



Presented by



Weekly Grant Opportunities Update

Jacksonville State University

September 16, 2019

Department of Health and Human Services

Department of Health and Human Services - Centers for Disease Control - NCHHSTP - STD/HIV Disease Intervention Training Centers (DITC)

Proposal Due Date: November 26, 2019

Expected Number of Awards: 6

Estimated Total Program Funding: \$30,000,000

Award Ceiling:

Award Floor:

Funding Opportunity Number: CDC-RFA-PS20-2003

Purpose: The Centers for Disease Control and Prevention (CDC) announces the availability of Fiscal Year (FY) 2020 funds for Notice of Funding Opportunity Announcement (NOFO) PS20-2003: STD/HIV Disease Intervention Training Centers (DITC). Purpose: The purpose of this NOFO is to strengthen capacity of local and state health departments to conduct STD/HIV intervention services. The intent is to transform Disease Intervention Specialists (DIS) training through expanded training content, consistent with the DIS Certification Job Task Analysis (JTA) core competencies, and enhanced knowledge to support the changing role of DIS and National DIS Certification. Training will standardize skill sets to facilitate cross-jurisdictional response, achieve staff proficiency to implement effective public health interventions, and contribute to the reduction of STD and HIV incidence. Program Strategies: Recipients will constitute a network of curriculum development and training centers, charged with collaborative implementation of a nationally standardized training program, for local and state health jurisdictions, throughout the United States. Available funding is categorized in three areas of focus: 1) national online knowledge-based curriculum development; 2) national instructor-led skills-based curriculum development; and 3) regional instructor-led skills-based training. Outcomes: Recipients' performance will be measured by: increased CDC-approved trainings available in eLearning, in-person, or blended learning formats; increased knowledge and skills of DIS and supervisors; and increased capacity of health departments to conduct effective client-level STD/HIV disease intervention tasks performed by DIS.

<https://www.grants.gov/web/grants/view-opportunity.html?opId=319142>

Department of Health and Human Services - National Institutes of Health - The Rat Opioid Genome Project: Clinical Trials not Allowed (U01- Clinical Trial Not Allowed)

Letter of Intent Due Date: October 18, 2019
Proposal Due Date: November 19, 2019
Expected Number of Awards:
Estimated Total Program Funding: \$3,000,000
Award Ceiling:
Award Floor:
Funding Opportunity Number: RFA-DA-20-010

Purpose: There are two main purposes of the Rat Opioid Genome Project. The first is to tease out genetic, genomic, and molecular (epi)genetic variants that underlie phenotypes associated with distinct stages along the opioid use disorder (OUD) trajectory to identify potential targets for future interventions at early stages along the trajectory. The second is to identify genetic, genomic, and molecular (epi)genetic variants underlying comorbid conditions and/or phenotypes that can be used to develop therapeutics to save lives of people who are at the end stages of the OUD trajectory.

<https://grants.nih.gov/grants/guide/rfa-files/RFA-DA-20-010.html>

National Endowment for the Arts

National Endowment for the Arts - NEA Literature Fellowships: Translation Projects, FY2021

Proposal Due Date: January 15, 2020
Expected Number of Awards:
Estimated Total Program Funding:
Award Ceiling: \$25,000
Award Floor: \$12,5000
Funding Opportunity Number: 2020NEA03LFTP

Purpose: An individual may submit only one application for FY 2021 funding. You may not apply for both a Translation Project under this deadline (January 15, 2020) and a Literature Fellowship (in prose or poetry) under the 2020 deadline (when fellowships in poetry are offered). The Arts Endowment's support of a project may begin any time between January 1, 2021, and January 1, 2022, and extend for up to two years. Grant Program Description Through fellowships to published translators, the National Endowment for the Arts (NEA) supports projects for the translation of specific works of prose, poetry, or drama from other languages into English. We encourage translations of writers and of work that are not well represented in English translation. All proposed projects must be for creative translations of

literary material into English. The work to be translated should be of interest for its literary excellence and value. Priority will be given to projects that involve work that has not previously been translated into English.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320514>

National Endowment for the Humanities

National Endowment for the Humanities - Scholarly Editions and Scholarly Translations

