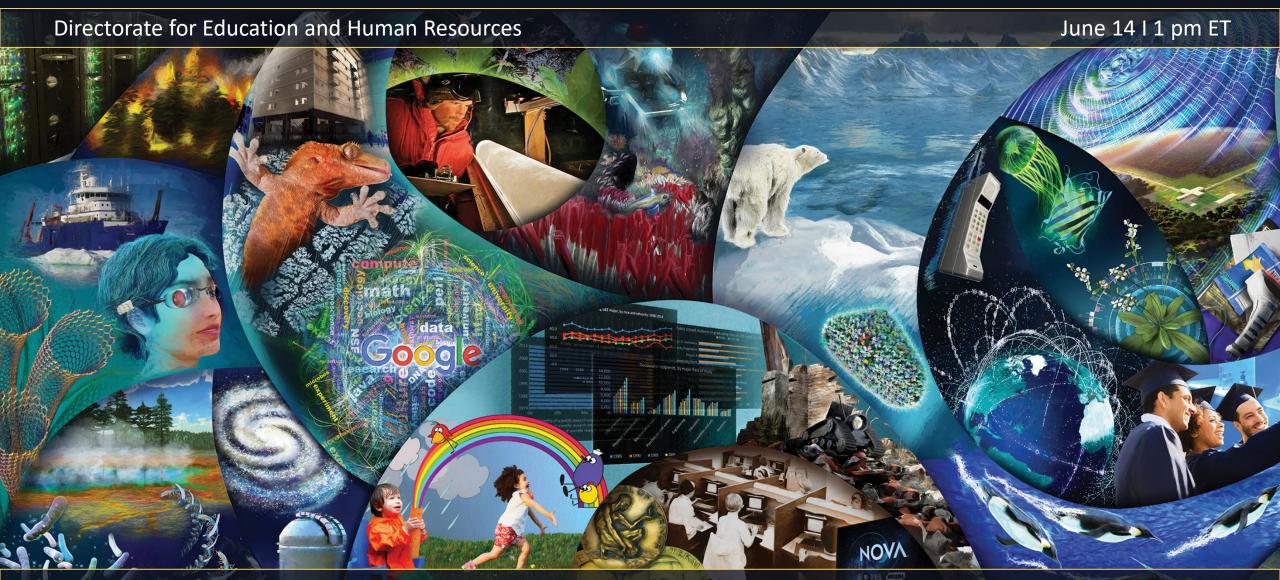
National Science Foundation Funding Opportunities Broadening Participation in STEM



PreK-12 Education | Undergraduate Education | Graduate Education | Informal Education | Human Resource Development



Webinar Goals

- Highlight EHR/NSF funding opportunities, especially those aimed at broadening participation in STEM
- Provide a forum for the field to ask Program Officers inquiries regarding funding opportunities
- Share other capacity building and professional development opportunities within EHR and across NSF



Webinar Schedule

- Overview & Introduction to NSF, EHR, & Broadening Participation
- Division of Human Resource Development (HRD)
- Division of Research on Learning in Formal & Informal Settings (DRL)
- Division of Undergraduate Education (DUE)
- Division of Graduate Education (DGE)
- Capacity Building & Professional Development









Welcome to the National Science Foundation



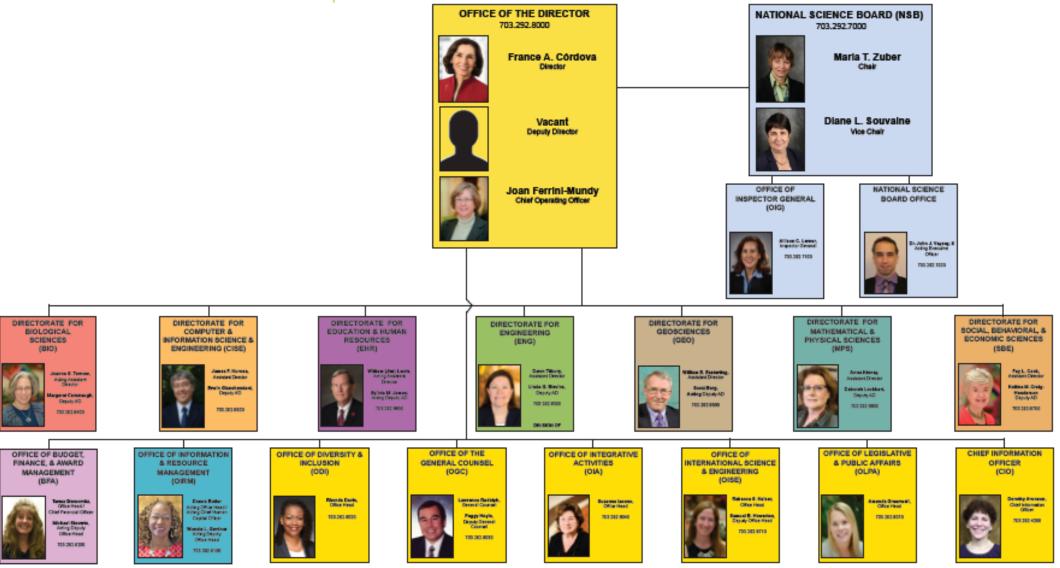
Mission: Promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.

- Established by the National Science Foundation Act of 1950 (Public Law 81-507).
- FY18 Annual Budget: \$7.8 Billion
- NSF funds approximately 27% of all federally supported basic research conducted by colleges and universities.
- NSF supported researchers have won 217
 Nobel prizes and other awards
- NSF Workforce: ~2,100





NATIONAL SCIENCE FOUNDATION



National Science Foundation 2415 Eisenhower Avenue Alexandria, Virginia 22314 TEL: 703.292.5111 | FIRS: 800.877.8339 | TDD: 800.281.8749

IV. CORE VALUES

NSF's core values are essential and enduring tenets that guide everyone in the organization as we support the agency's mission. They have been developed with the active engagement of NSF's staff and the National Science Board. These values identify who we are and what is important to us. They guide how we make decisions, set priorities, address challenges, manage tradeoffs, recruit and develop personnel, and work together with our awardees.

NSF's core values are ExPLICIT in what we do every day:

Excellence – We maintain the highest standards in merit review, financial management, and award administration. We use rigorous review by experts to ensure that only the best ideas are funded and that our investments further the national interest.

Public Service – We proudly value our role as public servants, enabling the research community to blaze new paths for expanding knowledge and addressing societal challenges.

Learning – We take advantage of opportunities to improve our skills and we provide all staff members with opportunities to develop. We question our assumptions; we evaluate our activities; we learn what is effective and what can be improved.

Inclusion – We strive to maintain a staff that is representative of the broader national community. We endeavor to support outstanding researchers and innovative thinkers from across our Nation's diversity of regions, types of organizations, and demographic groups.

Collaboration – We work in a collaborative enterprise in which teamwork is essential. We value the perspectives and values of our fellow team members and recognize that combining our knowledge enables us to find more robust solutions; we acknowledge the contributions that we each make to our shared success; we are committed to listening, communicating effectively, and working collegially.

Integrity – We hold each other and our awardees to the highest standards of ethical behavior. We strive to ensure the trustworthiness of the results of NSF-funded research by promoting the responsible conduct of research.

