Finding and Responding to the NSF Call

NSF HSI STEM HUB Summer Grantsmanship Webinar Series
June 23, 2020
National Science Foundation (NSF)

- Created in 1950 as an independent federal agency
- Supports ~25% of federally-funded basic research in U.S. colleges and universities
- Funds all fields in Science and Engineering
- >50,000 proposals; ~12,000 new awards per year supporting >380,000 scientists, educators and students in ~1,800 institutions

Erika T. Camacho
Program Director for ADVANCE & HSI Programs (Co-lead)
ecamacho@nsf.gov
NSF Organization

New NSF Director
Sethuraman "Panch" Panchanathan

EHR

BIO CISE EHR ENG GEO MPS SBE

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OFFICE OF THE DIRECTOR

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Director
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Deputy Director
Vacant
Deputy Director
Searching or Browsing Funding opportunities: www.nsf.gov
Collaborative Proposals

- Projects that involve 2 or more institutions.
- May be submitted as single or multiple submissions that are linked
- A lead institutions is designated (who is in the driver’s seat), other institution in non-lead
- Collaborative proposal can be submitted in most programs
**RUI-** Research in Undergraduate Institutions

- Supports research at Primarily Undergraduate Institutions (PUI). Includes 2-and 4-yr institutions
- Foundation wide-see RUI in the PAPPG for requirements
- Submitted to specific programs- must contact cognizant Program Director(s) for more details
- Supports Individual and Collaborative Proposals

**ROA-** Research Opportunity Awards

- Supports PUI faculty to work on existing project funded by NSF.
- Awards are made as Supplements to existing project
- Typically provide Summer Salary + Materials and Supplies
- Search NSF for existing awards, contact Principal Investigator (PI) to discuss project and how you might fit in. The PI then submits Supplement request.
Division of Human Resource Development (HRD)

- HRD programs support and promote activities that seek to strengthen STEM education for underserved communities, broaden their participation in the workforce, and add to our knowledge base about programs of inclusion.
HRD PROGRAMS

Improving Undergraduate STEM Education: Hispanic Serving Institutions (IUSE:HSI) (*co-managed with DUE*)
Organizational Change for Gender Equity in STEM Academic Professions (ADVANCE)
Alliances for Graduate Education and the Professoriate (AGEP)
Centers of Research Excellence in Science and Technology (CREST) & HBCU Research Infrastructure for Science and Engineering (HBCU-RISE)
Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
Louis Stokes Alliances for Minority Participation (LSAMP)
Tribal colleges and universities program (TCUP)
Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM)
The goal of the ADVANCE program is to broaden the implementation of evidence-based systemic change strategies that promote equity for STEM faculty in academic workplaces and the academic profession.

ADVANCE supports grants that:

- Develop, implement, and evaluate systemic change strategies to transform academic institutional policies, procedures, practices, and culture to create organizations that are inclusive and support diverse STEM faculty; and

- Facilitate the adaptation and scale-up of evidenced-based systemic change strategies by institutions and non-academic organizations. Partnership projects may focus on one or more STEM discipline area(s).
Alliances for Graduate Education and the Professoriate (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 that effectively integrate education and research.

Tracks:
CREST Centers,
CREST Partnership Supplements,
CREST Postdoctoral Research Fellowships (PRF)
HBCU Research Infrastructure for Science and Engineering (RISE)
SBIR/STTR Phase IIA Diversity Collaboration Supplements
Historically Black Colleges & Universities Undergraduate Program (HBCU-UP)

HBCU-UP seeks to meet the nation's accelerating demands for STEM talent, and more rapid gains in achievement and successful degree completion in STEM for underrepresented minority populations.

Awards support 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.
Louis Stokes Alliances for Minority Participation (LSAMP)

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 racial/ethnic groups (African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and Native Pacific Islanders) who pursue graduate studies or careers in STEM disciplines.
**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 science (including sociology, psychology, anthropology, economics, statistics, and other social and behavioral sciences as well as natural sciences), technology, engineering and mathematics (STEM) education, research, and outreach. Support is available to TCUP-eligible institutions (see the Additional Eligibility subsection of Section IV of this solicitation) for transformative capacity-building projects through various tracks.
The Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring

PAESMEM are the highest national mentoring awards bestowed by the White House. PAESMEM recognizes those who have made significant contributions both to mentoring and support of the future U.S. STEM workforce.

Over 300 individuals and organizations have received this distinguished Presidential recognition, serving as exemplars to their colleagues and leaders in the national effort to develop more fully the nation’s human resources in STEM.

