Oportunidades de Fondos Externos

Universidad de Puerto Rico

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UPR external funding success is of utmost importance to strengthen the connection between its investigators/faculty and funding entities who have the potential to sponsor their research and academic endeavors. This publication has been developed in order to summarize funding opportunities and promote the participation of faculty and collaborative research groups in their intent to apply for external funds. Such efforts are aligned with the UPR Strategic Plan 2017-2022: A New Era of Innovation and Transformation for Student Success; Certification 50 (2016-2017) of the Governing Board, December 19, 2016. Strategic Area: Research and Creative Work. Goal 2: Increase Applications for and awards of external funds for research and creative work.

SELECTED FUNDING OPPORTUNITIES

This is a selection of identified funding opportunities for the period ending 01/22/2021 and is in no way all-inclusive of funding opportunities available. Further information has been shared with External Resource Coordinators and Research Coordinators at each UPR campus by e-mail or MS Teams.

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1. Research and Evaluation on Violence Against Women, Fiscal Year 2021, Department of Justice, National Institute of Justice

Application Deadline: March 16, 2021

With this solicitation, NIJ seeks proposals for rigorous research and evaluation projects to support the development of objective and independent knowledge and validated tools to reduce violence against women (VAW) (including violence against elderly women and American Indian and Alaska Native women and girls [1]), promote justice for victims of crime, and enhance criminal justice responses. For that reason, this solicitation seeks applications for grant funding to conduct research and evaluation projects examining a broad range of topics, including the crimes of domestic and family violence, homicide, intimate partner and dating violence, rape, sexual assault, stalking, and sex trafficking, along with the associated criminal justice system response, procedures, and policies. In Fiscal Year (FY) 2021, NIJ is interested in research responding to the following two priority areas: 1) evaluation research on VAW programs, models, practices and
2) VAW research.

Letter of Intent: Applicants are encouraged to submit a letter of intent to apply to NIJFY2021VAWResearch@usdoj.gov by **February 8, 2021**. Submitting a letter of intent will not obligate a potential applicant to apply. Applicants who do not provide a letter of intent can still apply. (See Letter of Intent) Applications proposing research involving partnerships with criminal justice or other agencies, should include a strong letter of support, signed by an appropriate decision-making authority from each proposed partnering agency. A letter of support should include the partnering agency's acknowledgement that the grant recipient will archive de-identified data derived from, provided to, or obtained through this project with the National Archive of Criminal Justice Data (NACJD) at the conclusion of the award.

Applicants and their potential partners are encouraged to review the NACJD's policies and protections at NACJD. If selected for an award, grantees will be expected to have a formal agreement in place with partnering agencies by January 1, 2022. That formal agreement must include a provision to meet the data archiving requirements of the award. In the case of partnerships that will involve the use of federal award funds by multiple partnering agencies to carry out the proposed project, only one entity/partnering agency may be the applicant (as is the case with any application submitted in response to this solicitation); any others must be proposed as subrecipients. This solicitation supports DOJ Strategic Objective 3.1: Combat violent crime, promote safe communities, and uphold the rights of victims of crime.

NIJ's Violence Against Women and Family Violence Research and Evaluation Program seeks to promote women and family members' safety and increase the efficiency and effectiveness of the criminal justice system's response to such crimes. The program's key objectives include estimating the scope of the problem, identifying causes and consequences, evaluating promising prevention and intervention programs, compiling and disseminating research findings, and partnering to promote and facilitate collaboration, coordination, and cooperation among a wide variety of disciplines. A broad range of topics is covered under this program that touches on a wide variety of public health and safety topics as well as criminal justice challenges, including the availability of legal and victim support services, the effectiveness of prevention and intervention programs, and the impact of such crimes over time.

NIJ is particularly interested in studies involving longitudinal research, survey/instrumentation/measure/scale validation, and studies that include advanced statistical modeling, applied policy analysis, interdisciplinary research teams, and researcher-practitioner partnerships. In addition to welcoming original research, NIJ welcomes proposals to replicate seminal studies in the field. NIJ has a particular interest in supporting replication studies. Replication studies are vital for building scientific evidence about what works. They test the validity of previous research findings and enable questions concerning generalization across populations or contexts. When studies are replicated and achieve the same or similar results as the original study, it gives greater validity to the findings. Conversely, when they achieve dissimilar results, they call into question the validity of the findings of the original study. Strong replication studies are highly relevant, enhance the generalizability of the original study, and produce data of a comparable or higher quality than the data from the original study. An important contribution to the field would be to subject one of the programs in the NIJ-sponsored Crime Solutions repository of scientific evaluations that is rated as "promising" or "effective" based on less-rigorous quasi-experimental research designs, and subject them to a more rigorous RCT to see if the program still produces the intended effects.

Link to additional information: https://nij.ojp.gov/funding/opportunities/o-nij-2021-45009

2. Improving Health Disparities in Alcohol Health Services, Department of Health and Human Services, National Institutes of Health

Application Deadline: March 15, 2021

The National Institute on Alcohol Abuse and Alcoholism intends to renew an initiative by publishing a Funding Opportunity Announcement (FOA) to solicit applications for an R01 Clinical Trial Optional mechanism focusing on health disparities and health services. This FOA will include five areas of focus: access to treatment, making treatment more appealing, costs, dissemination and implementation, and health disparities. Applications are expected to emphasize health disparities in addition to the other four areas of emphasis.

Research Goals: NIAAA and the Division of Treatment and Recovery Research are seeking to expand our portfolio to address these needs and to advance five main areas in health services research. These five areas include accessibility, increased treatment appeal, costs, dissemination and implementation, and health disparities. We are particularly interested in applications addressing the interaction between one or more of these five areas and those using study designs extending beyond standard randomized clinical trials, e.g., effectiveness-implementation hybrid, Sequential Multiple Assignment Randomized Trial (SMART), and multiphase optimization study (MOST), and studies proposing culturally-informed adaptations of existing evidence-based interventions. Specific goals for these given topics include:

Increase accessibility to treatment. Research shows that, annually, less than 10 percent of the U.S. population with AUD sought formal treatment for this disorder. Improving this deficiency requires a better understanding of barriers to treatment and strategies to overcome them. Identified solutions must address the needs of a diverse population of individuals with AUD and across varied treatment settings. Examples of research topics include:

- Identification and development of strategies to reduce specific barriers to treatment access across the continuum of care for AUD; barriers could include those at the individual, organizational, community, and policy levels, and should attend to factors specific to health disparate and vulnerable populations
- Evaluation of specific strategies to increase access to treatment, taking into account initial engagement with and sustained treatment across the continuum of care.