Transparency – We operate with transparency and openness.



National Science Foundation STRATEGIC PLAN February 2018

VI. STRATEGIC GOALS AND OBJECTIVES



STRATEGIC GOAL 1

Expand knowledge in science, engineering, and learning.



STRATEGIC GOAL 2

Advance the capability of the Nation to meet current and future challenges.



STRATEGIC GOAL 3

Enhance NSF's performance of its mission.

VII. AGENCY PRIORITY GOAL

A Performance Plan for FY 2019 has been developed in concert with this Strategic Plan. It includes the following Agency Priority Goal.

Expand public and private partnerships to enhance the impact of NSF's investments and contribute to American economic competitiveness and security.

By September 30, 2019, NSF's number of partnerships and/or award actions with other federal agencies, private industry, and foundations/philanthropies will grow by 5 percent, relative to the FY 2017 baseline, to make available infrastructure, expertise, and financial resources to the US scientific and engineering research and education enterprise.

INVESTMENT AREAS

Potential investment areas are evaluated against considerations that include the following:

- Alignment with NSF's Mission. Does the investment area further NSF's mission, vision, goals, and objectives as established by the NSF Strategic Plan, without duplicating the efforts of other agencies or funding organizations?
- Budget. Factors include whether the proposed level of investment is consistent with the opportunity, level of risk, relevance, and potential impact.
- Potential for impact. Examples of important factors include the extent to which investments: may transform a field of science or engineering; are broadly significant or of great interest to the community; position the U.S. at the forefront of an emerging field; promote teaching, learning, mentoring, training and outreach; contribute to national research and development priorities; sustain economic competitiveness; support the national defense; or enable other socially important outcomes.

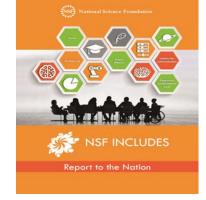
- Urgency and readiness. Important factors include whether timing is critical to achieve optimum results, or investment is necessary to maintain long-term stability and progress in critical areas.
- Integration of research with education and strengthening the connections between learning and inquiry. Significant factors include whether investment areas present a rich environment for encouraging future scientists, engineers, and educators, and whether they provide opportunities for teachers and students to participate in research activities at the K-12, undergraduate, graduate, and postdoctoral levels.
- Broadening participation. Important factors include whether the investment area contributes to increasing the diversity of the U.S. population that participates in research and research training.
- Collaborations. Important factors include whether investments create opportunities for national and international partnerships, or augment other NSF activities, or leverage other community, industry, federal agency or international investments in research, education, and infrastructure. By using such partnerships, NSF avoids duplication and increases the efficiency of its investments.

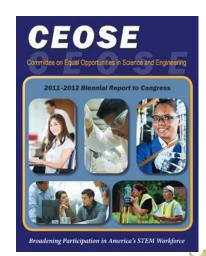
Broadening Participation @ NSF

NSF is committed to expanding efforts to increase participation from underrepresented groups and diverse institutions throughout the United States in all NSF activities and programs.

The Broadening Participation portfolio is divided into three categories:

- (1) programs that are primarily **focused** on broadening participation,
- (2) programs that have broadening participation as one of several **emphases**, and
- (3) Dear Colleague Letters expressing interest in specific aspects of broadening participation.

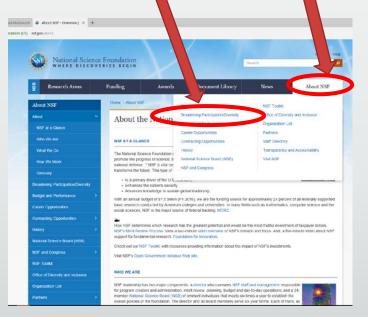




#1 –Go to www.nsf.gov

#2 - Click on About NSF

#3 – Click on Broadening Participation/Diversity



Office of the Director (OD)

Office of the Director

Office of the Director (OD)

Office of Diversity and Inclusion (ODI)

Office of the General Counsel (OGC)

Office of Integrative Activities (OIA)

- EPSCoR Office

Office of International Science and Engineering (OISE)

Office of Legislative & Public Affairs (OLPA)

NSF Broadening Participation

Broadening Participation Home

Broadening Participation Portfolio

Reducing the Impact of Bias

Broadening Participation Outreach

MPS Broadening Participation Resources

"Framework for Action" Report

Framework for Evaluating Impacts of Broadening Participation Projects

Links of Interest

Home **■** Email ⊕ Print → Share

Broadening Participation Portfolio

Background

NSF has taken a variety of approaches to broaden participation across its many programs. While broadening participation is included in the NSF review criteria, some program announcements and solicitations go beyond the standard criteria. They range from encouraging language to specific requirements. Investments range from capacity building, research centers, partnerships, and alliances to the use of co-funding or supplements to existing awards in the core research programs.

The portfolio represented below is divided into three categories: (1) programs that are primarily focused on broadening participation, (2) programs that have broadening participation as one of several emphases, and (3) Dear Colleague Letters expressing interest in specific aspects of broadening participation.

Focused Programs

Programs with an explicit broadening participation program goal. The majority of each award's budget goes to broadening participation activities, and could involve research on the topic.

PROGRAM NAME	Publication No.	Directorate	Division
Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)	17-522	All	All
ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers	16-594	All	All
Broadening Participation in Engineering	16-7680	ENG	EEC
Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)	16-525	EHR, ENG	HRD
Disability and Rehabilitation Engineering	17-5342	ENG	CBET
EPSCoR Research Infrastructure Improvement Program Track-3: Building Diverse Communities	13-553	OIA	
Experimental Program to Stimulate Competitive Research: Workshop Opportunities (EPS-WO)	12-588	All	All
Historically Black Colleges and Universities Undergraduate Program	16-538	EHR	HRD



Directorate for Education and Human Resources (EHR)

Mission: To achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering.



Office of the Assistant Director – Directorate for Education and Human Resources (EHR)

Division of Research on Learning in Formal and Informal Settings (DRL)

EHR Core Research (ECR)*

Advancing Informal STEM Learning (AISL)

Computer Science for All (CS for All: RPP)

Discovery Research K-12 (DRK-12)

STEM-C Partnerships (STEM+C)

Innovative Technology Experiences for Students and Teachers (ITEST)

Faculty Early Career
Development Program
(CAREER)*

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)* Division of Undergraduate Education (DUE)

EHR Core Research (ECR)*

Advanced Technological Education (ATE)

Robert Noyce Scholarship Program (NOYCE)

Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)

NSF Scholarships in STEM (S-STEM) Division of Graduate Education (DGE)

EHR Core Research (ECR)*

Graduate Research Fellowship (GRF)

NSF Research Traineeship Program (NRT)

CyberCorps: Scholarships for Service (SFS)

Project and Program Evaluation (PPE)

EHR Assistant Director (Acting AD): William J. (Jim) Lewis
EHR Deputy Assistant Director (Acting DAD): Sylvia M. James

EHR Division Directors (DD) and Deputy Division Directors (DDD)

