



NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 23-093

Dear Colleague Letter: A New Supplemental Funding Opportunity for Skills Training in Advanced Research & Technology (START)

April 25, 2023

Dear Colleagues:

Fostering the growth of a globally competitive and diverse research workforce and advancing the scientific and innovation skills of the U.S. is a strategic objective of the National Science Foundation (NSF). U.S. global competitiveness depends critically on the readiness of the Nation's science, technology, engineering, and mathematics (STEM) workforce. To achieve this goal, the NSF invests in programs that directly advance this workforce. As part of this effort, this Skills Training in Advanced Research & Technology (START) Dear Colleague Letter (DCL) announces an updated supplemental funding opportunity for awardees of the [Advanced Technological Education \(ATE\) Program](#), the [Industry-University Cooperative Research Centers \(IUCRC\) Program](#) and the [Engineering Research Centers \(ERC\) Program](#).

This supplemental funding opportunity provides students, faculty, and student/faculty teams in two-year Institutions of Higher Education (2-yr IHEs) with experiential learning opportunities for advanced skills development involving IUCRC or ERC associated projects. These opportunities will support participants in acquiring core professional competencies and skills to support careers in sectors of the U.S. economy served by IUCRCs and ERCs. In addition, the opportunity could provide for direct interaction with industry including mentored experiences at an industry member site/facility.

The **NSF IUCRC program** fosters long-term partnerships among academia, industry, and government in various technology sectors through multi-university, industry-focused research centers. These partnerships strengthen the U.S. innovation ecosystem and catalyze economic and intellectual contributions to the science and engineering workforce through the integration of research and education. The **NSF ERC Program** supports convergent research and innovation through inclusive partnerships and workforce development. The ERC program brings technology-based industry and universities together to establish cross-disciplinary centers focusing on advancing fundamental engineering knowledge and engineered systems technology while exposing students to the integrative aspects of engineered systems and

industrial practice. The **NSF ATE program** focuses on the education of the skilled technical workforce for advanced-technology fields that drive the Nation's economy. The program partners 2-yr IHEs with industry, academia, and government to provide industries with a highly skilled technical workforce for positions generally requiring less than a 4-year baccalaureate degree but more than a high school degree.

BACKGROUND

To grow our nation's STEM capacity and ensure that all Americans have the opportunity to participate in a science and engineering intensive economy, the United States must foster its skilled technical workforce where individuals use science and engineering skills in their jobs but do not have a bachelor's degree. Rapid changes in the nature of work, education, technology, workforce demographics, and international competition have led the National Science Board, the governing body of the NSF, to conclude that our competitiveness, security, and research enterprise require this critical but often overlooked segment of our STEM-capable workforce to be further developed. A recent National Academies of Sciences, Engineering, and Medicine report highlighted the critical shortfall of millions of skilled technical workers in the US economy^[2]. Approximately 13% of the U.S. workforce ages 25 and older, are skilled technical workers (those without a 4-year undergraduate degree) who contribute to all parts of the economy and the science and engineering enterprise.

Technically skilled individuals bring critical thinking, design, digital, math, and coding skills to work as mechanics, health care technicians, research technicians, skilled tradecraft people, computer systems analysts and administrators, operators of "smart" infrastructure, etc. They also make crucial contributions to the Nation's research and development enterprise, accounting for more than half of all workers in many of America's advanced industries. R&D-intensive industries that employ a skilled technical workforce, account for approximately 17 percent of U.S. Gross Domestic Product^[1] that include, but are not limited to, advanced manufacturing, information technology, healthcare/biotech/pharmaceuticals, automotive, aerospace, chemical and materials, conventional and emerging energy, and the environmental sector.

SUPPLEMENTAL FUNDING OPPORTUNITY

This START DCL supports students, faculty and faculty/student teams from 2-yr IHEs in gaining experience working on state-of-the-art, industrially relevant IUCRC and ERC research projects, working at these Centers. The aim is to foster deep and broad preparation of participants in emerging technological areas, experience working in collaborative teams with diverse individuals, and the opportunity to acquire skills, knowledge, and experience in areas such as safety, ethics, communication and innovation.