Make treatment and the settings where patients receive them more appealing. AUD patients often have multiple comorbidities; it is often more efficacious to address multiple disorders by integrating AUD treatment into mainstream health care than to separate this care in specialty settings. Any strategies to make treatments more efficient and effective would be a positive step toward motivating patients to seek treatment. Examples of research topics include:

- Remove the stigma of AUD and integrate AUD treatment into mainstream health care
- Explore the effectiveness of integrated behavioral health approaches, e.g., Collaborative Care Model, Patient Centered Medical Home, etc.
- Link interventions found in specialty addiction treatment programs with those in routine health care to create ongoing support
- Explore studies on recovery to determine how best to support patients once they leave specialty addiction treatment, health care, or other community institutions
- Establish ways to incorporate additional addiction services (beyond traditional SBIRT approaches) into primary care
- Develop performance-based outcomes to ensure treatment approaches are evidence- based
- Explore the use of electronic health records (EHRs) to validate the effectiveness of interventions
- Evaluate the effectiveness of telemedicine, such as the use of mobile phones, apps, patient portals, virtual appointments, and remote monitoring

Address treatment costs to the patient. With regard to treatment, it is important to understand the cost and cost-effectiveness of treatment interventions and explore ways to make the costs more affordable to patients who are seeking treatment. Previous studies have shown that alcohol treatment can lead to reduced social costs associated with health care usage, involvement of the criminal justice system, employment productivity, and motor vehicle crashes. Examples of research topics include:

- Explore how natural history studies might help inform changes in healthcare policy to further guide alcohol-related services delivery and quality of care
- Learn more about the costs associated with integrating alcohol treatment services into routine healthcare
- Understand behavioral, financial, policy, workforce, and other factors that influence the implementation, adherence, dissemination, and adoption of medical discoveries into clinical practice, and develop strategies that might make this process more efficient

- Use national data and existing differences in alcohol control and related policies to conduct natural experiments on the interaction between policy and costs
- Address cost as a barrier to treatment, particularly for health disparate and vulnerable populations

Evaluate, disseminate, implement, and sustain evidence-based behavioral and pharmacological treatments within the full range of professional healthcare practices. Currently, three medications have been approved by the U.S. Food and Drug Administration to treat alcohol dependence: disulfiram, oral and long-acting injectable naltrexone, and acamprosate. In addition, various behavioral therapies have demonstrated efficacy, including cognitive behavioral therapy, motivational enhancement therapy, twelve-step facilitation, brief intervention, contingency management, community reinforcement, and mindfulness approaches. Because of the heterogeneity of AUD, these various medications and behavioral therapies do not work the same for everyone. In an ideal setting, it would be more effective to offer clinicians and their patients a menu of medications and behavioral therapies from which to choose—building a specific treatment plan for each individual and increasing his or her odds for successful recovery. The challenge is not only to get these evidence-based treatments out to health care professionals, but also to ensure that the full range of options is considered and offered to patients. Examples of research topics include:

- Leverage findings from clinical trials to assess the effectiveness of medications and behavioral therapies in naturalistic treatment settings
- Explore variables impacting the implementation of behavioral therapies in naturalistic settings, such as social, economic, political, cultural, and psychosocial factors related to health outcomes and health disparities
- Raise awareness of the effectiveness of treatment by identifying, developing, and testing models and methods to enhance the dissemination, implementation, adoption, adaptation, and sustainability of evidence-based alcohol-related treatment practices (medications and behavioral therapies) across the full spectrum of services
- Implement new treatment models for measuring the implementation and effectiveness of those approaches in mainstream treatment settings

Increase Research on Health Disparities: Health services research has lagged in special populations, particularly racial, ethnic, and sexual/gender minority populations. There is a need for more research to find and implement effective behavioral therapies to reduce these disparities. In adapting and/or developing evidence-based treatments for vulnerable populations, research needs to take a candid and careful look at the determinants underlying health disparities (e.g., environmental, social, cultural, biological/genetic, psychosocial, and economic elements). In addition, special populations experience specific barriers that prevent them from seeking and receiving appropriate healthcare, including but not limited to stigma, mistrust, bias, and structural racism. A greater emphasis should be placed on developing novel, culturally grounded interventions in partnership with communities, which go beyond simply adapting existing mainstream interventions. Examples of specific areas of research include:

- Explore factors that contribute to health disparities, including an emphasis on the range of individual characteristics and community settings that may affect health outcomes across a range of treatment settings
- Develop measures to assess the multiple components and dimensions of individual health disparities models (e.g., health literacy, access to health care, confidence in the proximal health system, socioeconomic status, sociocultural beliefs and practices related to alcohol use, and personal health care)
- Address the role of stigma specifically for health disparity populations
- Develop and test novel, culturally-grounded interventions to address particular barriers to health services for AUD

Link to additional information: http://grants.nih.gov/grants/guide/rfa-files/RFA-AA-21-001.html

3. Reefense - Department of Defense, DARPA - Biological Technologies Office

Application Deadline: April 14, 2021

Proposal Abstract Due Date and Time: **February 22, 2021, 4:00 PM ET**
Full Proposal Due Date and Time: **April 14, 2021, 4:00 PM ET**
BAA Closing Date: **April 14, 2021**
Proposers' Day: **January 22, 2021**

Concise description of the funding opportunity – Reefense seeks to develop self-healing, hybrid biological, and engineered reef-mimicking structures to mitigate the coastal flooding, erosion, and storm damage that increasingly threaten civilian and Department of Defense (DoD) infrastructure and personnel. Under Reefense, custom wave-attenuating base structures will promote calcareous reef organism (coral or oyster) settlement and growth, which will enable the system to self-heal and keep pace with sea level rise over time. A system will be put in place that will also attract non-reef building organisms necessary to help maintain a healthy, growing

system. Finally, adaptive biology (other than genetically modified organisms) will enable improved coral and oyster resilience against disease and temperature stress, to ensure compatibility with a changing environment.