DGE: Dean M. Evasius (DD), Nirmala Kannakutty (DDD) HRD: Lura (Jody) Chase (Acting DD), Tasha Inniss (Acting DDD)

*Cross-Directorate funded

Division of Human Resource Development (HRD)

EHR Core Research (ECR)*

Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)

> Alliances for Graduate Education and the Professoriate (AGEP)

Centers of Research Excellence in Science and Technology (CREST)

Excellence Awards for Science and Engineering (EASE)

Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)

Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)*

Tribal Colleges and Universities Program (TCUP)

Louis Stokes Alliances for Minority Participation (LSAMP)



Report to the Nation



National Science Foundation



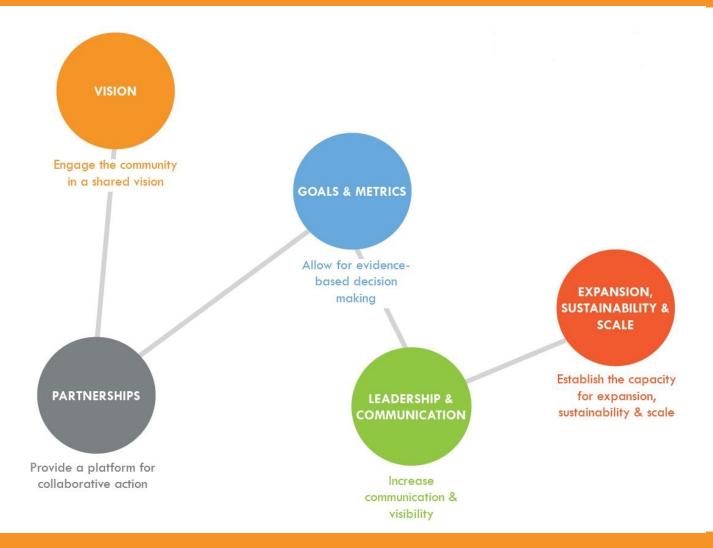
Message from the Director

"Recognizing the opportunity for significant impact, NSF INCLUDES is situated as one of NSF's Ten Big Ideas for Future NSF Investments at the frontiers of science and engineering. As a Big Idea, NSF INCLUDES is investing in pilot projects, and will soon be funding alliances and partnerships that use research-based, collaborative change strategies meant to unite a wide variety of partners to solve a common broadening participation problem."





The Five Elements of NSF INCLUDES



NSF INCLUDES National Network Infrastructure is designed to foster collaboration by emphasizing Five design elements: Vision, Partnerships, Goals and Metrics, Leadership and Communication and Expansion, Sustainability and Scale





VISION



...provide
STEM
engagement
for students
and
communities
to promote
STEM studies
and careers

70

design and development launch pilots awarded grants in FY2016 and FY2017 to address broadening participation challenges such as...

...expand

access to

quality STEM education

5

projects



educators



students'

STEM

identity, attitudes, motivation

...strengthen institutional capacity

projects

support systems for undergraduate and graduate STEM students

...enhance

...address
career needs
of STEM
professionals

6
projects

10
projects

20 projects

42 projects

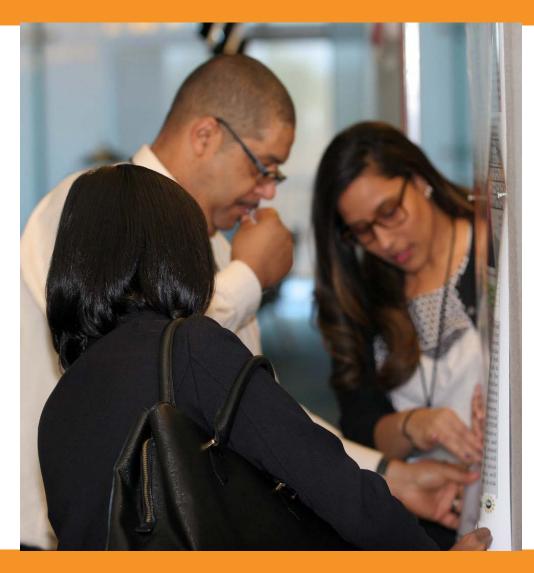
Image credits: Clker.com



Note: Some individual projects have goals and objectives that fall into more than one category.



PARTNERSHIPS



758

partner organizations working to broaden participation in STEM through collaborative change, including...

- local libraries and library systems
- 10 private foundations
- federal/national labs and federally funded research and development centers
- professional and higher education organizations and their affiliates
- government agencies and their affiliates (local, state, federal)
- **62** corporations and corporate affiliates
- **94** K-12 schools and local or state school districts

107 non-profit and community organizations

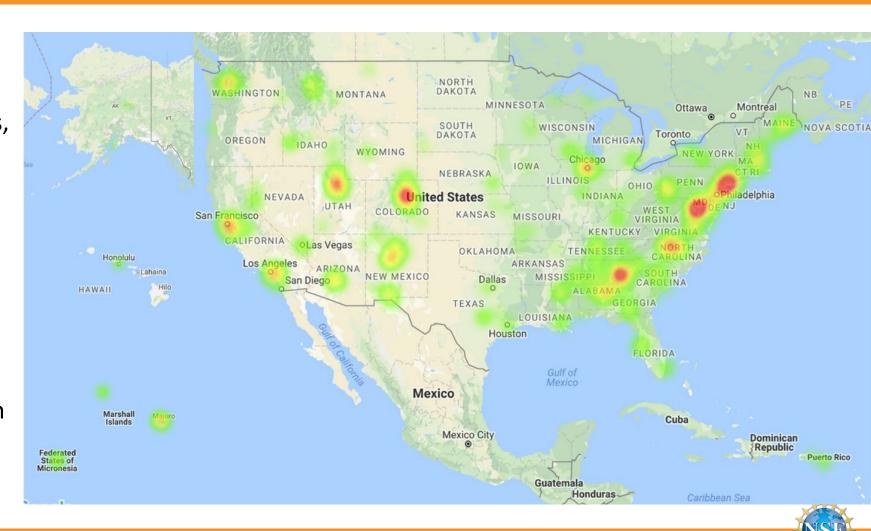
313

colleges, universities, community college systems, and university affiliates



Expansion, Sustainability & Scale

Ultimately, NSF INCLUDES is prompting new thinking about expansion, sustainability and scale. Rather than funding isolated efforts, NSF INCLUDES is building the collaborative infrastructure for individuals and organizations to share information, resources and other assets across broader networks that will reach more people across the country. Already, each NSF INCLUDES Design and Development Launch Pilot has been solidifying its networks and partnering with new organizations and with each other.





NSF INCLUDES National Network



HSI Program

NSF 18-524

Program Announcement via:

https://www.nsf.gov/pubs/2018/nsf18524/nsf18524.pdf

- The **HSI Program** seeks to enhance the quality of undergraduate STEM education at HSIs and to build capacity at HSIs that typically do not receive high levels of NSF grant funding.
- Projects supported by the HSI Program are expected to generate new knowledge about how to enhance undergraduate STEM education that results in an increase in retention and graduation rates of undergraduate students pursing STEM degrees at HSIs.