Nominate a mentor or begin an application at www.paesmem.net.a

On behalf of the White House, HRD manages the Presidential Awards’ programs.
Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program) NSF 19-540

- Goals:
  - **Build capacity** in undergraduate STEM education at HSIs that typically do not receive high levels of NSF grant funding
  - **Increase the retention and graduation rates** of students pursuing associate or baccalaureate degrees in STEM fields at HSIs

Website: [https://nsf.gov/ehr/HSIProgramPlan.jsp](https://nsf.gov/ehr/HSIProgramPlan.jsp) contains FAQs, data from listening sessions, and announcements
American Innovation and Competitiveness Act, Public Law 114-329

“The Director shall award grants on a competitive, merit-reviewed basis to Hispanic-serving institutions (as defined in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a)) to enhance the quality of undergraduate STEM education at such institutions and to increase the retention and graduation rates of students pursuing associate’s or baccalaureate degrees in science, technology, engineering, and mathematics.”

Consolidated Appropriations Act, 2017 Public Law 115-31

“The agreement also directs NSF to establish an Hispanic Serving Institution (HSI) program at no less than $15,000,000...to use this program to build capacity at institutions of higher education that typically do not receive high levels of NSF grant funding.”
NSF Organization

New NSF Director Sethuraman "Panch" Panchanathan
Directorate for Education & Human Resources

Office of the Assistant Director

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

Division of Graduate Education (DGE)

Division of Undergraduate Education (DUE)

Division of Human Resource Development (HRD)
DUE & HRD Co-Manage the HSI Program

• Division of Undergraduate Education (DUE)
  ➢ DUE’s programs are intended to strengthen 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 Human Resource Development (HRD)
  ➢ HRD programs support and promote activities that seek to strengthen STEM education for underserved communities, broaden their participation in the workforce, and add to our knowledge base about programs of inclusion.
**HHEs by the numbers**

<table>
<thead>
<tr>
<th>Number of HSIs</th>
<th>States + Puerto Rico &amp; D.C. with HSIs</th>
<th>Of Latinx students attend HSIs</th>
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<tbody>
<tr>
<td>523</td>
<td>27</td>
<td>66%</td>
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**Growth:**
- 98% increase in HSIs over the last 10 years
- 17% of all institutions meet HSI definition

**Enrollment:**
- 46% of students at HSIs are Latinx
- 62% of HSIs enroll under 5,000 students

**Geography:**
- 62% of HSIs are located in California, Texas, Puerto Rico, and New York

**Sector:**
- 42% are public two-year
- 28% are private four-year
- 25% are public four-year

*Source: Excelencia in Education*
HSIs: Department of Education Data

Eligibility Matrix

- Eligibility Matrix 2020 (2.26M)

- 436 HSIs consisting of 211 CCs
- [https://www2.ed.gov/about/offices/list/ope/dues/eligibility.html](https://www2.ed.gov/about/offices/list/ope/dues/eligibility.html)
HSI PROGRAM
Institutional Eligibility

• Institutions must be accredited and offer undergraduate educational programs in STEM, and satisfy the HSI definition as specified in section 502 of the Higher Education Act of 1965 (20 U.S.C. 1101a), i.e.,
  a) be an eligible institution; and
  b) have a full-time equivalent enrollment of undergraduates that is at least 25% Hispanic.

• **Certification of eligibility** is required with submission of a proposal to the HSI Program.

  ➢ [https://nsf.gov/ehr/Pubs/HSICertForm.pdf](https://nsf.gov/ehr/Pubs/HSICertForm.pdf)
HSI PROGRAM Tracks

**Track 1:** Building Capacity
Maximum of $2.5M up to 5 years

**Track 2:** HSIs New to NSF*
Maximum $300K up to 3 years
(*no NSF funding at the institution in past 5 years)
Track 1: Building Capacity

Priority Area 1: Critical Transitions

Priority Area 2: Innovative Cross-Sector Partnerships

Priority Area 3: Teaching and Learning in STEM

• Proposals should focus on one or more of these priority areas, as appropriate to the project goals and the institution capabilities and resources.

• The proposal should identify its priority area(s) in both the overview of the Project Summary and the body of the proposal.
“Building Capacity”

Priority Area 1: Critical Transitions

• Proposals should include institutional data that demonstrates a need for the proposed project.

• The proposed project should identify and investigate factors that affect student success and subsequent graduation.

• Institutional partnerships should have in place or plan to develop articulation agreements for the transfer of students from one institution to another that leads to STEM degree attainment.

• Successful project leadership teams will typically include STEM education researcher and those who specialize in higher education issues and processes. Consider project design – team should reflect capacity needed.
“Building Capacity”

Priority Area 2: Innovative Cross-Sector Partnerships

• Partners may include industry, government, academic institutions, non-profit organizations, and local communities.

• Projects should prepare students for future STEM careers by increasing access to experiential professional development opportunities.

• Projects may provide opportunities for faculty engagement in interdisciplinary and cross-sector STEM research.
“Building Capacity”

Priority Area 3: Teaching and Learning in STEM

- Projects should generate new knowledge about teaching and learning strategies and curricular models that improve undergraduate STEM education for a culturally diverse student population at HSIs.

- Projects may also create and adapt evidence-base successful studies to a new context/environment or strategies to enhance STEM learning that lead to measurable gains and implementable models.