Anticipated individual awards – Multiple awards are anticipated.

Technical Area 1: Substrate Design and Structure: TA1 focuses on the base structure and component materials to serve two purposes: provide immediate wave attenuation through deployment, and promote the establishment and growth of marine life while attenuating this energy. TA1 will employ innovations in materials science, micro and macro reef component design, and hydrodynamic modeling for wave attenuation and larval attraction. Materials could include but are not limited to cementitious materials such as marine-, Roman-, or alternative-cement concrete, upcycled materials, and coated natural materials. The structure may comprise modular and/or monolithic components, and may consist of geometric designs optimized for wave attenuation over a large area. In Phase 1, proposers will be required to construct a 50-meter segment of their designed reef structure parallel to the shoreline. The reef structure's length metric increases to 100 meters in Phase 2 and 150 meters in Phase 3. The material costs of the reef structure in production quantities should not greatly exceed that of conventional solutions (e.g., seawalls and riprap) for the system produced by the end of Phase 3. See Table 1 for the specific wave energy attenuation metrics.

Technical Area 2: Ecosystem Engineering: TA2 efforts will promote rapid recruitment of the non-reef building organisms needed to protect the reef, allowing the structure to grow over timescales at least as fast as the healthiest reefs found in nature. A wide array of multi-domain chemical, acoustic, structural, and optical promoters could be considered as technologies that aid in ecosystem establishment. TA2 efforts should focus on increasing recruitment of the various organisms that naturally protect reef-builders from predation and reduce competition for substrate, while enabling the buildup of beneficial organisms (e.g., coralline algae) that aid in recruitment. Examples include the fish and invertebrates that prey on organisms that consume corals or oysters, as well as herbivores that prevent the algae overgrowth that smothers and degrades both coral and oyster reefs. These organisms must occur natively in the region where the Reefense structures will be employed, as this program does not support introduction of non-native species. The program will entertain modest efforts to breed native species whose populations have been in decline. However, government partners will assess that the organisms are healthy before any field deployment can occur to avoid inadvertent introduction of pathogens into the system.

Link to additional information: https://beta.sam.gov/opp/1161c787cdeb4b179ffcfe2baaabc0f6/view

4. Future of Work at the Human-Technology Frontier: Core Research; National Science Foundation

Application Deadline: March 23, 2021

In 2016, the National Science Foundation (NSF) unveiled a set of "Big Ideas," 10 bold, long-term research and process ideas that identify areas for future investment at the frontiers of science and engineering (seehttps://www.nsf.gov/news/special_reports/big_ideas/index.jsp). The Big Ideas represent unique opportunities to position our Nation at the cutting edge of global science and engineering leadership by bringing together diverse disciplinary perspectives to support convergence research. As such, when responding to this solicitation, even though proposals must be submitted to the Directorate for Engineering (ENG) Office of Emerging Frontiers and Multidisciplinary Activities (ENG/EFMA), once received, the proposals will be managed by a cross-disciplinary team of NSF Program Directors. The overarching vision of this program is to support multi-disciplinary research to sustain economic competitiveness, to promote worker well-being, lifelong and pervasive learning, and quality of life, and to illuminate the emerging social and economic context and drivers of innovations that are shaping the future of jobs and work. For the purposes of this solicitation, work is defined as mental or physical activity to achieve tangible benefit such as income, profit, or community welfare.

A proposal for a research grant in this program must focus on advancing fundamental understanding of future work and work outcomes for workers and society. The specific objectives of the Future of Work at the Human-Technology Frontier program are to:

(1) facilitate multi-disciplinary or convergent research that employs the joint perspectives, methods, and knowledge of behavioral science, computer science, design, economics, engineering, learning sciences, research on adult learning and workforce training, and the social sciences;
(2) support deeper understanding of the societal infrastructure that accompanies and leads to new work technologies and new approaches to work and jobs, and that prepares people for the future world of work;
(3) encourage the development of a research community dedicated to designing intelligent technologies and work organization and modes inspired by their positive impact on individual workers, the work at hand, the way people learn and adapt to technological change, creative and inclusive workplaces (including remote locations, homes, classrooms, or virtual spaces), and benefits for social, economic, educational, and environmental systems at different scales;

(4) promote deeper basic understanding of the interdependent human-technology partnership to advance societal needs by advancing design of intelligent work technologies that operate in harmony with human workers, including consideration of how adults learn the new skills needed to interact with these technologies in the workplace, and by enabling broad and diverse workforce participation, including improving accessibility for those challenged by physical or cognitive impairment; and
(5) understand, anticipate, and explore ways of mitigating potential risks including inequity arising from future work at the human-technology frontier.

Proposals to this program should describe multi-disciplinary or convergent research that addresses technological, human, and societal dimensions of future work. Technological innovations should be integrated with advances in behavioral science, computer science, economic science, engineering, learning sciences, research on adult learning and workforce training, and the social sciences. Proposals that address the impact of large-scale disruptions such as the Covid-19 pandemic on the future of jobs and work are also of interest.

Link to additional information: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf21548

5. OJJDP FY 2021 Supporting Effective Interventions for Adolescent Sex Offenders and Children with Sexual Behavior Problems, Department of Justice, Office of Juvenile Justice Delinquency Prevention

Application Deadline: February 22, 2021

This solicitation provides funding to develop intervention and supervision services for adolescent sex offenders and children with sexual behavior problems, and to provide treatment services for their victims and families/caregivers. The goal of this program is to prevent sexual reoffending by adolescent sex offenders and problematic sexual behavior in children.

Objectives

- Improve family and system response to incidents of adolescent sex offenses and problematic sexual behavior in children.
- Increase protective factors in targeted youth to prevent sexual reoffending or continued problematic sexual behavior.

