

EHR

DIRECTORATE FOR
EDUCATION & HUMAN RESOURCES



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Program Directors
NSF Division of
Undergraduate
Education

New Faculty Workshop
July 28, 2022



Funding Opportunities in NSF's Directorate for Education and Human Resources (EHR)

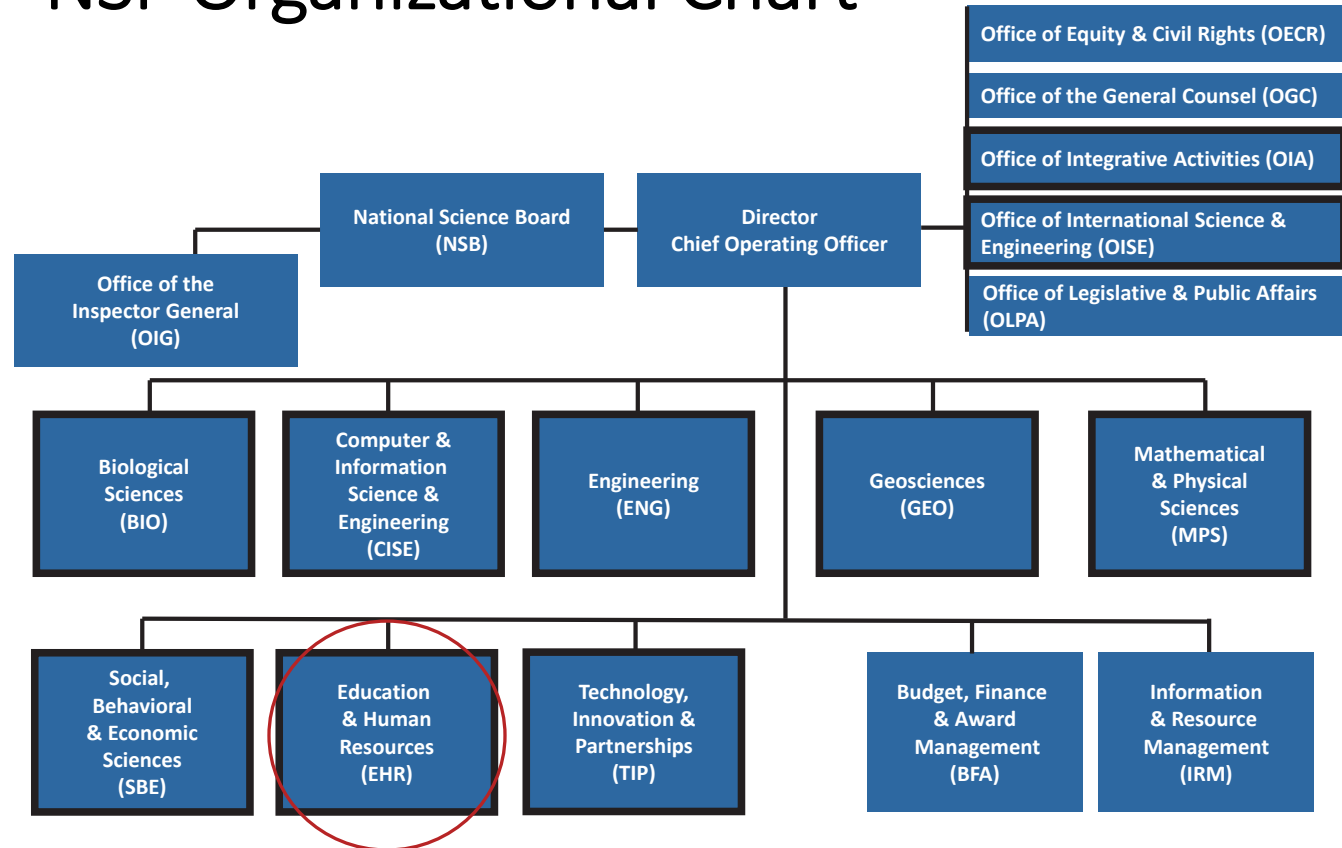


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NSF Organizational Chart



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EHR Mission & Themes

“To develop a diverse and well-prepared U.S. STEM workforce and STEM-literate public by supporting excellent research and development in STEM education.”