Proposal Due Date:	December 4, 2019
Expected Number of Awards:	22
Estimated Total Program Funding:	
Award Ceiling:	\$525,000
Award Floor:	
Funding Opportunity Number:	20191204-RQ

Purpose: The National Endowment for the Humanities (NEH) Division of Research Programs is currently accepting applications for its Scholarly Editions and Scholarly Translations program. This program supports the preparation of editions and translations of pre-existing texts that are foundational to humanities learning and research, but are currently inaccessible to the larger scholarly community and general audiences, or available only in inadequate editions or translations. Typically, the texts are significant literary, philosophical, and historical materials, but other types of work, such as musical notation, may also be included.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320519>

National Science Foundation

National Science Foundation - Secure and Trustworthy Cyberspace

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$53,000,000
Award Ceiling:	\$1,200,000
Award Floor:	\$50,000
Funding Opportunity Number:	19-603

Purpose: In today's increasingly networked, distributed, and asynchronous world, cybersecurity involves hardware, software, networks, data, people, and integration with the physical world. Society's overwhelming reliance on this complex cyberspace, however, has exposed its fragility and

vulnerabilities that defy existing cyber-defense measures; corporations, agencies, national infrastructure and individuals continue to suffer cyber-attacks. Achieving a truly secure cyberspace requires addressing both challenging scientific and engineering problems involving many components of a system, and vulnerabilities that stem from human behaviors and choices. Examining the fundamentals of security and privacy as a multidisciplinary subject can lead to fundamentally new ways to design, build and operate cyber systems, protect existing infrastructure, and motivate and educate individuals about cybersecurity. The goals of the SaTC program are aligned with the National Science and Technology Council's (NSTC) Federal Cybersecurity Research and Development Strategic Plan (RDSP) and National Privacy Research Strategy (NPRS) to protect and preserve the growing social and economic benefits of cyber systems while ensuring security and privacy. The RDSP identified six areas critical to successful cybersecurity research and development: (1) scientific foundations; (2) risk management; (3) human aspects; (4) transitioning successful research into practice; (5) workforce development; and (6) enhancing the research infrastructure. The NPRS, which complements the RDSP, identifies a framework for privacy research, anchored in characterizing privacy expectations, understanding privacy violations, engineering privacy-protecting systems, and recovering from privacy violations. In alignment with the objectives in both strategic plans, the SaTC program takes an interdisciplinary, comprehensive and holistic approach to cybersecurity research, development, and education, and encourages the transition of promising research ideas into practice. The SaTC program welcomes proposals that address cybersecurity and privacy, and draw on expertise in one or more of these areas: computing, communication and information sciences; engineering; education; mathematics; statistics; and social, behavioral, and economic sciences. Proposals that advance the field of cybersecurity and privacy within a single discipline or interdisciplinary efforts that span multiple disciplines are each welcome. Proposals must be submitted pursuant to one of the following designations, each of which may have additional restrictions and administrative obligations as specified in this program solicitation.

Eligible Applicants:

Proposals may only be submitted by the following: -Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities. -Institutions of Higher Education (IHEs) - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Special Instructions for International Branch Campuses of US IHEs: If the proposal includes funding to be provided to an international branch campus of a US institution of higher education (including through use of subawards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus, and justify why the project activities cannot be performed at the US campus.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320432>

National Science Foundation - Cellular and Biochemical Engineering

Proposal Due Date:

Proposals accepted anytime

Expected Number of Awards:

Estimated Total Program Funding:
Award Ceiling: \$8,200,000
Award Floor:
Funding Opportunity Number: PD-20-1491

***Purpose:** The Cellular and Biochemical Engineering (CBE) program is part of the Engineering Biology and Health cluster, which also includes: 1) the Biophotonics program; 2) the Biosensing program; 3) the Disability and Rehabilitation Engineering program; and 4) the Engineering of Biomedical Systems program. The Cellular and Biochemical Engineering program supports fundamental engineering research that advances understanding of cellular and biomolecular processes. CBE-funded research may lead to the development of enabling technology for advanced biomanufacturing in support of the therapeutic cell, biochemical, biopharmaceutical, and biotechnology industries. Fundamental to many research projects in this area is the understanding of how biomolecules, subcellular systems, cells, and cell populations interact, and how those interactions lead to changes in structure, function, and behavior. A quantitative treatment of problems related to biological processes is considered vital to successful research projects in the CBE program. The program encourages highly innovative and potentially transformative engineering research leading to novel bioprocessing and biomanufacturing approaches. The CBE program also encourages proposals that effectively integrate knowledge and practices from different disciplines while incorporating ongoing research into educational activities. Major areas of interest for the program include: Metabolic engineering and synthetic biology for biomanufacturing, including the design of synthetic metabolic components and synthetic cells, Quantitative systems biotechnology, Microbiome structure, function, synthesis, and maintenance, Protein and enzyme engineering, and Single cell and population dynamics and modeling in the context of biomanufacturing.*

