Programs and Initiatives in the Directorate for Education and Human Resources

Sandra Richardson, Ph.D.
Program Director
Division of Undergraduate Education
Directorate for Education and Human Resources
srichard@nsf.gov
The National Science Foundation

- National Science Board (NSB)
  - Director
  - Deputy Director
  - Office of the Inspector General (OIG)
  - Office of Diversity & Inclusion
  - Office of the General Counsel
  - Office of Integrative Activities
  - Office of International Science & Engineering
  - Office of Legislative & Public Affairs

- Biological Sciences (BIO)
  - Computer & Information Science & Engineering (CISE)
  - Engineering (ENG)
  - Geosciences (GEO)
  - Mathematical & Physical Sciences (MPS)

- Social, Behavioral & Economic Sciences (SBE)
  - Education & Human Resources (EHR)

- Budget, Finance & Award Management (BFA)
  - Information & Resource Management (IRM)

National Science Foundation
EHR Organizational Structure

Office of the Assistant Director (OAD)

- Division of Research on Formal and Informal Settings (DRL)
- Division of Graduate Education (DGE)
- Division of Undergraduate Education (DUE)
- Division of Human Resource Development (HRD)
EHR Investment Priorities

**STEM Learning and Learning Environments**
- Build on cognitive and “non-cognitive” foundations in STEM.
- Support research and the development of innovative tools, approaches and practices in formal and informal STEM learning contexts.

**Broadening Participation and Institutional Capacity in STEM**
- Promote accessibility, supports and success for underrepresented groups through high-quality STEM education.

**STEM Workforce**
- Build capacity and prepare a diverse STEM workforce.
- Capitalize on novel advances in science and technology.
- Address emerging global, social, and economic challenges and opportunities.
Advancing STEM Learning through Research

• Generate new knowledge about STEM learning & education.
• Develop a diverse workforce ready to advance the frontiers of science and engineering for society.
• Grow and sustain a STEM-literate public.

National Science Foundation
Advancing STEM Learning at All Levels

- STEM Workforce
- Postdoctoral Experiences
- Community College
- High School
- Middle School
- Elementary School
- Early Childhood Education

National Science Foundation
Advancing STEM Learning Across Contexts

Virtual Worlds
Formal Education
Making
Augmented Reality
Citizen Science
Online Learning
Games
Social Media
Museums
Science Centers
After-school Programs

National Science Foundation
EHR PROGRAMS
(and some cross-directorate programs)
# EHR Program Overview

<table>
<thead>
<tr>
<th>Division</th>
<th>L&amp;LE</th>
<th>BP</th>
<th>WD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research on Learning (DRL)</strong></td>
<td>S&amp;CC</td>
<td>AISL DR-K12</td>
<td>ITEST STEM+C CSforALL BCC-EHR*</td>
</tr>
<tr>
<td><strong>Undergrad Education (DUE)</strong></td>
<td>IUSE (EHR, HSI) S-STEM</td>
<td>ATE* Noyce AD* C3P* REU-Sites</td>
<td></td>
</tr>
<tr>
<td><strong>Graduate Education (DGE)</strong></td>
<td>ADVANCE AGEP HBCU-UP TCUP DEL*</td>
<td>SFS/CyberTraining/SaTC GRF / GRIP IGE NRT</td>
<td></td>
</tr>
<tr>
<td><strong>Human Resource Development (HRD)</strong></td>
<td>LSAMP CREST and RISE REU</td>
<td>PAEMST &amp; PAESMEM CREST</td>
<td></td>
</tr>
</tbody>
</table>

National Science Foundation
Division of Undergraduate Education (DUE) Programs

- **IUSE: EHR** Improving Undergraduate STEM Education: EHR 17-590
- **S-STEM**: NSF Scholarships in STEM 17-527
- **ATE**: Advanced Technological Education 18-571
- **NOYCE**: Robert Noyce Teacher Scholarship Program 17-541
Division of Research on Learning in Formal & Informal Settings (DRL) Programs

- **AISL**: Advancing Informal STEM Learning 17-573
- **CSforAll**: Computer Science for All 18-537
- **DRK-12**: Discovery Research PK-12 17-584
- **ITEST**: Innovative Technology Experiences for Students and Teachers 17-565
- **S&CC**: Smart and Connected Communities 19-564
- **STEM+C**: STEM + Computing Partnerships 18-005Y
Division of Human Resource Development (HRD) Programs

- **HBCU-UP**: HBCU Undergraduate Program 18-522
- **LSAMP**: Louis Stokes Alliances for Minority Participation 17-579
- **ADVANCE**: Increasing the Participation & Advancement of Women in Academic Science and Engineering Careers 19-552
- **AGEP**: Alliances for Graduate Education and the Professoriate 16-552
- **TCUP**: Tribal Colleges and Universities Program 18-546
HRD Programs cont.