Deliverables

- Develop or enhance intervention (including evidence-based treatment) and supervision services for adolescent sex offenders and/or children with sexual behavior problems.
- Develop or enhance treatment services for the child victims and nonoffending family members.
- Develop a comprehensive assessment of system resources that details the continuum of intervention services available for the target population (adolescent sex offenders and children with sexual behavior problems), and treatment services for their victims and family members/caregivers.
- Establish and/or maintain a multidisciplinary team that can respond to these cases to ensure offenders are held accountable within the legal system and treatment services are available for victims and offenders. Applicants able to demonstrate an existing partnership with multidisciplinary team member agencies in serving adolescent sex offenders and/or children with sexual behavior problems at the time of application will receive priority consideration and should include an attachment labeled "Multidisciplinary team partner list" as a part of their application. This list should reference the lead agency.

A key consideration for all program sites should be public safety balanced with prevention, early intervention, and treatment. Applicants must describe how they will ensure public safety (e.g., individualized supervision/safety plan) as a part of any proposed strategy to be funded.

Link to additional information: https://ojjdp.ojp.gov/funding/fy2021/O-OJJDP-2021-47012-PROD

6. National Centers of Excellence in Youth Violence Prevention (YVPCs): Rigorous Evaluation of Prevention Strategies to Prevent and Reduce Community Rates of Youth Violence, Department of Health and Human Services, Centers for Disease Control

Application Deadline: April 21, 2021

The Centers for Disease Control and Prevention's (CDC) National Center for Injury Prevention and Control (NCIPC or Injury Center) is soliciting research proposals to expand the evidence base for the primary prevention of youth violence. The purpose of this announcement is to fund the National Centers of Excellence in Youth Violence Prevention (Youth Violence Prevention Centers or YVPCs) to continue to build the evidence-base for violence prevention strategies and approaches that reduce community rates of

youth violence within one or more geographically defined communities with high rates of youth violence. Applications for YVPCs supported under this announcement must describe 5 core elements:

(1) an administrative infrastructure to support implementation, evaluation, and dissemination activities; to foster necessary local collaborations to achieve the YVPC's goals; and to work with other funded YVPCs as part of the YVPC Network;
(2) the selected community or set of communities with high rates of youth violence as the focus of all proposed YVPC activities;
(3) a rigorous evaluation of at least two distinct prevention strategies related to at least two of the four research areas outlined in this NOFO that are designed to reduce community rates of youth violence in the selected community or set of communities;
(4) a youth advisory council to provide input on the selection, implementation, and evaluation of youth violence prevention strategies; and
(5) integrated training activities for early career and junior researchers in youth violence prevention to complement the implementation, rigorous evaluation, and scholarship activities of the YVPC.

CDC's YVPCs have significantly advanced the science and practice of youth violence prevention to demonstrate that communities can stop youth violence before it starts. The YVPCs' innovative research and community partnerships are strengthened by multidisciplinary teams (e.g., epidemiology, behavioral and social sciences, medicine, public health, community development, community health psychology, communications and marketing, private industry, community-based organizations, faith-based organizations, and community members). These teams work closely with many sectors (e.g., public health departments, schools, law enforcement, faith-based organizations, community members, youth) to develop, implement, and rigorously evaluate prevention strategies in communities experiencing high rates of youth violence. The YVPCs serve as national models and provide guidance to communities across the country to prevent violence. The multi-disciplinary YVPCs that work closely with community partners and conduct cutting-edge research also provide critical environments to train the next generation of youth violence prevention researchers. More information about the YVPCs is available at: https://www.cdc.gov/violenceprevention/youthviolence/yvpc/index.html .

Link to additional information: Go to www.grants.gov and search form opportunity number **RFA-CE-21-005**

7. Scholarships in Science, Technology, Engineering, and Mathematics Program, National Science Foundation

Application Deadline: April 7, 2021

The main goal of the S-STEM program is to enable low-income, talented domestic students to pursue successful careers in promising STEM fields. Ultimately, the S-STEM program wants to increase the number of low-income students who graduate and contribute to the American innovation economy with their STEM knowledge. Recognizing that financial aid alone cannot increase retention and graduation in STEM, the program provides awards to Institutions of Higher Education (IHEs) to fund scholarships and to adapt, implement, and study effective evidence-based curricular and co-curricular activities that support recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM. The program seeks to:

1) increase the number of low-income academically talented students with demonstrated financial need obtaining degrees in S-STEM eligible disciplines and entering the US workforce or graduate programs in STEM;
2) improve support mechanisms for future scientists, engineers, and technicians, with a focus on low-income academically talented students with demonstrated financial need; and
3) advance our understanding of how interventions or evidence-based curricular and co-curricular activities affect the success, retention, transfer, academic/career pathways, and graduation of low-income students in STEM.

The S-STEM program encourages collaborations among different types of participating groups, including but not limited to partnerships among different types of institutions; collaborations of STEM faculty and institutional, educational, and social science researchers; and partnerships among institutions of higher education and business, industry, local community organizations, national labs, or other federal or state government organizations, if appropriate. Scholars must be domestic low-income, academically talented students with demonstrated unmet financial need who are enrolled in an associate, baccalaureate or graduate degree program in an S-STEM eligible discipline. Proposers must provide an analysis that articulates the population of students they are trying to serve. This analysis must include the predicted number of students who meet all the eligibility requirements at the time of proposal submission as a proxy measure of the pool of students that would qualify in the future if the proposal is awarded. This number may be based on current and/or historical data about students who are currently pursuing degrees in the STEM disciplines targeted by the proposal. S-STEM Eligible Degree Programs include:

- Associate of Arts, Associate of Science, Associate of Engineering, and Associate of Applied Science
- Bachelor of Arts, Bachelor of Science, Bachelor of Engineering and Bachelor of Applied Science

- Master of Arts, Master of Science and Master of Engineering
- Doctoral

S-STEM Eligible Disciplines

- Biological sciences (except medicine and other clinical fields)
- Physical sciences (including physics, chemistry, astronomy, and materials science)
- Mathematical sciences
- Computer and information sciences
- Geosciences
- Engineering
- Technology fields associated with the disciplines above (e.g., biotechnology, chemical technology, engineering technology, information technology)

Note that programs in business schools that lead to Bachelor of Arts or Science in Business Administration degrees (BABA/BSBA) are not eligible for S-STEM funding. Proposers are strongly encouraged to contact Program Officers before submitting a proposal if they have questions concerning degree eligibility. The S-STEM program particularly encourages proposals from 2-year institutions, Minority Serving Institutions (MSIs), Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), tribal colleges and universities, and urban and rural public institutions.