<https://www.nsf.gov/dir/index.jsp?org=EHR>

STEM Learning
and Learning
Environments



Broadening
Participation in
STEM



STEM
Professional
Workforce
Development



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Vexing Issues in STEM Education

- **Disparities and persistent inequities**
- **Grappling with AI and other advanced technologies to transform the work of STEM teaching and learning**
- **Aligning curriculum with the work of the future and studying its effects**
- **Understanding the impacts of remote instruction on all learners**



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1. Cross-Directorate
2. NSF-Wide
3. H-1B Visa Fee Funded
4. Stewarded by DUE and HRD
5. Co-managed with another Directorate
6. Program Description
7. On behalf of OSTP (in gold font)
8. NSF-wide stewarded by HRD (in gold font)

<https://www.nsf.gov/dir/index.jsp?org=EHR>

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

Division of Research on Learning in Formal & Informal Settings (DRL)	Division of Graduate Education (DGE)	Division of Undergraduate Education (DUE)	Division of Human Resource Development (HRD)
EHR Core Research (ECR) ¹ and Building Capacity in Science Education Research (ECR: BCSE) ¹			
Faculty Early Career Development Program (CAREER) ²			
Racial Equity in STEM Education (EHR Racial Equity) ^{1,6}			
STEM Education Postdoctoral Research Fellowships (STEM Ed PRF) ¹			
Advancing Informal STEM Learning (AISL)	CyberCorps®: Scholarship for Service (SFS)	Advanced Technological Education (ATE)	Increasing the Participation and Advancement of Women in Academic Science & Engineering Careers (ADVANCE) ⁸
National Artificial Intelligence Research Institutes ⁵	Graduate Research Fellowship (GRFP) ²	Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR)	Alliances for Graduate Education and the Professoriate (AGEP)
Computer Science for All (CS for All: RPP) ⁵	Innovations in Graduate Education (IGE)	Improving Undergraduate STEM Education: Hispanic Serving Institutions (IUSE:HSI; HSI Program) ⁴	Centers of Research Excellence in Science and Technology (CREST)
Discovery Research PreK-12 (DRK-12)	NSF Research Traineeship Program (NRT) ²	NSF Scholarships in STEM (S-STEM) ³	Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
Innovative Technology Experiences for Students and Teachers (ITEST) ³	Secure and Trustworthy Cyberspace (SaTC) ⁵	Robert Noyce Teacher Scholarship Program (NOYCE)	Improving Undergraduate STEM Education: Hispanic Serving Institutions (IUSE:HSI; HSI Program) ⁴
Research on Emerging Technologies for Teaching and Learning (RETTL) ⁵		Advancing Innovation & Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education ⁶	Louis Stokes Alliances for Minority Participation (LSAMP)
			Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering (NSF INCLUDES) ⁵
			Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) ⁷
			Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) ⁷
			Tribal Colleges and Universities Program (TCUP)

EHR Program Overview

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DRL

INVESTS in the improvement of STEM learning for people of all ages by promoting innovative research, development, and evaluation of learning and teaching across all STEM disciplines in formal and informal learning settings.



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

<https://www.nsf.gov/dir/index.jsp?org=DRL>

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Advancing Informal STEM Learning (AISL)

NSF 21-599 – Deadline: TBA

- **Goals:**
 - To advance new approaches to, and evidence-based understanding of, the design and development of STEM learning opportunities for the public in informal environments;
 - To provide multiple pathways for broadening access to and engagement in STEM learning experiences;
 - To advance innovative research on and assessment of STEM learning in informal environments;
 - To engage the public of all ages in learning STEM in informal environments.
- **Supports six types of projects:**
 - Pilots and Feasibility Studies
 - Research in Service to Practice
 - Innovations in Development
 - Broad Implementation
 - Literature Reviews, Syntheses, or Meta-Analyses
 - Conferences

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

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Computer Science for All (CSforAll)

NSF 20-539 – Deadline: 2nd Wed. in Feb.