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505721

National Science Foundation - Biophotonics
Proposal Due Date: Proposals accepted anytime
Expected Number of Awards:
Estimated Total Program Funding: \$6,600,000
Award Ceiling:
Award Floor:
Funding Opportunity Number: PD-20-7236

***Purpose:** The Biophotonics program is part of the Engineering Biology and Health cluster, which also includes: 1) the Biosensing program; 2) the Cellular and Biochemical Engineering program; 3) the Disability and Rehabilitation Engineering program; and 4) the Engineering of Biomedical Systems program. The goal of the Biophotonics program is to explore the research frontiers in photonics principles, engineering and technology that are relevant for critical problems in fields of medicine,*

biology and biotechnology. Fundamental engineering research and innovation in photonics is required to lay the foundations for new technologies beyond those that are mature and ready for application in medical diagnostics and therapies. Advances are needed in nanophotonics, optogenetics, contrast and targeting agents, ultra-thin probes, wide field imaging, and rapid biomarker screening. Low cost and minimally invasive medical diagnostics and therapies are key motivating application goals. Research topics in this program include:

Macromolecule Markers: Innovative methods for labeling of macromolecules. Novel compositions of matter. Methods of fabrication of multicolor probes that could be used for marking and detection of specific pathological cells. Pushing the envelope of optical sensing to the limits of detection, resolution, and identification.

Low Coherence Sensing at the Nanoscale: Low coherence enhanced backscattering (LEBS). N-dimensional elastic light scattering. Angle-resolved low coherence interferometry for early cancer detection (dysplasia).

Neurophotonics: Studies of photon activation of neurons at the interface of nanomaterials attached to cells. Development and application of biocompatible photonic tools such as parallel interfaces and interconnects for communicating and control of neural networks.

Microphotonics and Nanophotonics: Development and application of novel nanoparticle fluorescent quantum-dots. Sensitive, multiplexed, high-throughput characterization of macromolecular properties of cells. Nanomaterials and nanodevices for biomedicine.

Optogenetics: Novel research in employing light-activated channels and enzymes for manipulation of neural activity with temporal precision. Utilizing nanophotonics, nanofibers, and genetic techniques for mapping and studying in real-time physiological processes in organs such as the brain and heart.

<https://www.grants.gov/web/grants/view-opportunity.html?opId=320488>

National Science Foundation - Electrochemical Systems

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$13,093,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-7644

Purpose: *The Electrochemical Systems program is part of the Chemical Process Systems cluster, which also includes: 1) the Catalysis program; 2) the Interfacial Engineering program; and 3) the Process Systems, Reaction Engineering, and Molecular Thermodynamics program.*

The goal of the Electrochemical Systems program is to support fundamental engineering research that will enable innovative processes involving electro- or photochemistry for the sustainable production of electricity, fuels, and chemicals. Processes for sustainable energy and chemical production must be scalable, environmentally benign, reduce greenhouse gas production, and utilize renewable resources. Research projects that stress fundamental understanding of phenomena that directly impact key barriers to improved system or component-level performance (for example, energy efficiency, product

yield, process intensification) are encouraged. Processes for energy storage should address fundamental research barriers for the applications of renewable electricity storage or for transport propulsion. For projects concerning energy storage materials, proposals should involve hypotheses that involve device or component performance characteristics that are tied to fundamental understanding of transport, kinetics, or thermodynamics. Advanced chemistries are encouraged.

Proposed research should be inspired by the need for economic and impactful conversion processes. All proposal project descriptions should address how the proposed work, if successful, will improve process realization and economic feasibility and compare the proposed work against current state of the art. Highly integrated multidisciplinary projects are encouraged.