Link to additional information: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf21550

8. Pilot and Feasibility Studies to Facilitate the Use of Diabetes Self-Management Education and Support to Improve Diabetes Care, Department of Health and Human Services, National Institutes of Health

Application Deadline: Standard NIH closing on June 22, 2023

This FOA aims to support pilot and feasibility studies to foster innovative strategies to address barriers for use of DSMES and to generate key preliminary data on the intervention in a pilot study that will facilitate planning for a future dissemination and implementation trial. The goal is to ultimately broaden and increase utilization of DSMES for all patients with diabetes; therefore, the proposed approach should be feasible, practical, and acceptable to diverse patient populations and relevant stakeholders and have the potential to be sustained. Leveraging input from key stakeholders in developing the strategy prior to submission of the application is encouraged and plans for active and meaningful stakeholder engagement in relevant aspects of the proposed project is required. Refinement of the strategy and pilot trial design based on stakeholder input post-award should not exceed the first grant year. Strategies that address one or more barriers on multiple levels (health care system, provider, patient and environment) are encouraged with relevant methodology for studying the multilevel intervention. The development of strategies that consider the following is highly encouraged:

- Target social, racial and systemic inequities that prevent populations disproportionately burdened with diabetes from receiving DSMES
- Foster collaborative community and clinic strategies to address social determinants of health that hinder engagement in regular DSMES for populations most at risk for poor outcomes
- Use of novel delivery and care paradigms/systems that may involve integration of systems to more efficiently broaden referral and uptake of DSMES across clinical, community and home contexts where individuals seek care and services
- Utilize incentives to improve provider communication, referral and follow-up on DSMES and to encourage patient uptake and engagement in DSMES
- Use of technology, monitoring devices and data from connected devices to facilitate and enhance patient-centered approaches to DSMES accounting for social determinants of health, improve engagement in DSMES, and foster sustained behavioral changes
- Leverage and engage key family members and peer support in the DSMES process, especially for patients (e.g., older adults with physical and/or cognitive impairments, youths, or socioeconomically disadvantaged patients) who require assistance with diabetes-self management

Proposed projects should seek to increase and facilitate use of an accredited or recognized DSMES service that meets evidence-based standards (https://www.cdc.gov/diabetes/dsmes-toolkit/standards/index.html). While applications addressing diverse populations at high risk for poor diabetes-related outcomes are encouraged, proposed approaches focused solely on singular or very minor adaptations of an existing program (such as a basic DSMES element substitution or changing DSMES materials into another language or education level) is not consistent with the focus of this FOA.

Key outcomes for the pilot trial must include some metrics of acceptability and feasibility (which may include both qualitative measures and process measures) relevant for patients, providers or other key stakeholders. Improvements in knowledge, adoption of skills, and changes in behavior are indicators of successful DSMES engagement and including one or more of these outcomes is required. While the pilot trial does not need to be adequately powered to detect a difference in meaningful clinical outcomes (e.g., HgA1C, cost, health care utilization), one or more clinical outcomes must be assessed to aid in developing plans for a future, definitive dissemination and implementation trial.

Link to additional information: http://grants.nih.gov/grants/guide/rfa-files/RFA-DK-20-032.html

9. Development of Advanced Analytical Methods for the Characterization of Iron Carbohydrate Complex - Ferric Derisomaltose, Department of Health and Human Services, Food and Drug Administration

Application Deadline: March 31, 2021

Development of advanced analytical methods for the characterization and comparative analysis of complex products are important for linking product attributes to safety, quality and clinical performance, which is helpful for facilitating development of generic complex products. The purpose of this study is to develop advanced analytical methods for the characterization and analysis of ferric derisomaltose which is a complex drug product. The results from this study will help the development and review of generic ferric derisomaltose. According to the drug label, MONOFERRIC (ferric derisomaltose) injection, for intravenous use, is comprised of an iron carbohydrate complex with a matrix structure composed of interchanging layers of ferric hydroxide and the carbohydrate derisomaltose. Ferric derisomaltose has an average molecular weight of 155,000 Da and has the following empirical formula:

$$\{FeO_{(1-3X)}(OH)_{(1+3X)}(C_6H_5O_7^{3-})_X\},(H_2O)_T,-(C_6H_{10}O_6)_R(-C_6H_{10}O_5-)_Z(C_6H_{13}O_5)_R,(NaCl)_Y$$

$$X = 0.0311;\ T = 0.25;\ R = 0.14;\ Z = 0.49;\ Y = 0.14$$

However, the exact nature of the structure has not yet been fully elucidated. There have been reports on the structural analysis of the iron complex, but the data does not consistently point to a clear picture of the exact nature of the structure (See: Neiser, S, et al, 2015, Jahn, MR, et al, 2011, and Kastele, X, et al 2014). Since potential difference(s) in structure of the iron core and ligands may result in different properties which may affect the pharmacological effect of the drug, it is critical to understand the complex structure of the drug substance, its critical quality attributes and how the manufacturing process affects the performance of the product in order to develop and approve a generic ferric derisomaltose product.

Objectives:

The aim of this project is to fully characterize the FDA-approved product MONOFERRIC including its iron core structure, the structure of the carbohydrate, and how the different ligands interact with the iron core. Specifically, the goals of this project include:

(1) Development and validation of a sensitive method to analyze the iron core structure
(2) Development and validation of analytical methods to characterize the ligands including the carbohydrate structure, and the interactions of the ligands with the iron core.
(3) Assessment of the drug substance composition
(4) Full physico-chemical characterization of the drug product
(5) Analysis of inter-batch variability of MONOFERRIC (ferric derisomaltose) based on the developed analytical methods

Detailed Description:

To achieve the stated objectives above, additional details regarding the project are described below:

(1) Only the product marketed in the United States (MONOFERRIC) should be used in this study, and multiple lots of the drug product should be used to support an assessment of inter-batch variability.
(2) Orthogonal analytical methods should be used to probe the structure of the drug substance, including the structure of the iron core, the structure of the ligands bound to the iron core, and the molecular environment of the ligands in the drug substance. Due to the size of the iron core, sensitive analytical method(s) should be developed and used.
(3) Efforts should be directed to elucidating the nature of the interactions between the iron core and the various ligands (carbohydrate and citric acid components).