- Goal: To provide *all* U.S. students the opportunity to participate in CS/CT education in school at the K-12 level.
- **High school teachers:** preparation, professional development (PD) and ongoing support that CS teachers need to teach rigorous CS courses
- **K-8 teachers:** the instructional materials and preparation they need to integrate CS/CT into their teaching
- **Schools and districts:** the resources needed to define and evaluate multi-grade pathways in CS and CT
- **Research** about the learning and teaching of introductory computer science.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505359

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Discovery Research PreK-12 (DRK-12)

NSF 20-572 – Deadline: Oct. 5, 2022

- Goal: To significantly enhance the learning and teaching of STEM fields by preK-12 students and teachers, through research and development of STEM education innovations and approaches.
- Awards made across all facets of formal preK-12 STEM education.
- Particularly interested in work related to early childhood STEM education, statistics and data science, and integrating computing and computational thinking across the curriculum

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

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Innovative Technology Experiences for Students and Teachers (ITEST)

NSF 22-585 – Deadline: Aug. 12, 2022

- Goal: To advance educational innovations that motivate and prepare preK-12 learners for computationally-intensive industries of the future.
- 5 Design Elements
 - Innovative uses of technologies
 - Innovative learning experiences
 - STEM workforce development
 - Strategies for broadening participation
 - Strategic partnerships

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5467

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Research on Emerging Technologies for Teaching and Learning (RETTL)

NSF 20-612 – Deadline: Oct. 17, 2022

- Goal: To fund exploratory and synergistic research in emerging technologies (to include, but not limited to, artificial intelligence (AI), robotics, and immersive or augmenting technologies) for teaching and learning in the future.
- Projects
 - Must have research innovations in both the computer/engineering and the learning sciences
 - Should be exploratory, experimental; those that are risky and potentially transformative are highly encouraged
 - Should be highly interdisciplinary
- Special interest in diverse learner/educator populations, contexts, and content, including teaching and learning in STEM and in foundational areas that enable STEM.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504984

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DUE

STRENGTHENS 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)

<https://www.nsf.gov/dir/index.jsp?org=DUE>

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Advanced Technological Education (ATE)

NSF 21-598 – Deadline: Oct. 6, 2022

- Improving the education of highly-qualified science and engineering *technicians* for the advanced technology fields that drive the U.S. economy.
- Improving associate degree programs in technological fields at two-year community and technical colleges.
- Encouraging partnerships with business and industry.
- Resources:
 - ATE Central: atecentral.net
 - Mentor-Connect: mentor-connect.org
 - EvaluATE Center: evalu-ate.org
 - *ATE Impacts* book: ateimpacts.net/book

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5464

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

NSF 21-579 – 3rd Wednesday in January and July

- Promoting novel, creative, and transformative approaches to generating and using new knowledge about undergraduate STEM teaching and learning.
- The **Engaged Student Learning** track focuses on design, development, and research that involve the creation, exploration, or implementation of tools, resources, and models.
- The **Institutional and Community Transformation** track focuses on applying evidence-based practices that improve undergraduate STEM education and research on organizational change processes.

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

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NSF Scholarships in STEM (S-STEM)

NSF 22-527 – Deadline: Feb. 20, 2023

- Providing scholarships for low-income, academically talented students.
- Implementing curricular and co-curricular activities that support recruitment, retention, transfer (if appropriate), student success, academic/career pathways, and graduation in STEM.
- Expected student outcomes:
 - Attain an associate, baccalaureate, or graduate degree in an S-STEM eligible discipline and enter the workforce or a graduate program in STEM.
 - Transfer from an associate degree program to a baccalaureate degree program or advance from a baccalaureate degree program to a graduate program in STEM.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5257

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Robert Noyce Teacher Scholarship Program (NOYCE)

NSF 21-578 – Deadline: Aug. 30, 2022

- Addressing the critical need for highly effective K-12 STEM teachers and teacher leaders by recruiting, preparing, and retaining talented STEM undergraduates and professionals for teaching careers.
- Researching effectiveness and retention of STEM teachers in high-need school districts.
- Supporting research experiences for pre-service and in-service STEM teachers.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5733

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Advancing Innovation and Impact in Undergraduate STEM Education at Two-year Institutions of Higher Education

PD 21-7980 – Target Date: ongoing

- Potential outcomes of interest include but are not limited to: (1) making systemic improvements in STEM education; (2) promoting diversity, equity, and inclusion; (3) mitigating the disproportionate impact of the COVID-19 pandemic on two-year colleges.
- Potential approaches of interest are projects that aim to advance undergraduate STEM education by:
 - improving student outcomes in foundational STEM courses;
 - broadening and/or creating new STEM curricula;
 - providing STEM students with authentic research experiences, internships, and other experiential learning opportunities;
 - increasing access to high quality STEM education through new technologies;
 - re- or up-skilling incumbent workers for new STEM jobs;
 - building STEM career and seamless transfer pathways;
 - developing novel mechanisms to identify talent and recruit into STEM programs.
- NSF is interested in projects that include substantive public and private partnerships that contribute toward advancing STEM education.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505899

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DGE

PROVIDES funding to support graduate students and the development of novel, innovative programs to prepare tomorrow's leaders in STEM fields.