- Projects enhance understanding of how students learn STEM topics and how faculty adopt culturally relevant instructional approaches in STEM.

- Projects may include investigators (internal or external to the institution) with expertise in education research and/or social science research methods, as well as knowledge about STEM programs.
Track 2: HSIs New to NSF

- Stimulate implementation, adaptation, and innovation in one or more of the three priority areas identified in Track 1.
- Projects will develop evidence-based innovative models that address retention and graduation rates of students pursuing associate or baccalaureate degrees in STEM.
- Anticipated new knowledge to be generated from the project should be described.
- It is expected that some of the funded Track 2 projects will serve as pilots for ideas that may be expanded in future proposals in Track 1 or other NSF programs.
Research Design

• The research design addresses a research question and/or hypothesis that is important to the project and the field and is appropriate to the size and scope of the project.

Project Evaluation: Measures to Assess Success

• The evaluation plan examines all aspects of the project activities to inform the project's progress towards its goals and is appropriate to the size and scope of the project.

❖ Successful proposals will have well-aligned research questions/hypotheses, methods, analyses, project activities, and project evaluation.
Research vs. Evaluation

**Soup as a metaphor**

- **Research**
  - What happens to the soup’s flavor when I use different ingredients?
  - How does the rate of cooling change when I use different bowls?

- **Evaluation**
  - Did I use appropriate procedures to make the soup?
  - Did I adequately consider the possible ingredients I might use?
FORMATIVE SUMMATIVE

WHEN THE CHEF TASTES THE SOUP
WHEN THE GUESTS TASTE THE SOUP

FROM STEVE WHEELER’S BLOG “THE AFL TRUTH ABOUT ASSESSMENT”
For the NSF HSI Program

• **Letters of Collaboration** that document what is being committed that is of significance to the project must be provided.
  
  • (Tell your OSP officer, these letters are different from the template in PAPPG.)

• Letters that merely endorse the project or offer nonspecific support for project activities should not be included and the proposal may be returned without review if general support letters are included.
What makes a successful proposal?
Successful Proposals:

• Generate new knowledge and have solid STEM education research questions.

• Have a strong evaluation plan written by an expert who is consulted throughout.

• Have a detailed management plan written in consultation with the evaluator.

• Have well-aligned research questions/hypotheses, methods, analyses, project activities, and project evaluation.

• Create and/or adapt evidence-based successful studies or strategies to a new context/environment that enhance STEM education and lead to measurable outcomes and implementable models.

• Are based on relevant current literature and evidence-based practices.
Successful Proposals:

• Have a convincing **sustainability plan** clearly outlining how certain activities will be institutionalized.

• Include **institutional data** that demonstrates a **need** for and ability to undertake the proposed project.

• Include investigators (internal or external to the institution) with expertise in **education research methods** and/or **social science research methods**, as well as who specialize in higher education issues and processes.
  
  • **Team reflects the capacity needed for scope of project and research design.**

• Have an appropriate **dissemination plan** for the scope and size of the project.
Helpful Hints

1. Read the Program Solicitation *(several times and carefully)*
2. Talk with your Sponsored Projects Office
   - University deadlines & limited submission
   - Institutional Review Board “IRB” approvals
   - e.g., institutional Animal Care and Use Committee (IACUC) approvals
3. Work on projects you care deeply about
4. Build on what others have done
Helpful Hints (continued)

5. Think global - act local and global
6. Have measurable goals and objectives
7. Think teamwork
8. Talk with NSF program officers
   • Your proposed project (1-2 pg white paper)
   • Clarifications on program requirements/limitations
   • Current program patterns
Helpful Hints (continued)

9. Use good management skills

10. Create a timeline to address the requirements of the proposal and draft the various sections
   • E.g., Institutional commitments

11. Work with Sponsored Projects Office on the budget

12. Evaluate for impact and effectiveness
   • Professional evaluator can help

13. Spread the word and talk with other PIs
• **Goals**
  ✓ What are you trying to accomplish?
  ✓ What will be the outcomes?

• **Rationale**
  ✓ Why do you believe that you have a good idea?
  ✓ Why is the problem important?
  ✓ How does it tie into previous literature/efforts?
  ✓ Why is your approach promising?
  ✓ Why are you ready to undertake this work?

• **Evaluation**
  ✓ How will you manage the project to ensure success?
  ✓ How will you know if you succeed?

• **Dissemination**
  ✓ How will others find out about your work?
  ✓ How will you interest them?

• **Sustainability**
  ✓ How will your project be maintained beyond the life of the award?
Questions?
HSI Resources


Program Website: https://nsf.gov/ehr/HSIProgramPlan.jsp

FastLane Help Desk: 1-800-673-6188 or e-mail Fastlane@nsf.gov
Any Questions?

Thank you for your attention!

Erika T. Camacho  ecamacho@nsf.gov

Serve as an HSI reviewer & more information in the program website:  
https://nsf.gov/ehr/HSIProgramPlan.jsp