NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 20-030

Dear Colleague Letter: SBE Perspectives on Graduate Education

December 16, 2019

Dear Colleagues:

Graduate students are an integral part of the U.S. research enterprise. Our nation's ability to strengthen its health, prosperity, and security depends on keeping graduate programs rigorous and effective. The National Science Foundation (NSF) is committed to continually improving the value of graduate education to our nation.

In 2017, NSF's Social, Behavioral & Economic Sciences Directorate (SBE) supported a workshop on the future of graduate training.[1] The National Academies of Sciences, Engineering and Medicine's (NASEM) Board on Science Education hosted the workshop. Following the workshop, and with support from NSF's Division of Graduate Education (DGE), NASEM issued a report entitled *Graduate STEM Education for the 21st Century*.[2]

The workshop and report recommend changes to U.S. graduate education that can help STEM students better meet the nation's evolving needs. A strong evidence base will be critical in efforts to evaluate current and proposed new practices. Such an evidence base is only possible through a comprehensive body of research on graduate education. With the objective of improving graduate training, the purpose of this Dear Colleague Letter (DCL) is to draw the attention of the SBE community to the following funding opportunities in the Directorate for Education & Human Resources (EHR) and SBE.

- The Innovations in Graduate Education (IGE) Program (NSF 17-585) encourages the development and implementation of bold, new, and potentially transformative approaches to STEM graduate education training. The program seeks proposals that explore ways for graduate students in research-based master's and doctoral degree programs to develop the skills, knowledge, and competencies needed to pursue a range of STEM careers.
- The NSF Research Traineeship (NRT) Program (19-522) seeks proposals that focus on and demonstrate strong commitment to technical and professional training of STEM graduate students that emphasizes research training and extends well beyond it. In

addition to research training, NRT projects are expected to develop trainees' technical skills broadly, including facility and/or familiarity with the techniques, languages, and cultures of fields integral to the interdisciplinary or convergent research theme; foster the development of transferable professional skills; and provide trainees with mentoring and vocational counseling from professionals who have the backgrounds, experience, and skills to advise trainees on how to prepare for a variety of STEM career pathways.
- The EHR Core Research Program (NSF 19-508) of fundamental research in STEM education provides funding for research that will help synthesize, build and/or expand research foundations in the following focal areas: STEM learning, STEM learning environments, STEM workforce development, and broadening participation in STEM.
- The ECR: Building Capacity in STEM Education Research (BCSER) Program (NSF 20-521) supports projects that build individuals' capacity to carry out high quality STEM education research. Proposals are invited from individuals in all STEM disciplines, particularly among early and mid-career researchers.
- The CyberCorps®: Scholarships for Service (SFS) Program (NSF 19-521) seeks innovative proposals leading to an increase in the ability of the U.S. higher education enterprise to produce cybersecurity professionals by improving research on learning materials, interventions, degree programs and educational pathways for national adoption.
- The Secure and Trustworthy Cyberspace (SaTC) Program (NSF 19-603) includes an education designation which supports projects that leverage research in cybersecurity and research on student learning, both in terms of intellectual merit and broader impacts, to address the challenge of expanding existing educational opportunities and resources in cybersecurity.
- Other SBE programs - including but not limited to Ethical and Responsible Research (NSF 19-609), Research on the Science and Technology Enterprise: Statistics and Surveys (NSF 15-521), Science of Broadening Participation (SBP), Science of Learning and Augmented Intelligence Program (PD 19-127Y), and Sociology (PD 98-1331) - have long-standing interests in education related issues.

It is anticipated that the projects supported in response to this DCL will help address the following types of questions:

- What types of competencies are most critical for graduate students to obtain across all disciplines (e.g. responsible and ethical conduct of research), and how should that training be embedded in graduate programs?
- Are there graduate education training models that could be adapted for use across disciplines?
- How does access to learning resources or interventions impact educational and career outcomes?

As the SBE community responds to such matters, we encourage proposals that build upon SBE's rich interdisciplinary resources. These resources include highly-relevant datasets, such as those developed by the National Center for Science and Engineering Statistics (NCSES). We also encourage collaborations with educational researchers that will help individuals and institutions identify innovative approaches to transform graduate education.

Sincerely,

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1 http://sites.nationalacademies.org/DBASSE/BOSE/SBS-Graduate-Training/index.htm
2 https://www.nap.edu/catalog/25038/graduate-stem-education-for-the-21st-century