Division of Graduate Education (DGE)

<https://www.nsf.gov/dir/index.jsp?org=DGE>

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Graduate Research Fellowship Program (GRFP)

NSF 22-614 – Deadlines: Oct. 2022

- The five-year fellowship includes three years of financial support for graduate students who are or will be pursuing research-based master's and doctoral degrees in eligible fields of study.
- No post-graduate service requirement.
- Current annual stipend is \$37k, and there is an additional \$12k cost-of-education allowance for the institution.
- Additional information: www.nsfgrfp.org/

<https://www.nsfgrfp.org/>

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6201

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Innovations in Graduate Education (IGE)

NSF 20-595 – Deadline: Mar 25, 2023

- Supports piloting, testing, and validating innovative and potentially transformative approaches to STEM graduate education.
- Projects generate the knowledge base required for the customization, implementation, and broader adoption of transformative improvements in graduate education.
- Addresses both workforce development and institutional capacity building needs in graduate education. Strategic collaborations are encouraged.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505473

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NSF Research Traineeship Program (NRT)

NSF 21-536 – Deadline: Sept. 6, 2022

- Encourages development of bold, new, potentially transformative models for inclusive STEM graduate training in high-priority fields of convergence research.
- Projects develop skills, knowledge, and competencies of research-based master's and PhD students needed to pursue a range of STEM careers.
- Proposals that involve strategic collaborations are encouraged.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505015

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CyberCorps[®]: Scholarship for Service (SFS)

NSF 21-580 – Deadline: July 15, 2022

- Aligns with U.S. strategy to develop a superior cybersecurity workforce.
- Provides grants to institutions to provide scholarships to undergraduate and graduate students pursuing degrees in cybersecurity.
- After graduation, scholarship recipients are required to work for a federal, state, local, or tribal government organization in a cybersecurity-related position for a period equal to the length of their scholarship.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504991

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Secure and Trustworthy Cyberspace (SaTC)

NSF 22-517 – Proposals accepted anytime

- Welcomes proposals that address cybersecurity and privacy, drawing on expertise in one or more of these areas: computing, communication, and information sciences; engineering; education; mathematics; statistics; and social, behavioral, and economic sciences.
- Proposals must be submitted to one of the following designations:
 - **CORE:** This designation is the main focus of the SaTC research program, spanning the interests of NSF's Directorates for Computer and Information Science and Engineering (CISE), Engineering (ENG), Mathematical and Physical Sciences (MPS), and Social, Behavioral and Economic Sciences (SBE).
 - **EDU:** The Education (EDU) designation is used to label proposals focusing on cybersecurity and privacy education and training.
 - **TTP:** The Transition to Practice (TTP) designation is used to label proposals that are focused exclusively on transitioning existing research results to practice.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504709

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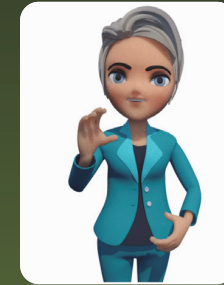
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HRD

SUPPORTS and **PROMOTES** 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.



Division of Human Resource Development (HRD)

<https://www.nsf.gov/dir/index.jsp?org=HRD>

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ADVANCE: Organizational Change for Gender Equity in STEM Academic Professions

NSF 20-554 – Deadlines: vary by track

- Goal: Broaden the implementation of evidence-based systemic change strategies that promote equity for STEM faculty in academic workplaces and the academic profession.
- Address systemic (or organizational) inequities in areas such as policy and practice as well as in organizational culture and climate.
- More information: www.nsf.gov/ADVANCE

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5383

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Alliances for Graduate Education and the Professoriate (AGEP)

NSF 21-576 – Deadlines in Feb. and Aug.