GOALS

The expected goals of this research experience for students, faculty, and student/faculty teams from 2-yr IHEs are:

- To increase their knowledge/skills/abilities through engagement in cutting-edge use-inspired research projects of industrial and societal importance.
- To pursue new activities aimed at acquiring further professional development experiences that will enhance their preparation for multiple career pathways.
- To foster deep and broad preparation of participants in emerging technical areas, experience working in collaborative teams with diverse individuals, skills and knowledge in areas including but not limited to safety, ethics, communication, innovation, and entrepreneurship.
- To provide opportunities to work in collaborative teams and with diverse individuals, where 2-yr IHE participants work collaboratively with 4-yr IHE participants.
- To provide advanced research and technology skills to individuals especially from underrepresented groups such as women, persons with disabilities, and persons from groups underrepresented in STEM, and those from geographically underrepresented areas in STEM. Proposers are also strongly encouraged to consider involving veterans of the U.S. Armed Forces as part of NSF's broader effort to promote veteran involvement in STEM research and education.

ELIGIBILITY

The supplemental funding opportunity described in this DCL are open to:

- All active IUCRC grantees (<https://iucrc.nsf.gov/centers>) including IUCRC PIs and Center associated faculty who seek to engage participants (students, faculty, or student/faculty teams) from 2-yr IHEs in use-inspired research taking place at the IUCRC.
- All active ERC grantees (<https://www.nsf.gov/eng/eec/erc.jsp>) including ERC personnel who seek to engage participants (students, faculty, or student/faculty teams) from 2-yr IHEs in Center research and related activities. *Note: For ERCs, all supplements must be submitted by the lead institution for the ERC award.*
- All active ATE grantees who establish a collaboration with an active IUCRC or ERC awardee. (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5464, <https://atecentral.net/impacts/book>)
- To be eligible, 2-yr IHE students must be enrolled at least part-time, as defined by their 2-yr IHE institution.

SUPPLEMENTAL FUNDING REQUEST PREPARATION INSTRUCTIONS

There are two categories of supplements described in this DCL. **START Supplements** and **START Site Supplements**. A START supplement would be for a duration not to exceed two

years. A START Site supplement must be for a duration that exceeds two years serving a cohort of participants and serving as a regional training hub for mentorship and training.

START SUPPLEMENTS

A START supplement is typically for a small number of participants for a program that lasts less than two years.

Note: for ERCs, the supplement request must be submitted by the ERC lead institution.

The Summary of Proposed Work of each supplemental funding request should begin with the text string: *Summary of Proposed Work* with the following: "*Submission to Dear Colleague Letter: A New Opportunity for Skills Training in Advanced Research & Technology (START)*"

The supplemental funding request must include the following:

In the list below, item 1 should go into "Summary of Proposed Work" and items 2-6 should be uploaded as supplementary documents.

1. Two-page summary that describes the proposed traineeship.
2. Resume of each student who is participating (up to 2 pages) including an optional ORCID ID^[3].
3. A bio-sketch of any faculty member from the 2-yr IHE who is participating.
4. A letter of collaboration co-signed by the IUCRC/ERC PI and the Department Chair or other high-level administrator at the IUCRC/Grantee institution that will host the 2-yr IHE student(s)/faculty. The letter must describe how the 2-yr IHE student(s)/faculty will be incorporated into the Center's research projects, what their involvement in Center projects will entail, and any other mentoring or training and/or research experiences they will receive. The letter must also confirm that the 2-yr IHE student is enrolled at least part-time in a 2-yr IHE.
5. For 2-yr IHE faculty involved as a participant, the faculty's institution must provide a letter of acknowledgement of the participation in the proposed activity.
6. Documentation that shows that the participants have agreed to the terms and conditions set by the NSF awardee to participate in the traineeship offered.
7. A Budget and a clear justification for all requested budget costs.