(4) Physico-chemical characterization should be performed at the drug product and drug substance levels when appropriate. Data obtained from the study should be used to better define what the drug substance is, and what the critical quality attributes are for the drug substance and drug product.
(5) A particle size distribution analysis of the drug product should be performed including Z-average and polydispersity index assessments. The methods should be validated; the effect of dilution on hydrodynamic particle size should be evaluated using a series of samples diluted with 0.9% NaCl solution.

NOTE: The expectation is that the data generated as an outcome of this research award, including but not necessarily limited to any individual replicate/subject-level data (not just summary results), any model constructs and data sets, and/or any computer code that represents an outcome of the award should be shared with the FDA Office of Generic Drugs (OGD) prior to the completion of the award period, and it is strongly preferred that FDA would explicitly be granted permission to make such data publicly available after a reasonable amount of time following the completion of the award period (e.g. 1 year after the end of the award period); the applicant's Data Sharing Plan will specifically be considered when scoring the 'Significance' of the application.

Link to additional information: https://grants.nih.gov/grants/guide/rfa-files/RFA-FD-21-016.html

10. Cyber-Physical Systems, National Science Foundation

Application Deadline: December 31, 2021

Cyber-physical systems (CPS) are engineered systems that are built from, and depend upon, the seamless integration of computation and physical components. Advances in CPS will enable capability, adaptability, scalability, resiliency, safety, security, and usability that will expand the horizons of these critical systems. CPS technologies are transforming the way people interact with engineered systems, just as the Internet has transformed the way people interact with information. New, smart CPS drive innovation and competition in a range of application domains including agriculture, aeronautics, building design, civil infrastructure, energy, environmental quality, healthcare and personalized medicine, manufacturing, and transportation. CPS are becoming data-rich enabling new and higher degrees of automation and autonomy. Traditional ideas in CPS research are being challenged by new concepts emerging from artificial intelligence and machine learning. The integration of artificial intelligence with CPS especially for real-time operation creates new research opportunities with major societal implications. While tremendous progress has been made in advancing CPS technologies, the demand for innovation across application domains is driving the need to accelerate fundamental research to keep pace. At the same time, the CPS program seeks to open new vistas for the research community to think beyond the usual cyber-physical paradigms and structures and propose creative ideas to address the myriad challenges of today's systems as well as those of the future that have not yet been designed or fielded. The CPS program aims to develop the core research needed to engineer these complex CPS, some of which may also require dependable, high-confidence, or provable behaviors. Core research areas of the program include control, data analytics, and machine learning including real-time learning for control, autonomy, design, Internet of Things (IoT), mixed initiatives including human-in- or human-on-the-loop, networking, privacy, real-time systems, safety, security, and verification. By abstracting from the particulars of specific systems and application domains, the CPS program seeks to reveal cross-cutting, fundamental scientific and engineering principles that underpin the integration of cyber and physical elements across all application domains. The program additionally supports the development of methods, tools, and hardware and software components based upon these cross-cutting principles, along with validation of the principles via prototypes and testbeds. This program also fosters a research community that is committed to advancing education and outreach in CPS and accelerating the transition of CPS research into the real world. All proposals must include the following as part of the Project Description:

- A Research Description that describes the technical rationale and technical approach of the CPS research, including the challenges that drive the research problem and how the research integrates cyber and physical components. This section must also describe how the research outcomes are translational to other application domains. Specifically, it must include:
    - A subsection titled "CPS Research Focus" which describes the cyber-physical system attributes of the challenge problem and clearly identifies the core CPS research areas addressed in which the novel and foundational research contributions are being made;
- An Evaluation/Experimentation Plan that describes how proposed concepts will be validated and outlines the metrics for success;
- A Project Management and Collaboration Plan that summarizes how the project team is ideally suited to realize the project goals and how the team will ensure effective collaboration; and
- A Broader Impacts section that describes how the research will be disseminated to a broad and diverse audience. This should go beyond traditional academic publications and includes education and outreach from the research team spanning multiple levels of engagement. Broader Impacts encompasses Broadening Participation in Computing (BPC) and Engineering (BPE).

NSF is working closely with multiple agencies across the federal government, including the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T); the U.S. Department of Transportation (DOT) Federal Highway Administration

(FHWA); several National Institutes of Health (NIH) institutes and centers including the National Institute of Biomedical Imaging and Bioengineering (NIBIB), National Cancer Institute (NCI), Office of Behavioral and Social Sciences Research (OBSSR), and National Center for Advancing Translational Sciences (NCATS); and the U.S. Department of Agriculture National Institute of Food and Agriculture (USDA NIFA, hereafter referred to as NIFA). Proposals for three classes of research and education projects—differing in scope and goals—are supported through the CPS program:

- Small projects may request a total budget of up to $500,000 for a period of up to 3 years. They are well suited to emerging new and innovative ideas that may have high impact on the field of CPS. There is no deadline for Small projects.
- Medium projects may request a total budget ranging from $500,001 to $1,200,000 for a period of up to 3 years. They are well suited to multi-disciplinary projects that accomplish clear goals requiring integrated perspectives spanning the disciplines. There is no deadline for Medium Projects.
- Frontier projects must address clearly identified critical CPS challenges that cannot be achieved by a set of smaller projects. Furthermore, Frontier projects should also look to push the boundaries of CPS well beyond today's systems and capabilities. Funding may be requested for a total of $1,200,001 to $7,000,000 for a period of 4 to 5 years. Note that the Frontier projects have a specific deadline.

Link to additional information: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf21551

11. Climate Program Office (CPO) Extreme Heat Risk Initiative Competition, FY2021, Department of Commerce

Application Deadline: February 15, 2021

Extreme heat in urban areas presents society with significant economic, health, safety, and security challenges. As part of the National Oceanic and Atmospheric Administration (NOAA) climate portfolio within the Office of Oceanic and Atmospheric Research (OAR), the Climate Program Office (CPO) addresses this and other climate challenges by managing competitive research programs through which high-priority climate science, assessments, decision support research, outreach, education, and capacity-building activities are funded to advance our understanding of the Earth's climate system, and to foster the application and use of this knowledge to improve the resilience of our Nation and its partners.