<https://www.grants.gov/web/grants/view-opportunity.html?opId=320487>

National Science Foundation - Environmental Sustainability

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$7,066,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-7643

Purpose: The Environmental Sustainability program is part of the Environmental Engineering and Sustainability cluster together with 1) the Environmental Engineering program and 2) the Nanoscale Interactions program. The goal of the Environmental Sustainability program is to promote sustainable engineered systems that support human well-being and that are also compatible with sustaining natural (environmental) systems. These systems provide ecological services vital for human survival. Research efforts supported by the program typically consider long time horizons and may incorporate contributions from the social sciences and ethics. The program supports engineering research that seeks to balance society's need to provide ecological protection and maintain stable economic conditions. There are four principal general research areas that are supported:

Industrial ecology: Topics of interest include advancements in modeling such as life cycle assessment, materials flow analysis, input/output economic models, and novel metrics for measuring sustainable systems. Innovations in industrial ecology are encouraged.

Green engineering: Research is encouraged to advance the sustainability of manufacturing processes, green buildings, and infrastructure. Many programs in the Engineering Directorate support research in environmentally benign manufacturing or chemical processes. The Environmental Sustainability program supports research that would affect more than one chemical or manufacturing process or that takes a systems or holistic approach to green engineering for infrastructure or green buildings.

Improvements in distribution and collection systems that will advance smart growth strategies and ameliorate effects of growth are research areas that are supported by Environmental Sustainability. Innovations in management of storm water, recycling and reuse of drinking water, and other green engineering techniques to support sustainability may also be fruitful areas for research.

Ecological engineering: Proposals should focus on the engineering aspects of restoring ecological function to natural systems. Engineering research in the enhancement of natural capital to foster sustainable development is encouraged.

Earth systems engineering: Earth systems engineering considers aspects of large scale engineering research that involve mitigation of greenhouse gas emissions, adaptation to climate change, and other global concerns.

<https://www.grants.gov/web/grants/view-opportunity.html?opId=320494>

National Science Foundation - Process Systems, Reaction Engineering, and Molecular Thermodynamics

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$4,900,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-1403

Purpose: *The Process Systems, Reaction Engineering and Molecular Thermodynamics program is part of the Chemical Process Systems cluster, which also includes: 1) the Catalysis program; 2) the Electrochemical Systems program; and 3) the Interfacial Engineering program.*

The goal of the Process Systems, Reaction Engineering and Molecular Thermodynamics program is to advance fundamental engineering research on the rates and mechanisms of chemical reactions, systems engineering and molecular thermodynamics as they relate to the design and optimization of chemical reactors and the production of specialized materials that have important impacts on society.

The program supports the development of advanced optimization and control algorithms for chemical processes, molecular and multi-scale modeling of complex chemical systems, fundamental studies on molecular thermodynamics, and the integration of this information into the design of complex chemical reactors. An important area supported by the program focuses on the development of energy-efficient and environmentally-friendly chemical processes and materials.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505727

National Science Foundation - Disability and Rehabilitation Engineering

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$4,600,000

Award Ceiling:

Award Floor:

Funding Opportunity Number:

PD-20-5342

***Purpose:** The Disability and Rehabilitation Engineering program is part of the Engineering Biology and Health cluster, which also includes: 1) the Biophotonics program; 2) the Biosensing program; 3) the Cellular and Biochemical Engineering program; and 4) the Engineering of Biomedical Systems program.*

The Disability and Rehabilitation Engineering program supports fundamental engineering research that will improve the quality of life of persons with disabilities through: development of new technologies, devices, or software; advancement of knowledge regarding healthy or pathological human motion; or understanding of injury mechanisms.

Research may be supported that is directed toward the characterization, restoration, rehabilitation, and/or substitution of human functional ability or cognition, or to the interaction between persons with disabilities and their environment. Areas of particular interest are neuroengineering and rehabilitation robotics. The program will also consider research in the areas of: new engineering approaches to understand healthy or pathological motion, both as a target for rehabilitation and as a means to characterize motion related to disability or injury; understanding injury at the tissue- or system-level such that interventions may be developed to reduce the impact of trauma and subsequent disability; or understanding the role of gut microbiota in modulating disability in the context of rehabilitation.