START SITE SUPPLEMENT:

START Site supplements must have a cohort of participants and the **duration of the program must exceed two years**. A START Site is expected to serve as a regional training hub to mentor and train 2-yr IHE students, faculty and/or student/faculty teams.

The Summary of Proposed Work of each supplemental funding request should begin with the text string: *Summary of Proposed Work* with the following: "*Submission to Dear Colleague*

Letter: A New Opportunity for Skills Training in Advanced Research & Technology (START)"

The supplemental funding request must include the following:

In the list below, item 1 should go into "Summary of Proposed Work" and items 2-6 should be uploaded as supplementary documents.

1. A detailed proposal that describes the planned traineeship including these aspects:
 - Description of traineeship projects
 - Mentorship and training plan
 - Outreach and recruitment plan
2. Resume of each student already identified, who is participating (no more than 2 pages) including an optional ORCID ID^[3].
3. A bio-sketch of any faculty member already identified, from the 2-yr IHE who is participating.
4. A letter of collaboration co-signed by the IUCRC/ERC PI and the Department Chair or other high- level administrator at the IUCRC/Grantee institution that will host the 2-yr IHE student(s)/faculty. The letter must describe how the 2-yr IHE student(s)/faculty will be incorporated into IUCRC/ERC research projects, what their involvement in Center projects will entail, and any other mentoring or training and/or research experiences they will receive. The letter must also confirm that the 2-yr IHE student is enrolled at least part-time in a 2-yr IHE.
5. For 2-yr IHE faculty involved as a participant, the faculty's institution must provide a letter of acknowledgement of the participation in the proposed activity.
6. Documentation that shows that the participants have agreed to the terms and conditions set by the NSF awardee regarding intellectual property (IP).
7. A Budget and a clear justification for all requested budget costs.

Note: For START Site requests, it is not necessary to fully identify all participants at the time of supplement submission. The participant resumes must be sent to NSF post award, once identified.

SUPPLEMENTAL FUNDING DETAILS

Support will be provided through START supplements to existing ATE, IUCRC or ERC awardees. The IUCRC/ERC Program awardee institution serves as the Host Organization. The research experiences at the Host Organization may vary in length, with a maximum 2-yr duration. Funding amounts shall not exceed 20% of the total original ATE, IUCRC or ERC award. Supplements to ATE awards may include subawards to one or more partner IUCRC or ERC Hosts to support costs described below.

Allowable costs in the START supplemental funding request include:

- Support for students, faculty, and/or student/faculty teams from 2-yr IHEs.
- Projects that pair a 2-yr IHE student participant with a 4-yr IHE student participant working on IUCRC or ERC projects are encouraged.
- Support for travel, tuition and fees, health insurance, stipends and temporary relocation costs for the participant(s) from the 2-yr IHE (should be reported in the NSF budget as participant support costs). Note: Spousal and dependent travel are not allowed.
- Funds for the Host Organization mentor(s) (e.g., faculty/postdoc/graduate student) may include salary/indirect costs for the time and effort expended in mentoring the 2-yr IHE student(s)/faculty in the research project. Tuition requests for a graduate student mentor at the Host Organization is not permitted.
- Funds may be requested by the Host Institution or 2-yr IHE for materials and supplies to support the 2-yr IHE student or student/faculty team participation in the IUCRC or ERC project during the internship.
- The grantee is permitted to request indirect costs in accordance with their approved/negotiated indirect cost rate.

SPECIAL AWARD CONDITION

Intellectual Property Rights: Activities funded under this DCL are considered traineeships. The National Science Foundation claims no rights to any inventions or writings that might result from its traineeship awards. However, trainees should be aware that NSF, another Federal agency, or some private party may acquire such rights through other support for particular research. Also, trainees should note their obligation to include an Acknowledgment and Disclaimer in any publication.