Through this announcement, CPO is seeking applications for a single competition in FY21. This competition supports a high-priority climate risk area that CPO is organizing some of its activities around to improve science understanding and/or capabilities that result in user-driven outcomes. This risk area, focused on extreme heat, is one of four initial risk areas; the others are coastal inundation, marine ecosystems, and water resources. More information about CPO's Climate Risk Areas Initiative can be found at: https://cpo.noaa.gov/News/ArtMID/7875/ArticleID/1945/NOAA%E2%80%99s-Climate-Program-Office-launches-Climate-Risk-Areas-Initiative.

NOAA, OAR, and CPO encourage applicants and awardees to support the principles of diversity and inclusion when writing their proposals and performing their work. Diversity is defined as a collection of individual attributes that together help organizations achieve objectives. Inclusion is defined as a culture that connects each employee to the organization. Promoting diversity and inclusion improves creativity, productivity, and the vitality of the climate research community in which CPO engages.

Link to additional information: Go to www.grants.gov and search form opportunity number **NOAA-OAR-CPO-2021-2006738**

12. Spectrum and Wireless Innovation enabled by Future Technologies, National Science Foundation

Application Deadline: March 5, 2021

The National Science Foundation's Directorates for Engineering (ENG), Computer and Information Science and Engineering (CISE), Mathematical & Physical Sciences (MPS), and Geosciences (GEO) are coordinating efforts to identify new concepts and ideas on Spectrum and Wireless Innovation enabled by Future Technologies (SWIFT). A key aspect of the SWIFT program, now in its second year, is its focus on effective spectrum utilization and/or coexistence techniques, especially with passive uses, which have received less attention from researchers. Coexistence is when two or more applications use the same frequency band at the same time and/or at the same location, yet do not adversely affect one another. Coexistence is especially difficult when at least one of the spectrum users is passive, i.e., not transmitting any radio frequency (RF) energy. Examples of coexisting systems may include passive and active systems (e.g., radio astronomy and wireless broadband communication systems) or two active systems (e.g., weather radar and Wi-Fi). Breakthrough innovations are sought on both the wireless communication hardware and the algorithmic/protocol fronts through synergistic teamwork. The goal of these research projects may be the creation of new technology or significant enhancements to

existing wireless infrastructure, with an aim to benefit society by improving spectrum utilization, beyond mere spectrum efficiency. The SWIFT program seeks to fund collaborative team research that transcends the traditional boundaries of individual disciplines.

The key aspect of the SWIFT solicitation is a focus on effective spectrum utilization and/or coexistence, especially with passive uses. This will require substantial innovation in wireless technology. Research proposed under this solicitation must go beyond past programs that focused mainly on spectral efficiency (bits/sec/Hz) and energy efficiency (bits/Joule). Developing new methods or techniques enabling effective spectrum utilization and/or coexistence will enable wireless systems and networks to support the high performance (e.g., higher data-rates, lower latency) and dense deployments that will be needed by future applications operating in spectrally adjacent channels or in co-channel. Wireless research and development today require a focus on robust, reliable, and secure wireless systems and networks for the next generation networks and systems. Research focusing on novel efficient device design, advanced RF/analog hardware security, circuit and antenna design, communication theory, signal processing, new algorithms and protocols, machine learning etc. should come together to address the upcoming challenges facing wireless systems and networks. Research that will enable the above will likely provide immense societal benefits provided that the integrity of passive receive-only uses is also preserved.

All proposals submitted in response to the SWIFT program must address at least one of the two primary challenges from Group A below. In addition, proposals must address one or more of the challenges listed in Group B or identify and address new challenge(s):

Group A: Effective Spectrum Utilization and/or Coexistence

- Spectrum Utilization – Innovations are sought on ways to improve the spectrum utilization efficiency within frequency bands that are preallocated for wireless communications and networking. These may include, but are not limited to, massive multiple-input multiple-output antenna arrays, advanced signal processing for communications and networking, novel and efficient error-control coding, joint source-channel coding, passive and active intelligent surfaces, combined model-based and data-based transceiver designs and optimization, tradeoff between capacity and complexity, and cloud-based radio signal processing.
- Spectrum Coexistence - Although the growing demands on the wireless spectrum are mainly driven by commercial active uses (e.g., mobile broadband wireless), critical passive uses (e.g., radio astronomy, atmospheric and geospace sciences, and climatological observations) as well as critical active uses (e.g., weather radar and GPS) also need consideration as systems that will share the same or adjacent spectrum bands are deployed. Current means of spectrum sharing are limited to sensing and database management around mostly active users; exploring new spectrum utilization and sharing paradigms for bidirectional sharing with passive uses such as radio-astronomy have largely remained unexplored. Proposals that intend to use specific frequency bands should demonstrate awareness of incumbent passive and active uses and address coexistence issues with these uses.

Group B: Innovations on Hardware Technologies, System Architectures, Algorithms, Machine Learning and AI

High Performance RF/Analog/Mixed-Signal Hardware Technologies through Cross-Layer Design - As more and more emphasis are placed on mmWave and even THz frequency bands significant advances are needed in hardware technologies that can realize the full potential for those frequency bands. High performance hardware technologies are also in need for frequencies beyond the currently used commercial wireless applications, e.g., 6 GHz. Key challenges in the hardware innovation front may include output power, efficiency, latency, size, thermal management, hardware security, bandwidth, etc. Researchers should focus on addressing challenges from the ground up, e.g., from devices to circuits to higher layers through cross-layer design.

Link to additional information: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf21539

13. Integrative Research in Biology, National Science Foundation

Application Deadline: March 16, 2021

This solicitation invites submission of collaborative proposals that tackle bold questions in biology and require an integrated approach to make substantive progress. Integrative biological research spans subdisciplines and incorporates cutting-edge methods, tools, and concepts from each to produce groundbreaking biological discovery. The research should be synergistic and produce novel, holistic understanding of how biological systems function and interact across different scales of organization, e.g., from molecules to cells, tissues to organisms, species to ecosystems and the entire Earth. Such knowledge is critical to inform solutions to societal challenges, including natural resource management, resilience to environmental change, and global food security. Outcomes from integrative research will also inform and guide the development of new technologies that drive the nation's bioeconomy. Integrative biological research depends on researchers who work in dynamic, diverse, and collaborative interdisciplinary teams. These teams should be fully engaged in the training and education of the next generation of scientists who will be future leaders in integrative research. A vibrant,

inclusive, and integrative training environment will therefore produce a new generation of researchers who can navigate across subdisciplines and engage in integrative thinking.