Faculty Early CAREER Development Program

- CAREER is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education, and to lead advances in the missions of their departments or organizations.
- EHR encourages eligible faculty to submit CAREER proposals in STEM education research.
- EHR will hold a webinar for EHR CAREER proposers on June 19, 2018 at 2 pm; details are to be found in the Events Calendar on the NSF homepage at www.nsf.gov.

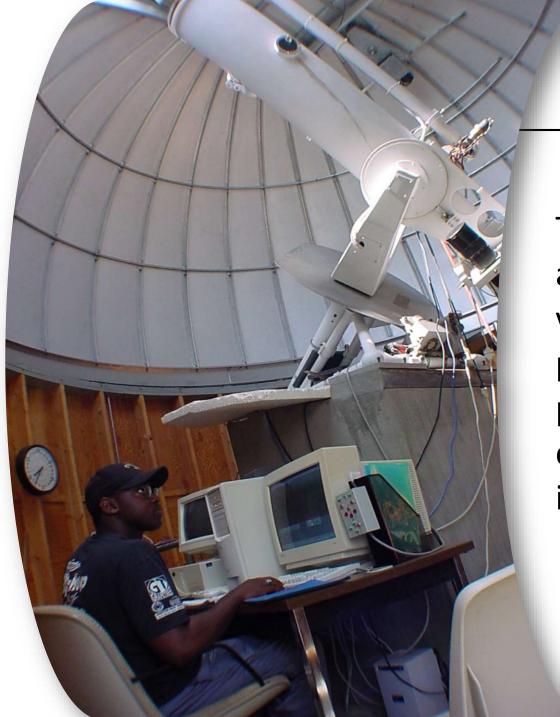


HRD is a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of STEM education and research through broadening participation by historically underrepresented groups minorities, women, and persons with disabilities.

Division of Human Resource Development (HRD)

Presenters: Drs. Jesse DeAro, Claudia Rankins, and Marilyn Suiter





Division of Human Resource Development

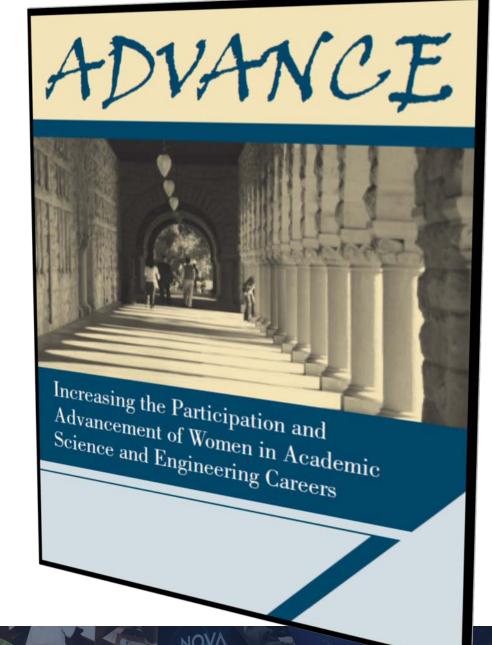
The mission of HRD is to grow the innovative and competitive U.S. STEM workforce that is vital for sustaining and advancing the Nation's prosperity by supporting the broader participation and success of individuals currently underrepresented in STEM and the institutions that serve them.

Photo: NSF-supported Prairie View A&M Graduate Student



The **ADVANCE** program is designed to foster gender equity through a focus on the identification and elimination of organizational barriers that impede the full participation and advancement of all women faculty in academic institutions. Organizational barriers that inhibit equity may exist in policy, practice, culture, and organizational climate.

Program Solicitation – NSF #16-594; multiple funding opportunities, proposal deadlines every other year





Alliances for Graduate Education and the Professoriate (AGEP)



Program
Solicitation –
NSF #16-552;
annual
proposal
deadline in
December
each year

AGEP-Brookhaven National Laboratory project Faculty, post-docs, graduate students, administrators.

AGEP seeks to advance knowledge about models to improve pathways to the professoriate for historically underrepresented minority doctoral students (including those with disabilities), postdoctoral fellows and faculty in specific STEM disciplines and/or STEM education research fields.

New and innovative models are encouraged, as are models that reproduce and/or replicate existing evidence-based alliances in significantly different disciplines, institutions, and participant cohorts.



Centers of Research Excellence in Science and Technology (CREST)

- The **CREST** program provides support to enhance the research capabilities of minority-serving institutions through the establishment of centers with collaborating partners that effectively integrate education and research.
- CREST project California State University, Bakersfield - For the study of 21st century water resources and subsurface carbon storage in the San Joaquin Valley.

 Projects must demonstrate a compelling vision for research infrastructure improvement, and a comprehensive to achieve and sustain national competitiveness in a clearly defined area of national significance in science or engineering research.

Program Solicitation – NSF #18-509; multiple funding opportunities, proposal deadlines throughout the year



Historically Black Colleges & Universities Undergraduate Program (HBCU-UP)





HBCU-UP provides support for the development, implementation, and the study of evidence-based, innovative models and approaches to nourish substantial improvements in the preparation and STEM workforce career success of HBCU undergraduates. HBCU-UP also funds research in broadening participation, as well as all NSF supported disciplines.

Program Solicitation – NSF #16-538; multiple funding opportunities, proposal deadlines throughout the year





Louis Stokes Alliances for Minority Participation (LSAMP)

LSAMP was authorized by Congress and established in 1991. The LSAMP program provides funding to alliances that implement comprehensive, evidence-based, innovative, and sustained strategies that ultimately result in the graduation of well-prepared, highly-qualified students from underrepresented groups who pursue graduate studies or careers in STEM.







Program Solicitation – NSF #17-579; multiple funding opportunities, annual deadlines in January and November each year.





Tribal Colleges and Universities Program (TCUP)

TCUP provides awards to Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions to promote high quality STEM education and research in order to support the preparation of a science and engineering workforce that is broadly inclusive and capable of performing in an international research and development environment in order for the U.S. to remain at the forefront of world science and technology.





Program Solicitation – NSF #18-546; multiple funding tracks, proposal deadlines throughout the year.

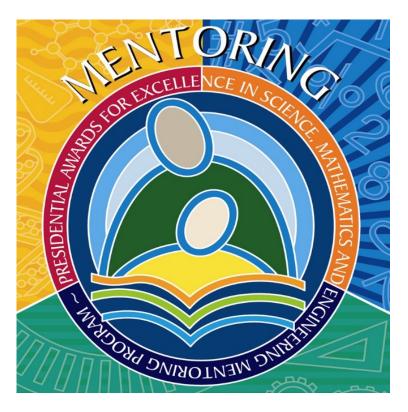




NSF Excellence Awards in Science & Engineering



Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)



Presidential Award for Excellence in Science,
Mathematics, and Engineering Mentoring (PAESMEM)



DRL invests in projects to improve the effectiveness of STEM learning for people of all ages. Its mission includes promoting innovative research, development, and evaluation of learning and teaching across all STEM disciplines by advancing cutting-edge knowledge and practices in both formal and informal learning settings.