Emphasis is placed on significant advancement of fundamental engineering knowledge that facilitates transformative outcomes. We discourage applications that propose incremental improvements.

Innovative proposals outside of the above specific interest areas may be considered. However, prior to submission, it is recommended that the PI contact the Program Director to avoid the possibility of the proposal being returned without review.

NSF does not support clinical trials; however, feasibility studies involving human volunteers may be supported if appropriate to the project objectives.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505718

National Science Foundation - Catalysis

Proposal Due Date:

Proposals accepted anytime

Expected Number of Awards:

Estimated Total Program Funding:

\$4,800,000

Award Ceiling:

Award Floor:

Funding Opportunity Number:

PD-20-1401

Purpose: The Catalysis program is part of the Chemical Process Systems cluster, which also includes: 1) the Electrochemical Systems program; 2) the Interfacial Engineering program; and 3) the Process Systems, Reaction Engineering, and Molecular Thermodynamics program.

The goals of the Catalysis program are to increase fundamental understanding in catalytic engineering science and to advance the development of catalytic materials and reactions that are beneficial to society. Research in this program should focus on new concepts for catalytic materials and reactions, utilizing synthetic, theoretical, and experimental approaches. Target applications include fuels, specialty and bulk chemicals, environmental catalysis, biomass conversion to fuels and chemicals, conversion of greenhouse gases, and generation of solar hydrogen, as well as efficient routes to energy utilization.

Heterogeneous catalysis represents the main thrust of the program. Proposals related to both gas-solid and liquid-solid heterogeneous catalysis are welcome, as are proposals that incorporate concepts from homogeneous catalysis.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505723

National Science Foundation - Combustion and Fire Systems

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$4,654,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-1407

Purpose: The Combustion and Fire Systems program is part of the Transport Phenomena cluster, which also includes 1) the Fluid Dynamics program; 2) the Particulate and Multiphase Processes program; and 3) the Thermal Transport Processes program.

The goal of the Combustion and Fire Systems program is to advance energy conversion efficiency, improve energy security, enable cleaner environments, and enhance public safety.

The program endeavors to create fundamental scientific knowledge that is needed for useful combustion applications and for mitigating the effects of fire. The program aims to identify and understand the controlling basic principles and to use that knowledge to create predictive capabilities for designing and optimizing practical combustion devices.

Important outcomes for this program include:

broad-based tools — experimental, theoretical, and computational — that can be applied to a variety of problems in combustion and fire systems;
science and technology for clean and efficient generation of power;

discoveries that enable clean environments (for example, by reduction in combustion-generated pollutants); and enhanced public safety through research on fire growth, inhibition, and suppression.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505699

National Science Foundation - Thermal Transport Processes

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$7,047,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-1406

Purpose: The Thermal Transport Processes program is part of the Transport Phenomena cluster, which includes also 1) the Combustion and Fire Systems program; 2) the Fluid Dynamics program; and 3) the Particulate and Multiphase Processes program. The Thermal Transport Processes program supports engineering research projects that lay the foundation for new advances in thermal transport phenomena. These projects should either develop new fundamental knowledge or combine existing knowledge in thermodynamics, fluid mechanics, and heat and mass transfer to probe new areas of innovation in thermal transport processes. The program seeks transformative projects with the potential for improving basic understanding, predictability and application of thermal transport processes. Projects should articulate the contribution(s) to the fundamental knowledge supporting thermal transport processes and state clearly the potential application(s) impact when appropriate. Projects that combine analytical, experimental and numerical efforts, geared toward understanding, modeling and predicting thermal phenomena, are of great interest. Collaborative and interdisciplinary proposals for which the main contribution is in thermal transport processes fundamentals are also encouraged. Emphasis is placed on research that demonstrates how thermal transport phenomena affect the existence, behavior and dynamics of components and systems. Priority is given to insightful investigations of fundamental problems with clearly defined economic, environmental and societal impacts. Some specific areas of interest include:

Convection/diffusion/radiation: Heat and mass transport in geometrically complex surfaces and structures; thermal-related turbulence; development of form-function relationships in thermal processes; thermal design methodology; radiation amplification, controlling, and extinction; interfacial gas-solid and liquid-solid thermal and species-driven phenomena.