The goal for this program is two-fold: (1) to support collaborative researchers who engage in innovative, integrative biological research to address fundamental questions that cross different scales of organization—from molecules to cells, tissues to organisms, species to ecosystems and the entire Earth—and are yet to be answered by a single subdiscipline alone, and (2) to prepare a new generation of scientists who reflect the diversity of the nation and are ready to contribute to the future research enterprise through integrative approaches.

Projects should address bold biological questions or significant technological challenges that can only be resolved by integrating perspectives and approaches from different biological subdisciplines. The proposal should describe the subdisciplines being incorporated, the hierarchical scales to be explored, and the integrative approaches. Where appropriate, projects should apply experimental strategies, modeling, integrative analysis, advanced computation, or other research approaches to stimulate new discovery and general theory in biology.

IntBIO is supported as part of BIO's continuing investment in efforts to integrate biology across subdisciplines and to explore new collaborations in an integrative environment. Through a formal community engagement opportunity, BIO recently sponsored a series of Reintegrating Biology activities that culminated in production of a set of vision papers authored by members of the biological research community (https://reintegratingbiology.org/vision-papers/). Some of these papers present questions that could be appropriate for this solicitation. However, these examples are not exclusive or exhaustive, and other topics are welcome.

Link to additional information: https://www.nsf.gov/pubs/2021/nsf21543/nsf21543.pdf

14. Mood Disorders in People Living with HIV: Mechanisms and Pathways (R21 Clinical Trial Optional), Department of Health and Human Services, National Institutes of Health

Application Deadline: March 10, 2021

The purpose of this initiative is to support studies to better understand the underlying mechanisms and interplay of biological, psychosocial and structural factors contributing to mood disorders in people living with HIV. Exploratory and high-risk research projects are appropriate for this funding opportunity announcement. Applications testing a fully conceptualized and hypothesis-based solid premise founded with adequate preliminary data should consider applying to the companion R01 announcement RFA-MH-21-116. Basic and preclinical research in domestic and international settings are of interest. Multidisciplinary research teams and collaborative alliances are encouraged but not required.

In the U.S. and globally, mood disorders such as depression and anxiety are prevalent in a significant proportion of people living with HIV. Biological (genetic, neuroendocrine, immune, microbiome, anti-retroviral therapy), psychosocial (stress, trauma, coping, social support), and structural (violence, stigma, poverty) factors interact to influence the pathogenesis of mood disorders among people living with HIV (PLHIV). Both HIV and anti-retroviral therapy (ART) have been shown to cause inflammatory/ immune-related changes in the Central Nervous System (CNS) and periphery in PLHIV. These alterations can potentially disrupt neurotransmitters as well as circuits modulating mood and behavior. In addition, social and environmental factors such as violence, stigma, and stress, which are experienced at higher rates in PLHIV, can also contribute to disruption of the neurotransmitter/neuroendocrine homeostasis in the CNS.

Research on CNS disease in PLHIV has been traditionally focused on cognitive impairment due to high rates of AIDS dementia in the pre-ART era. With effective ART therapy, dementia rates have significantly decreased, but mood disorders continue to be a significant comorbidity. It is important to understand the interactions of etiologies and the unique mechanisms involved in causation and pathogenesis of mood disorders in PLHIV. Such understanding can lead to novel mental health interventions and discovery of novel preclinical targets that can alleviate adverse neuropsychiatric outcomes in PLHIV.

To address the above research gaps this initiative seeks exploratory and innovative applications in below areas including, but not limited to:

- Studies to understand the unique functional changes in neurochemistry and neuroendocrine milieu that lead to mood disorders in the context of HIV and ART;
- Studies that model the impact of HIV and associated inflammation in the CNS and periphery (including the gut-microbiome-brain axis) on the CNS regulators of mood and behavior (Using functional endpoints relevant to mood disorders, such as reward processing and effortful behavior);

- Studies to adapt and develop highly tractable behavioral assessments based on RDoC constructs to understand the phenotype and heterogeneity of mood disorders in PLHIV;
- Secondary analysis and integration of existing data sets to understand the phenotype and heterogeneity of mood disorders in PLHIV;
- Studies using humanized *in-vitro* and *in-vivo* models to understand the contribution of neuro-immune dysregulation to changes in neurotransmitter/ neuroendocrine *milieu* in the context of HIV and ART;
- Studies to identify modifiable pre-clinical targets involving functional processes related to mood disorders unique to PLHIV;
- Studies to understand the mechanistic role of genetic and epigenetic factors influencing outcomes related to mood disorders in PLHIV (Refer to recommendations of the National Advisory Mental Health Council (NAMHC) Genomics Workgroup. Applicants are strongly encouraged to read the full report, summary and specific guidance when drafting research applications and to critically evaluate the rigor and strength of evidence implicating genetic or molecular changes associated with disease);
- Studies to examine the independent and interactive effects of non-somatic and somatic drivers of mood disorders on neuroimmune mediators and their impact on neurochemistry, including the response to antidepressants or behavioral therapy in PLHIV;
- Studies to identify novel mechanistic biological signatures of immune activation and inflammation associated with mood disorders unique to PLHIV that can serve as targetable biomarkers.

Note: Applications to this FOA are strongly encouraged to integrate at least two levels of analysis (e.g. behavior/cognition, neural circuits, genetics, molecular and cellular processes) and use approaches to study discrete constructs consistent with the RDoC Framework. Animal Studies being proposed in response to this FOA should consider NIMH guidelines and priorities regarding animal neurobehavioral approaches in research relevant to mental illnesses as detailed in NOT-MH-19-053 and the recent commentary on A Hypothesis-Based Approach: The Use of Animals in Mental Health Research. Bio-behavioral studies being proposed in response to this FOA should consider NIMH guidelines and priorities in the field of stress biology research as detailed in NOT-MH-18-058.

Link to additional information: http://grants.nih.gov/grants/guide/rfa-files/RFA-MH-21-117.html


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