Division of Research on Learning in Formal and Informal Settings (DRL)

Presenters: Drs. Ellen McCallie and Bob Russell





ITEST Program Overview

 ITEST promotes PreK-12 student interest and involvement in STEM and related careers

- ITEST supports innovative strategies that:
 - Increase student awareness of STEM and ICT careers.
 - Motivate students to pursue the education necessary to participate in those careers.
 - Provide students with technology-rich experiences that develop their knowledge of related content and skills needed
 - Broaden participation



Solicitation-Specific Review Criteria: Broadening Participation

Proposals should describe:

- Explicit strategies for recruiting and selecting participants from identified groups currently underrepresented in STEM occupations or education pathways to those occupations
- Explicit strategies for identifying the specific needs of the underrepresented groups to be served, and plans or strategies for addressing or accommodating the particular needs of participants of the identified underrepresented groups
- Explicit attention to strategies appropriate to participants' age and experience for promoting awareness, interest, or capacities to participate in STEM careers or STEM education pathways



ITEST Solicitation (17-565)

- Three project types: Exploratory, Strategies, & SPREAD
- Funded through H1-B Work Visa Revenue
- Additional Solicitation Specific Criteria related to broadening participation for all ITEST proposals.
- Proposal Deadline: August 8, 2018
- Resource Center: STELAR, www.stelar.edu.org





AISL Program Overview

- Advances new approaches to and understanding of the design and development of STEM learning in informal environments for public and professional audiences.
- Investments should be of interest and utility to public audiences, informal STEM researchers, developers and practitioners, and decision-makers.
- Priorities: (1) strategic impact, (2) knowledge-building, (3) innovation, (4) collaboration, (5) infrastructure/capacity building and (6) broadening participation.



AISL Solicitation-Specific Review Criteria:

Broadening Participation

 Does the proposal identify the characteristics and needs of the targeted underrepresented groups (public or professional) to be served?

 Does the proposal include explicit plans or strategies for addressing or accommodating the specific interests, community or cultural perspectives, and educational needs of participants of the identified underrepresented groups?



AISL Solicitation (17-573)

Proposal Deadline: Nov. 7, 2018

Resource Center:
 Center for Advancement of Informal
 Science Education (CAISE): www.informalscience.org

 Solicitation: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504793





Discovery Research PreK-12 (DRK-12) Program Overview

 DRK-12 supports integrated Research and Development of Resources, Models, and Tools in the service of STEM learning and learning environments

 Goals: enhanced student achievement in STEM, preparation for the scientific workforce, and improved science literacy

 Focus: learning that takes place during the 12-14 years students are enrolled in the formal classroom learning environments



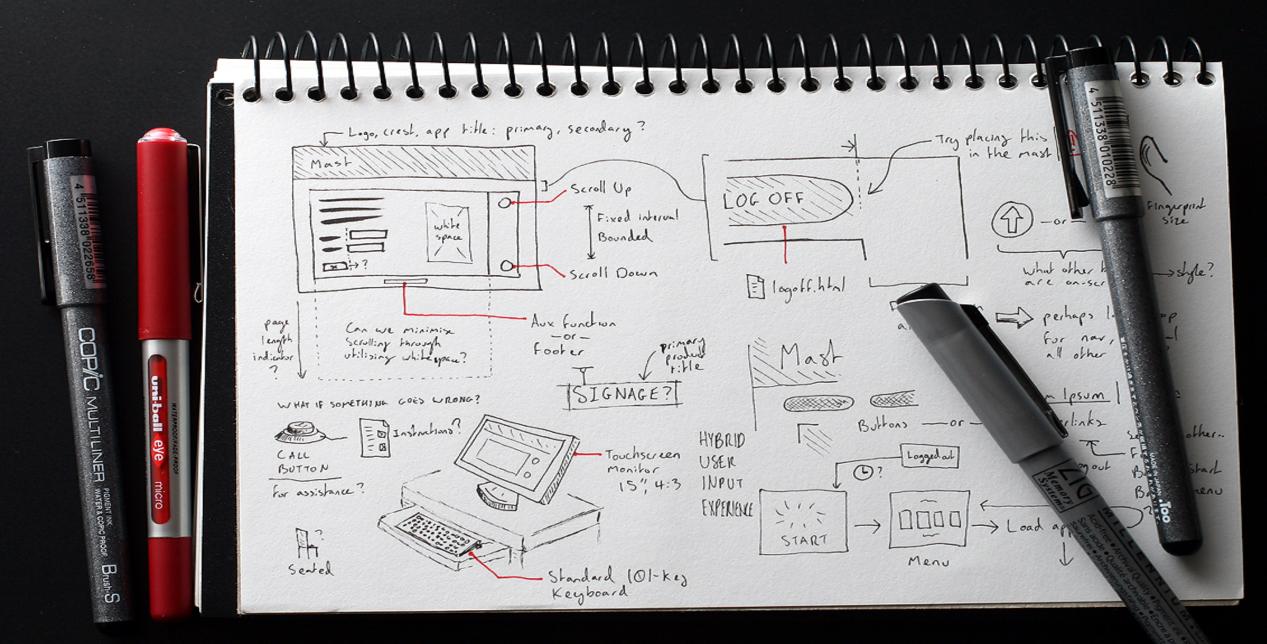
Discovery Research PreK-12 Solicitation (17-584)

DRK-12 has three major research and development strands:
 Assessment; Learning; Teaching

• Proposal Deadline: Nov. 14, 2018

Resource Center: www.cadrek12.org

Solicitation: https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047



STEM + Computing Partnerships (STEM+C)

STEM + Computing (STEM + C) Program Overview

- Focuses on research and development of interdisciplinary and transdisciplinary approaches to the integration of computing within STEM teaching and learning.
- Targets students in the age range of preK-12 students in both formal and informal settings.
- Supports research on how students learn to think computationally to solve interdisciplinary problems in science and mathematics.
- Supports R&D proposals related to new approaches to pre-K-12 STEM teaching and learning related to Harnessing the Data Revolution, Convergence Research and the Future of Work at the Human-Technology Frontier, three of NSF's Big Ideas for Future NSF Investment: https://www.nsf.gov/news/special_reports/big_ideas/



STEM+C Application Information

- Target date: July 2, 2018
- Proposals received after July 2, 2018 may also be considered for 2018 or 2019 funds as funds are available
- Funding categories: There are no specific strands, themes, funding categories or restrictions on project duration or funding limit
- Frequently Asked Questions (FAQs) for submitting proposals to the STEM+C Program Description (18-005Y):



Contact Program Officers About Your Project

- Examine the websites of the relevant programs
- Prepare a 1-2 -page summary of your project
 -Address the merit review criteria
- Contact one of the listed Program Directors with questions about relevance of your project
- Not required but program officers can give you excellent feedback



DUE invests in efforts aimed at strengthening STEM education at two- and four-year colleges and universities by improving curricula, instruction, laboratories, infrastructure, assessment, diversity of students and faculty, and collaborations.

Division of Undergraduate Education (DUE)

Presenters: Drs. Ellen Carpenter and Abby Ilumoka



Division of Undergraduate Education (DUE)

IUSE: EHR

Improving
Undergraduate
STEM
Education

S-STEM

NSF Scholarships in STEM

ATE

Advanced Technological Education

Noyce

Robert Noyce Teacher Scholarships



Improving Undergraduate STEM Education (IUSE: EHR)

Competitive proposals should build on available evidence and theory, generate evidence, and build knowledge.