- Goal: To increase the number of African American, Hispanic American, Native American Indian, Alaska Native, Native Hawaiian and Native Pacific Islander faculty in STEM.
- Advancing academic STEM career pathway models and systemic institutional change.
- Promoting equity and the professional advancement of doctoral candidates, postdoctoral researchers, and faculty in STEM academic careers.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5474

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Centers of Research Excellence in Science and Technology (CREST)

NSF 18-509 – Deadlines: Multiple

- Provides support to enhance the research capabilities of minority-serving institutions (MSIs) through the establishment of centers that effectively integrate education and research.
- Types of projects:
 - CREST Centers
 - CREST Postdoctoral Research Fellowships (PRF)
 - HBCU Research Infrastructure for Science and Engineering (HBCU-RISE)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6668

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

NSF 20-559 – Deadlines: Multiple

- Supports development, implementation, and study of evidence-based, innovative models and approaches to prepare HBCU undergraduates for the STEM workforce.
- Bolsters STEM faculty research capacity and professional development.
- Encompasses broadening participation research in STEM education.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5481

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Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)

NSF 22-611 – Deadline: Sept. 30, 2022

- Enhancing the quality of undergraduate STEM education at HSIs.
- Increasing recruitment, retention, and graduation of students pursuing STEM degrees at HSIs.
- Promoting research on engaged student learning at HSIs and on what it takes to diversify and increase participation in STEM effectively.
- Incentivizing institutional or community transformation.
- Building STEM education research capacity at HSIs.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505512

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Tribal Colleges and Universities Program (TCUP)

NSF 21-595 – Deadlines: Multiple

- Supports high-quality STEM, STEM education, research, and outreach at federally recognized Tribal Colleges and Universities, Alaska Native-serving institutions, and Native Hawaiian-serving institutions.
- **Instructional Capacity Excellence in TCUP Institutions (ICE-TI):** support for transformational STEM instruction and research
- **Targeted STEM INFUSION Projects (TSIP):** similar but smaller in scale and impact
- **Small Grants for Research (SGR):** supports STEM or STEM education research
- **TCU Enterprise Advancement Centers (TEA Centers):** paradigm-shifting support to the TCUP institution as an intellectual resource

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5483

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Louis Stokes Alliances for Minority Participation (LSAMP)

NSF 20-590 – Deadlines: Multiple

Transforming STEM education to support African American, Hispanic American, American Indian, Alaska Native, Native Hawaiian, and Native Pacific Islander students

- Innovative, evidence-based recruitment, retention, and graduation strategies (alliance-based, centers and pathways)
- Enable successful transfer of students from 2-yr to 4-yr institutions (Bridge to the Baccalaureate)
- Increase undergraduate access to high-quality research experiences (REUs)
- Facilitate seamless transition of students into graduate programs (Bridge to the Doctorate)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13646

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

Funding Opportunities TBA

- One of NSF's "10 Big Ideas" — an NSF-wide initiative
- Mission: Enhance U.S. leadership in discoveries and innovations focused on NSF's commitment to equity, inclusion, and broadening participation in STEM at scale
- Two tenets:
 - *Broadening participation in STEM at scale* (projects focus on realizing systemic change at large, national scales).
 - *Collaborative infrastructure* (organizations coming together to develop a shared goal, mutually reinforcing activities, objectives and measures to map progress, a mechanism for continuous communication, and potential for expansion, sustainability, and scale).

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505289

<https://www.includesnetwork.org/>

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EHR-Wide, Multi-Directorate, and NSF-Wide Opportunities

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Faculty Early Career Development Program (CAREER)

NSF 22-586 – Deadline: Jul. 27, 2022

- Goal: Support early-career faculty with potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.
- Single-PI project (5 years), and PI must meet eligibility requirements (e.g., assistant professor, tenure-track or equivalent, can only submit 3 times).
- Integration of Research and Education plan is required.
- Another program besides CAREER must be selected when submitting proposal (e.g., EHR Core Research, IUSE, DRK-12, etc.).
- EHR strongly recommends advisory boards.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214

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EHR Programs That Accept CAREER Proposals

See Dear Colleague Letter [NSF 22-099](#)

Division of Human Resource Development

- EHR Core Research (ECR)
- Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
- Improving Undergraduate STEM Education: Hispanic-Serving Institutions (HSI Program)
- Racial Equity in STEM Education (EHR Racial Equity)
- Tribal Colleges and Universities Program (TCUP)

Division of Undergraduate Education

- Advanced Technological Education (ATE)
- EHR Core Research (ECR)
- Improving Undergraduate STEM Education (IUSE)
- Racial Equity in STEM Education (EHR Racial Equity)
- Robert Noyce Teacher Scholarship Program - Track 4

