sustainable chemistry, including—

- (1) establishing a program to make awards, on a competitive basis, to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations) to support—
 - (A) individual investigators and teams of investigators, including to the extent practicable, early career investigators for research and development;
 - (B) collaborative research and development partnerships among universities, industry, and non-profit organizations;
 - (C) integrating sustainable chemistry principles into elementary, secondary, undergraduate, and graduate chemistry and chemical engineering curriculum and research training, as appropriate to that level of education and training; and
- (2) incorporating sustainable chemistry into existing Foundation research and development programs.

(Pub. L. 117–167, div. B, title III, §10350, Aug. 9, 2022, 136 Stat. 1560.)

§ 19060. Risk and resilience research

The Director shall make awards on a competitive basis to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations) to advance knowledge of risk assessment and predictability and to support the creation of tools and technologies, including advancing data analytics and

utilization of artificial intelligence, for increased resilience through—

- (1) improvements in our ability to understand, model, and predict extreme events and natural hazards;
- (2) the creation of novel engineered systems solutions for resilient complex infrastructures, particularly those that address critical interdependence among infrastructures and leverage the growing infusion of cyber-physical-social components into the infrastructures;
- (3) development of equipment and instrumentation for innovation in resilient engineered infrastructures;
- (4) multidisciplinary research on the behaviors individuals and communities engage in to detect, perceive, understand, predict, assess, mitigate, and prevent risks and to improve and increase resilience; and
- (5) advancements in multidisciplinary wildfire science, including those related to air quality impacts, human behavior, and early detection and warning.

(Pub. L. 117–167, div. B, title III, §10351, Aug. 9, 2022, 136 Stat. 1561.)

§ 19061. Unmanned aircraft systems technologies

In coordination with the Administrator of the Federal Aviation Administration and the Administrator of the National Aeronautics and Space Administration, the Director shall carry out a program of research and related activities related to unmanned aircraft system technologies, which may include a prize competition pursuant to section 3719 of title 15 and support for undergraduate and graduate curriculum development.

(Pub. L. 117–167, div. B, title III, §10352, Aug. 9, 2022, 136 Stat. 1561.)

§ 19062. Accelerating unmanned maritime systems technologies

(a) In general

In order to support advances in marine science, maritime domain awareness, and national security the Director, in consultation with the Under Secretary of Commerce for Oceans and Atmosphere and the Commandant of the Coast Guard, shall issue awards, on a competitive basis, to institutions of higher education or nonprofit organizations (or consortia of such institutions or organizations) to support research that will accelerate innovation to advance unmanned maritime systems for the purpose of providing greater maritime domain awareness to the Nation.

(b) Coordination

In implementing this section, the Director shall coordinate with the Coast Guard, the Department of Defense, the National Oceanic and Atmospheric Administration, and other Federal agencies, including those established under the Commercial Engagement Through Ocean Technology Act of 2018 (Public Law 115–394) [33 U.S.C. 4101 et seq.].

(Pub. L. 117–167, div. B, title III, §10353, Aug. 9, 2022, 136 Stat. 1561.)

Editorial Notes

REFERENCES IN TEXT

The Commercial Engagement Through Ocean Technology Act of 2018, referred to in subsec. (b), is Pub. L. 115-394, Dec. 21, 2018, 132 Stat. 5281, also known as the CENOTE Act of 2018, which is classified generally to chapter 54 (§4101 et seq.) of Title 33, Navigation and Navigable Waters. For complete classification of this Act to the Code, see Short title note set out under section 4101 of Title 33 and Tables.

§ 19063. Leveraging international expertise in research

The Director shall explore and advance opportunities for leveraging international capabilities and resources that align with the Foundation and United States research community priorities and have the potential to benefit United States prosperity, security, health, and well-being, including through binational research and development organizations and foundations and by sending teams of Foundation scientific staff for site visits of scientific facilities and agencies in other countries. The Director shall establish and implement policies, including through any research security training requirements, to mitigate the potential risks of such interactions, including risks to the protection of intellectual property and the risk of undue foreign influence on research.

(Pub. L. 117-167, div. B, title III, §10354, Aug. 9, 2022, 136 Stat. 1562.)

§ 19064. Biological research collections**(a) In general**

The Director shall continue to support databases, tools, methods, and other activities that secure and improve existing physical and digital biological research collections, improve the accessibility of collections and collection-related data for research and educational purposes, develop capacity for curation and collection management, and to transfer ownership of collections that are significant to the biological research community, including to museums and universities.

(b) Specimen management plan

In consultation with other relevant Federal research agencies, and as the Director determines is appropriate, the Director shall require that proposals submitted to the Foundation for funding for research that involves collecting or generating specimens include, as part of the data management plan under section 19053 of this title, a description of how the specimens and associated data will be accessioned into and maintained in an established biological collection.

(c) Action Center for Biological Collections

In coordination with other relevant Federal research agencies, as appropriate, the Director shall make awards on a competitive basis to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations) to facilitate coordination and data sharing among communities of practice for research, education, workforce training, evaluation, and business model development, including

by establishing an Action Center for Biological Collections.

(Pub. L. 117-167, div. B, title III, §10355, Aug. 9, 2022, 136 Stat. 1562.)

§ 19065. Clean water research and technology acceleration

The Director shall make awards on a competitive, merit-reviewed basis to institutions of higher education or non-profit organizations (or consortia of such institutions or organizations) to—

(1) support transdisciplinary research to significantly advance our understanding of water availability, quality, and dynamics and the impact of human activity and a changing climate on urban and rural water and wastewater systems, including in low-income, underserved, and disadvantaged communities;

(2) develop, pilot, and deploy innovative technologies, systems, and other approaches to identifying and addressing challenges that affect water availability, quality, and security, including through direct engagement with affected communities and partnerships with the private sector, State, territorial, Tribal, and local governments, non-profit organizations and water management professionals; and

(3) grow the scientific workforce capable of studying and managing water and wastewater systems and of conducting wastewater surveillance, through education, training, and other professional development.

(Pub. L. 117-167, div. B, title III, §10356, Aug. 9, 2022, 136 Stat. 1563.)

§ 19066. Technology and behavioral science research**(a) In general**

The Director shall make awards on a merit-reviewed, competitive basis for research and development to—

(1) increase understanding of social media and consumer technology access and use patterns and related mental health, behavioral, and substance use disorder issues, particularly for children and adolescents; and

(2) explore the role of social media and consumer technology in rising rates of mental health and substance use disorder issues, including within communities experiencing long-term economic distress.

(b) Coordination to avoid duplication

In making awards under this subsection, the Director shall, for purposes of avoiding duplication of activities and research, consult, collaborate, and coordinate with the heads of other relevant Federal departments and agencies, including the Department of Health and Human Services.

(Pub. L. 117-167, div. B, title III, §10357, Aug. 9, 2022, 136 Stat. 1563.)