Thermodynamics: Thermal-electric energy conversion; battery-related thermal issues; power generation and propulsion; phase-change and supercritical energy cycles; non-equilibrium thermal processes.

Biological heat and mass transport: Biomimicry; intra- and extra-cellular thermal transport; freeze resistance mechanisms; thermotherapy and thermoregulation; organ conservation (freezing and thawing).

Nanothermics, microthermics, and mesothermics: Scaling up nanoscale heat transport processes or coupled heat-mass transport processes; utilization of new multi-functional, meta- and graded-materials in thermal transport; nano-texturing and phase-change; multi-scale thermal transport in a process.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320471>

National Science Foundation - Particulate and Multiphase Processes

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$8,285,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-1415

Purpose: The Particulate and Multiphase Processes program is part of the Transport Phenomena cluster, which also includes 1) the Combustion and Fire Systems program; 2) the Fluid Dynamics program; and 3) the Thermal Transport Processes program. The goal of the Particulate and Multiphase Processes program is to support fundamental research on physico-chemical phenomena that govern particulate and multiphase systems, including flow of suspensions, drops and bubbles, granular and granular-fluid flows, behavior of micro- and nanostructured fluids, unique characteristics of active fluids, and self assembly/directed-assembly processes that involve particulates. The program encourages transformative research to improve our basic understanding of particulate and multiphase processes with emphasis on research that demonstrates how particle-scale phenomena affect the behavior and dynamics of larger-scale systems. Although proposed research should focus on fundamentals, a clear vision is required that anticipates how results could benefit important applications in advanced manufacturing, energy harvesting, transport in biological systems, biotechnology, or environmental sustainability. Collaborative and interdisciplinary proposals are encouraged, especially those that involve a combination of experiment with theory or modeling. Major research areas of interest in the program include:

Multiphase flow phenomena: Dynamics of particle/bubble/droplet systems, behavior of structured fluids (colloids/ferro-fluids), granular flows, rheology of multiphase systems, unique characteristics of active fluids, and novel approaches that relate micro- and nanoscale phenomena to macroscale properties and process-level variables.

Particle science and technology: Aerosols, production of particles and polymer-particle complexes with engineered properties, self-assembly, directed assembly, and template-directed assembly of particles into functional materials and devices.

Multiphase transport in biological systems: Analysis of physiological processes, applications of functionalized nanostructures in clinical diagnostics and therapeutics.

Interfacial transport: Dynamics of particles and macromolecules at interfaces, kinetics of adsorption and desorption of nanoparticles and surfactants and their spatial distributions at interfaces, complex molecular interactions at interfaces, formation of interfacial complexes that affect the dynamics of particles.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320484>

National Science Foundation - Fluid Dynamics

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	
Estimated Total Program Funding:	\$9,175,000
Award Ceiling:	
Award Floor:	
Funding Opportunity Number:	PD-20-1443

Purpose: The Fluid Dynamics program is part of the Transport Phenomena cluster, which also includes 1) the Combustion and Fire Systems program; 2) the Particulate and Multiphase Processes program; and 3) the Thermal Transport Processes program. The Fluid Dynamics program supports fundamental research toward gaining an understanding of the physics of various fluid dynamics phenomena. Proposed research should contribute to basic scientific understanding via experiments, theoretical developments, and computational discovery. Major areas of interest and activity in the program include:

Turbulence and transition: High Reynolds number experiments; large eddy simulation; direct numerical simulation; transition to turbulence; 3-D boundary layers; separated flows; multi-phase turbulent flows; flow control and drag reduction. A new area of emphasis is high speed boundary layer transition and turbulence; the focus would be for flows at Mach numbers greater than 5 to understand cross-mode interactions leading to boundary layer transition and the ensuing developing and fully developed turbulent boundary layer flows. Combined experiments and simulations are encouraged.

Bio-fluid physics: Bio-inspired flows; biological flows with emphasis on flow physics.

Non-Newtonian fluid mechanics: Viscoelastic flows; solutions of macro-molecules.

Microfluidics and nanofluidics: Micro- and nano-scale flow physics.