Division of Research on Learning in Formal and Informal Settings

- Advancing Informal STEM Learning (AISL)
- Computer Science for All (CSforAll: Research & RPPs)
- Discovery Research preK-12 (DRK-12)
- EHR Core Research (ECR)
- Innovative Technology Experiences for Students and Teachers (ITEST)
- Racial Equity in STEM Education (EHR Racial Equity)
- Research on Emerging Technologies for Teaching & Learning

Division of Graduate Education

- EHR Core Research (ECR)
- Innovations in Graduate Education (IGE)
- Racial Equity in STEM Education (EHR Racial Equity)
- Secure & Trustworthy Cyberspace (SaTC) EDU

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EHR Core Research (ECR)

NSF 21-588 – Deadline: Oct. 6, 2022

- Supports fundamental research (curiosity-driven basic research and use-inspired basic research) that contributes to the general, explanatory knowledge that underlies STEM education in one or more of the following research areas:
 - **STEM Learning and Learning Environments** — research to advance fundamental knowledge for improving STEM learning in the many environments and contexts in which such learning takes place
 - **Broadening Participation in STEM** — research investigating issues related to the learning and participation of groups underrepresented in STEM fields, at both the individual and institutional levels
 - **STEM Workforce Development** — research on STEM workforce development (STEM workforce participation, skill-building approaches, workplace knowledge and competencies, learning in workplace contexts, critical shifts in STEM workforce trends, etc.) at all levels of education, from K-12 through higher education and the workplace

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504924

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EHR Core Research (ECR): Building Capacity in STEM Education Research (ECR:BCSER)

NSF 22-548 – Deadline: 4th Fri. in Feb.

- Supports activities that enable early and mid-career researchers to acquire expertise and skills to conduct rigorous fundamental research in STEM education.
- Funds research career development activities on topics relevant to qualitative and quantitative research methods and design, including the collection and analysis of new qualitative or quantitative data, secondary analyses using extant datasets, and meta-analyses.
- Complements the Faculty Early Career Development (CAREER) Program's mission and focus.
- Welcomes proposals from mid-career faculty and investigators from academic as well as non-academic organizations, including researchers with a doctoral degree in a disciplinary STEM field outside of education who wish to pursue research in STEM education, and those with doctoral degrees from an education research program who wish to complement their expertise with training in a disciplinary STEM field.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505645

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Racial Equity in STEM Education (EHR Racial Equity)

PD 21-191Y – Target Dates: Mar. 22 & Oct. 11, 2022

- Goal: Support bold, ground-breaking, and potentially transformative projects addressing systemic racism in STEM.
- Proposals should...
 - Advance racial equity in STEM education and workforce development through research (both fundamental and applied) and practice.
 - Be led by, or developed and led in authentic partnership with, individuals and communities most impacted by the inequities caused by systemic racism.
- Contexts may include but are not limited to: PreK-12, two- and four-year undergraduate, and graduate institutions; municipal organizations; STEM workplaces; and informal STEM contexts, such as museums, community organizations, and media.

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505910

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STEM Postdoctoral Research Fellowships

NSF 22-531

- **Goal:** Enhance the research knowledge, skills, and practices of recent doctorates in STEM, STEM Education, Education, and related disciplines to advance their preparation to engage in fundamental and applied research in STEM education that advances knowledge within the field.
- **Program Tracks:**
 - Individual Postdoctoral Fellowships
\$300,000 for 24 months
 - Institutional Cohort Postdoctoral Fellowships
\$1,250,000 for single institutions for 36 months
\$2,500,000 for collaboratives for 36 months

<https://beta.nsf.gov/funding/opportunities/science-technology-engineering-and-mathematics-education-postdoctoral>

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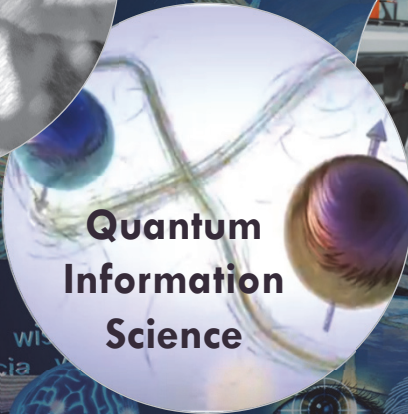
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