Program Goals

Improve STEM Learning & Learning Environments:

Increase the number and diversity of undergraduate students recruited and retained in STEM education and career pathways through improving the evidence base for successful strategies to broaden participation and implementation of the results of this research

Build the Professional STEM Workforce for Tomorrow:

Improve the preparation of undergraduate students so they can succeed as productive members of the future STEM workforce, regardless of career path, and be engaged as members of a STEM-literate society

Broaden Participation & Institutional Capacity for STEM Learning:

Increase the number and diversity of undergraduate students recruited and retained in STEM education and career pathways through improving the evidence base for successful strategies to broaden participation and implementation of the results of this research

NSF 17-590

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505082



Improving Undergraduate STEM Education (IUSE: EHR)



Engaged Student Learning

Focus on designing, developing, and implementing research on STEM learning models, approaches, and tools



Exploration
& Design
(smaller scale)

Up to \$300K Up to 3 yrs Development & Implementation

(larger scale)

Level I:

Up to \$600K, Up to 3 yrs

Level II: \$601K to \$2M, Up to 5 yrs

Institutional and Community Transformation

Focus on increasing the propagation of highly effective methods of STEM teaching and learning



Exploration & Design

(smaller scale)

Up to \$300K Up to 3 yrs Development & Implementation

(larger scale)

Up to \$3M Up to 5 yrs

Deadlines:

Exploration and Design: No Deadlines
Development and Implementation:
December 11, 2018







The Bowman Creek Educational Ecosystem (DUE 1612021, ICT, E&D)

- IUSE ICT E&D project in South Bend, Indiana
- Collaboration between University of Notre Dame, Indiana University South Bend, Ivy Tech Community College, K-12 schools, city government and community organizations
- Name of project refers to Bowman Creek, a badly polluted tributary of St. Joseph River in Southbend, IN
- Impaired waterway is focus of project's activities
- Project built upon "multidimensional diversity" where interns represent a very broad range of schools, ages, majors, and ethnic and racial backgrounds
- Participants identify computer-based projects that will have real community impact, and then work in interdisciplinary teams to implement them
- Project generates knowledge through investigation of research questions that explore how perceptions of identity and possibility together with life experiences shape student choices with regard to STEM as a career



NSF Scholarships in STEM (S-STEM) Program

<u>S-STEM Goal</u>: To increase recruitment and retention of full-time academically-talented STEM students with demonstrated financial need through institutional scholarship programs.

- Scholarship Amount: Up to \$10,000 per student per year (depending on <u>financial need</u>)
- 60% of Budget to Scholarships 40% to Student Support, Admin., Research, Evaluation



Multi-Institutional Academic
Redshirt Program (U of Washington)
6 institution-partnership on a "redshirt"
program to provide pre-engineering
students with extra year of preparation
for rigors of engineering curricula
(DUE 1564656, ICT, E&D)

- Curriculum
- Development
 - Professional
 - Workforce
- Cohorts
- Mentoring, etc.

Curricular & Co-Curricular Activities Study & Understand

- Models
- Effective practices
- Strategies

- Recruitment
- Retention
- Student success
- Academic/career pathways
- Student transfer
- Degree attainment

Increase





S-STEM Program

Three Program Tracks

Track 1: Institutional Capacity Building

For institutions without prior funding from S-STEM or STEP programs

Up to \$650K Up to 5 yrs

Track 2: Design and Development:

Single Institution

Up to \$1M Up to 5 yrs

Tracks 2 & 3 seek to leverage S-STEM funds with institutional efforts and infrastructure to increase and understand impacts

Track 3: Design and Development:

Multi-Institution Consortia

Up to \$5M Up to 5 yrs

NOVA

PBS (TEEL)

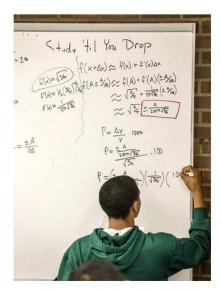




Education | Education Lab | Local News

Promising 'academic redshirt' progengineers to expand

Originally published September 9, 2016 at 6:00 am | Updated September 9, 2016 at 8:29 pm



A student in the "academic redshirt" program at the University of Washington in 2014 works on a math problem. The program enrolls promising engineering students from low-income households, many of them women and minorities, and gives them an additional year of math and science courses before they enter the engineering major. Redshirting is an idea borrowed from college athletics, in which student-athletes get an extra year to mature. (Mike Siegel/The Seattle Times)

Example of S-STEM Project

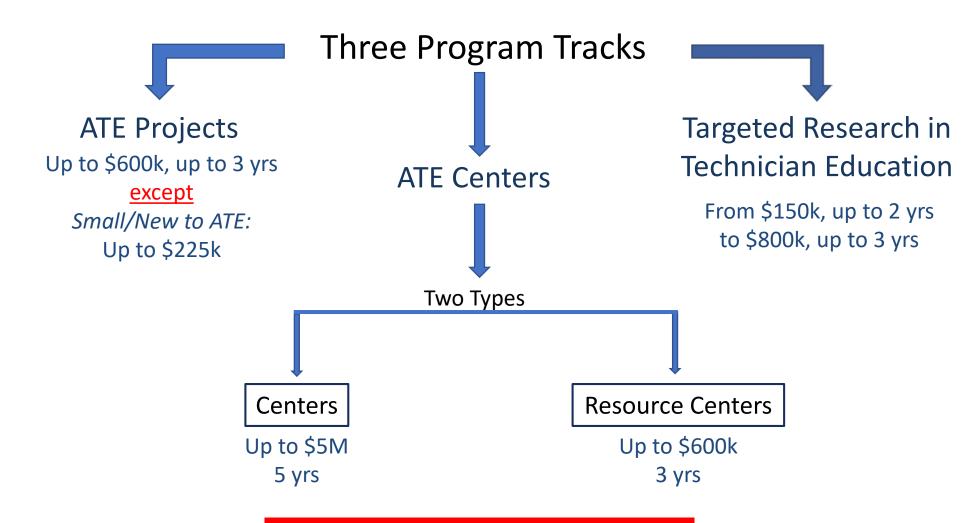
Multi-Institutional Academic Redshirt Program (DUE 1564656)

- Six-institution partnership to adapt, implement and test a model of engineering student success originally developed at the University of Colorado, Boulder
- Idea borrowed from redshirt programs in athletics, in which a freshman athlete is given a year to prepare to compete in a sport at university level
- Here, "redshirt" refers to the idea of providing pre-engineering students with an extra year of preparation for rigors of engineering curricula
- Project awards scholarships and embeds students in an ecosystem of evidence-based academic and student support activities
- Activities include intrusive academic advising, an innovative first-year academic curriculum, community building and career awareness
- Knowledge generation through educational research study to answer research questions:
- 1. How do the curricular elements of the redshirt program impact the students' retention to the sophomore year at the university and in engineering?
- 2. How does the cohort model impact the participants' sense of identity as engineering students?