Wind and ocean energy harvesting: Focused on fundamental fluid dynamics associated with renewal energy.

Fluid-structure interactions: This is an NSF-AFOSR (Air Force Office of Scientific Research) joint funding area focused on theory, modeling and/or experiments for hypersonics applications. A small number of awards (depending on availability of funds and proposal quality) will be provided and will be jointly reviewed by NSF and AFOSR using the NSF panel format. Actual funding format and agency split for an award will be determined after the proposal selection process. The AFOSR program that participates in this initiative is the Program on High Speed Aerodynamics (program officer: Dr. Ivett Leyva).

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320491>

National Science Foundation - Environmental Engineering

Proposal Due Date:	Proposals accepted anytime
Expected Number of Awards:	103
Estimated Total Program Funding:	\$10,000,000
Award Ceiling:	

Award Floor:

Funding Opportunity Number:

PD-20-1440

Purpose: The Environmental Engineering program is part of the Environmental Engineering and Sustainability cluster, which also includes 1) the Nanoscale Interactions program; and 2) the Environmental Sustainability program. Environmental engineering is an interdisciplinary field that applies chemical, biological, and physical scientific principles to protect human and ecological health. The goal of the Environmental Engineering program is to support potentially transformative fundamental research that applies scientific and engineering principles to 1) prevent, minimize, or re-use solid, liquid, and gaseous discharges of pollution to soil, water, and air by closing resource loops or through other measures; 2) mitigate the ecological and human-health impacts of such releases by smart/adaptive/reactive amendments or manipulation of the environment, and 3) remediate polluted environments through engineered chemical, biological, and/or geo-physical processes. Integral to achieving these goals is a fundamental understanding of the transport and biogeochemical reactivity of pollutants in the environment. Therefore, research on environmental micro/biology, environmental chemistry, and environmental geophysics may be relevant providing the research has a clear objective of protecting human and ecological health. Major areas of interest include (but are not limited to):

Building a future without pollution or waste: Investigation of innovative biogeochemical processes that prevent or minimize the production of waste; waste valorization and other research that will lead to new technologies to extract resources from waste streams to close the resource loop.

Sustainable supply and protection of water: Investigation of innovative biogeochemical processes that remove, biologically or chemically transform, and/or prevent the release of contaminants in surface and groundwater; innovative processes for recovery of water, nutrients, and other resources from wastewater, saline water, or brines; innovative approaches to smart and adaptive management of surface water, groundwater, and urban watersheds and storm water to maintain/improve quality and prevent downstream impacts from nutrients and other water constituents.

Environmental chemistry, fate, and transport of nutrients and contaminants of emerging concern in air, water, soils, and sediments: Investigation of transport and biogeochemical reactivity in the environment; environmental forensics to identify sources and reaction pathways; field- and laboratory scale experimental research that bridges gaps between data and predictions from molecular, continuum, and field-scale modeling.

Environmental engineering of the built environment: Research to understand the biogeochemical reactivity of the built environment with the goal of enhancing and improving human and ecological health; research that will lead to new technologies to improve outdoor and indoor air quality; research to understand how drinking water and wastewater chemical characteristics and microbial community structure impact or are affected by water quality and human health.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=320490>

National Science Foundation - Biosensing

Proposal Due Date:

Proposals accepted anytime

Expected Number of Awards:

Estimated Total Program Funding:

\$7,600,000

Award Ceiling:

Award Floor:

Funding Opportunity Number:

PD-20-7909

Purpose: The Biosensing program is part of the Engineering Biology and Health cluster, which also includes 1) the Biophotonics program; 2) the Cellular and Biochemical Engineering program; 3) the Disability and Rehabilitation Engineering program; and 4) the Engineering of Biomedical Systems program.

The Biosensing program supports fundamental engineering research on devices and methods for measurement and quantification of biological analytes. Examples of biosensors include, but are not limited to, electrochemical/electrical biosensors, optical biosensors, plasmonic biosensors, and paper-based and nanopore-based biosensors. In addition to advancing biosensor technology development, proposals that address critical needs in biomedical research, public health, food safety, agriculture, forensic, environmental protection, and homeland security are highly encouraged. Proposals that incorporate emerging nanotechnology methods are especially encouraged.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505720