- **CREST**: Centers of Research Excellence in Science and Technology 18-509
- **RISE**: Research Infrastructure for Science and Engineering 18-509
- **PAESMEM**: Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring 16-534
- **PAEMST**: Presidential Awards for Excellence in Mathematics and Science Teaching 16-534
Division of Graduate Education (DGE) Programs

- **SFS**: CyberCorps: Scholarship for Service 19-521
- **GRFP**: Graduate Research Fellowship 18-573
- **GRIP**: Graduate Research Internship Program DCL 18-069
- **IGE**: Innovations in Graduate Education 17-585
- **NRT**: NSF Research Traineeship 19-522
- **CyberTraining**: Training-based Workforce Development for Advanced Cyberinfrastructure 19-524
- **SaTC**: Secure and Trustworthy Cyberspace 18-572

*National Science Foundation*
Crosscutting and Cross-divisional Programs

- **ECR**: EHR Core Research 19-508

- **ECR: BCSER**: Building Capacity in STEM Education Research 19-565

- **IUSE: HSI**: Improving Undergraduate STEM Education: Hispanic Serving Institutions 18-524

- **REU**: Research Experiences for Undergraduates 13-542

- **CAREER**: Faculty Career Development Program 17-537
NSF’s Ten Big Ideas
Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES)

- Bring together dedicated partners
- Find approaches that work
- Build a nation where everyone has opportunities in STEM
GENERAL INFORMATION
Proposals Answer Fundamental Questions

<table>
<thead>
<tr>
<th>Goals</th>
<th>Rationale</th>
<th>Evaluation</th>
<th>Dissemination</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are you trying to accomplish?</td>
<td>Why do you believe that you have a good idea?</td>
<td>Are there ways to inform decisions with data?</td>
<td>How will others find out about your work?</td>
</tr>
<tr>
<td>What will be the outcomes?</td>
<td>Why is the problem important?</td>
<td>How will you know if you succeed?</td>
<td>How will you interest them?</td>
</tr>
<tr>
<td>Why do you believe that you have a good idea?</td>
<td>Why is the problem important?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Why is the problem important?</td>
<td>How does it tie into previous literature/efforts?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How does it tie into previous literature/efforts?</td>
<td>Why is your approach promising?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Why is your approach promising?</td>
<td>Are there ways to inform decisions with data?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there ways to inform decisions with data?</td>
<td>How will you know if you succeed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How will you know if you succeed?</td>
<td>How will others find out about your work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How will others find out about your work?</td>
<td>How will you interest them?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Research and Evaluation in EHR Proposals

All EHR awards should contribute to knowledge about STEM learning and learning environments, workforce development, or broadening participation.

Research
• Is integral to the project
• Contributes to generalizable knowledge
• Includes appropriate methods, depending on the research questions (qualitative, quantitative, or mixed methods)

Evaluation
• Projects have a way to assess process or outcomes
• Identifies an independent, external evaluator, depending on program solicitation requirements
Prospective Principal Investigators

- Track Funding Opportunities
- Engage with NSF
- Answer Fundamental Questions
- Seek Collaborations & Interdisciplinary Partnerships
Engage with NSF

- Submit Proposals
- Serve as a Reviewer & Panelist
- Join Webinars
- Consider being a Rotator

Visit the EHR Website for information about EHR Divisions and Programs

Contact NSF Program Directors for Questions and Suggestions

National Science Foundation
Making Connections: Resource Centers

- **AISL**: Center for Advancement of Informal Science Education (CAISE) [informalscience.org/community](http://informalscience.org/community)

- **DRK-12**: Community for Advancing Discovery Research in Education (CADRE) [cadrek12.org](http://cadrek12.org)

- **ITEST**: STEM Learning and Research Center (STELAR) [stelar.edc.org](http://stelar.edc.org)

- **MSP**: Math and Science Partnership Network (MSPnet) [hub.mspnet.org](http://hub.mspnet.org)

- **CIRCL**: [http://circlcenter.org](http://circlcenter.org)

- **ARISE (Noyce)**: [https://aaas-arise.org/](https://aaas-arise.org/)
Follow solicitation/ announcement/ PAPPG guidelines

The Proposal and Award Policies and Procedures Guide (PAPPG) contains documents relating to NSF’s proposal and award process, including pre- and post-award information.
NSF Resources cont.

- Funding Opportunities: [www.nsf.gov/funding/browse_all_funding.jsp](http://www.nsf.gov/funding/browse_all_funding.jsp)
- Award Information: [www.nsf.gov/awardsearch](http://www.nsf.gov/awardsearch)
- Preparing Proposals: [https://www.nsf.gov/funding/preparing/](https://www.nsf.gov/funding/preparing/)
- FastLane: [www.fastlane.nsf.gov](http://www.fastlane.nsf.gov)

*National Science Foundation*
Thank You!

Sandra Richardson
NSF Program Officer (EHR Directorate)

srichard@nsf.gov

National Science Foundation