Advanced Technological Education (ATE) Program Overview

- 1) ATE Focuses on the <u>education of technicians</u> to meet workforce demands in existing and emerging advanced technological fields.
- Colleges that award two-year degrees and their faculty must play leadership role on all projects.
- 3) Requires <u>partnerships</u> between two-year colleges and business and industry, along with secondary schools, four-year colleges and universities, and government, as appropriate.
- 4) Must respond to the hiring needs of for highly-skills technical workforce in the service area of the proposing institution(s).
- 5) Must address sustainability.
- 6) Read the program solicitation for more detailed information.

ATE Program



Deadlines (All Tracks):

FY 19: October 4, 2018

NOVA

PBS CELL

FY 20: October 3, 2019



Robert Noyce Teacher Scholarship Program

Act of Congress (2002)

GOAL: to encourage talented STEM majors and STEM professionals to become K-12 STEM teachers

Scholarship, stipend, and fellowship recipients must teach in a high-need school district for a specified number of years

Track 1 (S&S) Scholarships & Stipends

Undergraduate STEM majors and/or STEM career changers

Track 2 (TF) NSF Teaching Fellowships

STEM career changers

Track 3 (MTF) NSF Master Teaching Fellowships

Exemplary, experienced STEM teachers

Track 4 (Noyce Research) Research on the Preparation, Recruitment, and Retention of K-12 STEM Teachers

NSF 17-541

https://www.nsf.gov/fundin g/pgm_summ.jsp?pims_id=5 733

DGE supports graduate students and the development of novel, innovative programs to prepare tomorrow's leaders in STEM (Science, Technology, Engineering, and Mathematics) fields.

Division of Graduate Education (DGE)

Presenters: Drs. Sarah Flores and Tyrone Mitchell



Division of Graduate Education

Solicitations and Program Descriptions:

- NSF Graduate Research Fellowship Program (GRFP)
- CyberCorps(R) Scholarship for Service (SFS)
- Community College Cyber Pilot Program (C3P)
- Innovations in Graduate Education (IGE) Program
- National Science Foundation Research Traineeship (NRT) Program
- EHR Core Research (ECR)

Dear Colleague Letters (DCLs)

- Graduate Research Internship Program (GRIP)
- Non-Academic Research Internships for Graduate students (INTERN)



Division of Graduate Education

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Broadening Participation Opportunities

with the NSF Graduate Research

Fellowship Program



National Science Foundation

Graduate Research Fellowship Program

DESCRIPTION



NSF Graduate Research Fellowships

Five Year Awards - \$138,000

- Three years of financial support
 - \$34,000 Stipend per year
 - \$12,000 Educational allowance to institution
- Professional Development Opportunities:
 - International Research
 - Internships
- Career-Life Balance Initiative (family leave)
- FASED Individuals with Disabilities
- Supercomputer access: XSEDE







National Science Foundation

Graduate Research Fellowship Program

Who is eligible?







Eligibility

- U.S. citizens and permanent residents
- Early-career: undergraduate & graduate students
- Pursuing research-based MS or PhD degrees
- Science, Technology, Engineering and Mathematics fields (STEM)
- Enrolled in an accredited U.S. institution by Fall after award

New Eligibility Rules (NSF 16-050)

Level 1: Seniors/baccalaureates: no graduate study

Level 2: First-year **graduate students**

Level 3: Second-year graduate students

≤ 12 months of graduate study by August 1, 2018

Only once in grad school

Level 4: >12 months graduate study
with an interruption in graduate study of 2+ years

National Science Foundation

Graduate Research Fellowship Program

Application Package



GRFP Complete Application

Complete Application Package:

- 1) Personal, Relevant Background and Future Goals Statement (3 pages)
- 2) Graduate Research Statement (2 pages)
- 3) Transcripts (uploaded electronically)
- 4) Three letters of reference

DEADLINES: October 2018

Refer to Solicitation NSF 16-588

National Science Foundation

Graduate Research Fellowship Program

Personal & Research Statements



Two Statements

Statement 1:

Personal, relevant Background and Future Goals (3 pages)

Describe your personal, educational and/or professional experiences that motivate your decision to pursue advanced study. Include examples of research and/or professional activities in which you have participated. Describe the contributions to advancing knowledge in STEM fields and the potential for broader societal impacts. Include future plans to contribute to broader impact.

Statement 2:

Graduate Research Plan (2 pages)

Present an original research topic that you would like to pursue in graduate school. Describe the research idea, your general approach. Address the potential of the research to advance knowledge and understanding within science as well as the potential for broader impacts on society.

National Science Foundation

Graduate Research Fellowship Program

Panel Review Criteria





Intellectual Merit Assessment

- Academic performance: grades, courses, awards, etc.
- Graduate Research plan
- Research/professional experience
- Reference letters

Broader Impacts Assessment

- Prior accomplishments and future plans
- Individual experiences
- Potential benefit(s) to society
- Community outreach
- Reference letters



National Science Foundation

Graduate Research Fellowship Program

Other Funding Opportunities for All Students



Portals for federally-sponsored opportunities in STEM for students

stemundergrads.science.gov



stemgradstudents.science.gov



Narrow Results:



Narrow Results:

Search

Graduate Program Type	>
Graduate Level Eligibility	>
STEM Discipline Focus	>
Institutional Location	>
Federal Agency Sponsor	>
Geographic Region	>

Search

STEMUndergrads.science.gov

The STEMUndergrads.science.gov site was established to be the primary source for searching Federally-sponsored opportunities for undergraduate students and undergraduate programs in science, technology, engineering, and mathematics (STEM) areas. These opportunities range from scholarships and research internships that undergraduate students can apply to directly for funding to allow academic institutions to establish innovative undergraduate training programs.

Users of the site may search for program opportunities using a set of standardized categories - such as STEM discipline, institutional location where the undergraduate opportunity takes place, and Federal agency sponsor - as well as through using a keyword search. Each search result provides a brief program description and a direct link to the sponsoring agency's program website. Interested applicants should follow the sponsoring agency's procedures for applying.

STEMGradStudents.science.gov

- The STEMGradStudents.science.gov site was established to be the primary source for searching Federally-sponsored opportunities for graduate students and graduate study programs in science, technology, engineering, or mathematics (STEM) areas. These advanced degree opportunities range from graduate fellowships and research internships that graduate students can apply to directly for funding to allow academic institutions to establish innovative graduate training programs.
- Users of the site may search for program opportunities using a number of standardized categories - such as by STEM discipline or institutional location where the graduate opportunity takes place - as well as through using a keyword search. Each search result provides a brief program description and a direct link to the sponsoring agency's program website. Interested applicants should follow the sponsoring agency's procedures for applying.
- These sites were developed through collaborations between the participating agencies of the White House National Science and Technology Council's Committee on STEM Education (CoSTEM) and the Science.gov Alliance, and is updated on a regular basis.

Graduate Research Fellowship Program



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NSF CyberCorps[®]: Scholarship for Service Program



The SFS program seeks to <u>increase the number</u> of <u>qualified students</u> entering the fields of information assurance and computer security and to <u>increase the capacity of the United</u>

States higher education enterprise to continue to produce professionals in these fields.









 Increasing the number of <u>female students</u> and <u>under-represented</u> <u>minorities (URMs)</u> in cybersecurity and computing disciplines

 Diversifying the <u>types of institutions</u> with strong cybersecurity programs

 Diversifying the <u>geographic distribution</u> of institutions with strong cybersecurity programs

Scholarship Track

- Scholarships: Provides funds to colleges and universities for student scholarships in support of education in areas relevant to cybersecurity (\$3-5 million for five years).
- Student service obligation: In return for their scholarships, recipients must agree to work after graduation for the government in a position related to cybersecurity for a period equal to the length of the scholarship.

Capacity Track

Seeks innovative proposals that are likely to lead to an increase in the ability of the US higher education enterprise to produce cybersecurity professionals:
 provides funds to support curriculum, outreach, faculty, institutional, and/or partnership development
 (up to \$500,000 for 5 years).







Scholarship Track

SCHOLARSHIP TRACK AWARDS

Typical Award: \$3-5 million for

five years



INSTITUTION ELLIGIBILITY

- Evidence of strong program in cybersecurity: National Centers of Academic Excellence (CAE) or equivalent designation (e.g., DC3 Forensics, NSA CAE -Cyber Ops, or alternative evidence)
- Offer formal cybersecurity educational program
- Community colleges eligible as sub-awardees of a partnering 4-year institution







Scholarship Track



STUDENT ELLIGIBILITY

- U.S. Citizen or Permanent Resident
- Full-time enrollment in Cybersecurity program
- Eligible for government employment (must be able to acquire security clearance)
- Awardee institutions set additional selection criteria



SCHOLARSHIP COMPONENTS

- Up to 3 years of support for undergraduate and graduate (MS or PhD) education
- Full tuition, stipends (\$22,500 for undergrad and \$34,000 annually for graduate students) and other allowances (up to \$9,000 per year)
- in-person job fair participation in Washington, D.C.
- Post-graduation government service requirement for a period equivalent to the length of scholarship







Capacity Track

SOLICITATION COMING IN SEPTEMBER 2018

CAPACITY TRACK AWARDS

Up to \$500,000 for 5 years

INSTITUTION ELLIGIBILITY

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), Chapter I.E.



WHAT CAN BE FUNDED?

Provides funds to support curriculum, outreach, faculty, institutional, and/or partnership development







Community College Cyber Pilot Program (C3P)

• Per the 2018 National Defense Authorization Act (NDAA18)



- "...develop and implement a pilot program at not more than 10, but at least 5, community colleges to provide scholarships to eligible students who—
- (1) are pursuing associate degrees or specialized program certifications in the field of cybersecurity; and
- (2)(A) have bachelor's degrees; or (B) are veterans of the Armed Forces.





Community College Cyber Pilot Program (C3P)

In response to the NDAA18, NSF will accept proposals to **develop**, **implement**, **support**, **and evaluate C3P projects** in this pilot effort. This new category of CyberCorps® SFS scholars will satisfy criteria and receive the benefits consistent with the CyberCorps® SFS program requirements (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504991) and must work after graduation for a Federal, State, Local, or Tribal Government organization in a position related to cybersecurity for a period equal to the length of the scholarship.



The next C3P Webinar will be scheduled in September 2018.

WILL THERE BE ANY INFORMATION ON ANY BUDGET LIMITS?

The Program Description does not include any budget limits.

INSTITUTION ELLIGIBILITY

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the NSF Proposal & Award Policies & Procedures Guide (PAPPG), Chapter I.E



Questions?



EHR Education Core Research

Solicitation 15-509



ECR Program Features

- Fundamental research in STEM education about critical areas that are essential, broad and enduring.
- Synthesis or expansion of research foundations in the focal areas.
- Contribution to the accumulation of robust evidence to guide interventions and innovations.

- Focus on persistent challenges in STEM education and workforce development.
- Development of foundational knowledge in STEM formal and informal learning and learning contexts for all groups and stages of development.

Proposal Deadline: September every year.



Proposal Types and Funding

Three Funding levels

- Level I \$500,000 maximum of three years
- Level II \$1,500,000 maximum of three years
- Level III \$2,500,000 maximum of five years

Synthesis and conference/workshop proposals

Deadline: September 13, 2018



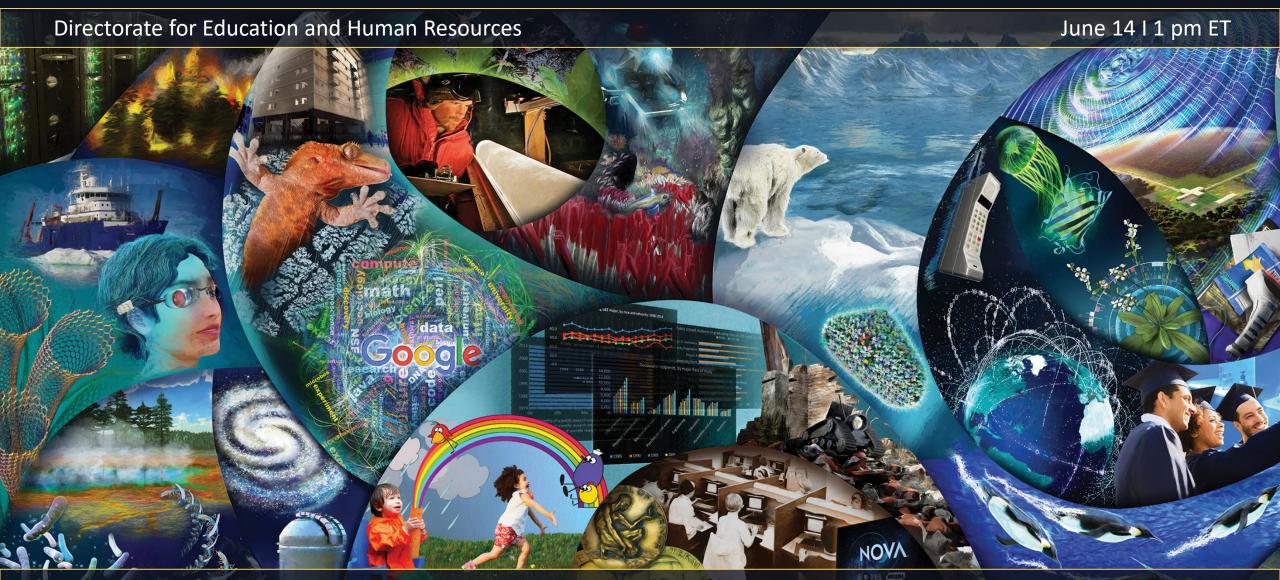
Capacity Building and Professional Development

Capacity Building & Professional Development

- NSF Summer Scholars Internship Program (HACU, QEM)
- Attend NSF Days Events, Workshops, and Webinars
- Serve as a proposal reviewer (ad hoc) and panelist (in-person, virtual),
 Link sent following the webinar (2 weeks to sign up)
- Get Connected (social media, Science360, Science Nation, Discovery Files Podcast)
- Consider joining NSF as a Rotator!
- Contact NSF Program Officers if you have questions about a program
- Submit Proposals!



National Science Foundation Funding Opportunities Broadening Participation in STEM



PreK-12 Education | Undergraduate Education | Graduate Education | Informal Education | Human Resource Development