TARGET DATES

Supplemental funding requests may be submitted at any time in FY2023 with a target date of June 15, 2023 to be reviewed for possible funding prior to October 1, 2023. For each subsequent fiscal year, supplemental funding requests may be submitted at any time with a target date of April 15th for possible funding in that Fiscal Year.

SUBMISSION AND REVIEW

All supplemental funding requests will be reviewed in accordance with the NSF's merit review process.

Supplemental funding requests cannot be submitted without prior NSF approval. To explore submission, please contact the cognizant Program Officer (see list below) of the award to which the supplement will be attached by sending via email, a 2-page (maximum) summary of the planned funding request including a draft budget. You will then be contacted on how to proceed.

- V. Celeste Carter, ATE Program Director, Directorate for STEM Education (EDU). Telephone: (703) 292-4651, email: vccarter@nsf.gov
- Prakash G. Balan, IUCRC Program Director, Directorate for Engineering, telephone: (703) 292-5341, email: pbalan@nsf.gov
- Crystal Leach, IUCRC Program Director, Directorate for Engineering, telephone: (703) 292-2667, email: crleach@nsf.gov
- Mohan Kumar, IUCRC Program Director, Directorate for Computer & Information Science & Engineering, telephone: (703) 292-7408, email: mokumar@nsf.gov
- Ann C. Von Lehmen, IUCRC Program Director, Directorate for Computer & Information Science & Engineering, telephone: (703) 292-4756, email: avonlehm@nsf.gov
- Rebecca Ferrell, IUCRC Program Director, Directorate for Social, Behavioral & Economic Sciences, telephone: (703) 292-7850, email: rferrell@nsf.gov
- Barbara L. Ransom, IUCRC Program Director, Directorate for Geosciences, telephone: (703) 292-7792, email: bransom@nsf.gov
- Kenneth Moloy, IUCRC Program Director, Directorate for Mathematical and Physical Sciences, telephone: (703) 292-8441, email: kmoloy@nsf.gov
- Sarit B. Bhaduri, ERC Program Director, Directorate for Engineering telephone: (703) 292-2975, email: nsferc@nsf.gov
- Sandra Cruz-Pol, ERC Program Director, Directorate for Engineering telephone: (703) 292-2928, email: nsferc@nsf.gov
- Dana L. Denick, ERC Program Director, Directorate for Engineering, telephone: (703) 292-8866, email: nsferc@nsf.gov
- Randy Duran, ERC Program Director, Directorate for Engineering, telephone: (703) 292-5326, email: nsferc@nsf.gov
- Nadia A. El-Masry, ERC Program Director, Directorate for Engineering, telephone: (703) 292-4975, email: nsferc@nsf.gov

Sincerely,

Simon Malcomber
Acting Assistant Director
Directorate for Biological Sciences (BIO)

Margaret Martonosi
Assistant Director
Directorate for Computer and Information Science and Engineering (CISE)

James L. Moore III
Assistant Director
Directorate for STEM Education (EDU)

Susan Margulies

Assistant Director
Directorate for Engineering (ENG)

Alexandra R. Isern
Assistant Director
Directorate for Geosciences (GEO)

Sean Jones
Assistant Director
Directorate for Mathematical and Physical Sciences (MPS)

Sylvia Butterfield
Acting Assistant Director
Directorate for Social, Behavioral, and Economic Sciences (SBE)

REFERENCES

1. THE SKILLED TECHNICAL WORKFORCE: Crafting America's Science & Engineering Enterprise <https://www.nsf.gov/nsb/publications/2019/nsb201923.pdf>
2. National Academies of Sciences, Engineering, and Medicine (NASEM), "Building America's Skilled Technical Workforce," (Washington, D.C.: The National Academies Press, 2017): <https://www.nap.edu/catalog/23472/building-americas-skilled-technical-workforce>
3. Students requesting support are encouraged to register for an ORCID ID and for this identifier to be included in the student's resume. ORCID® (<http://orcid.org>) is an open, non-profit, community-driven effort to create and maintain a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers. An ORCID identifier provides a unique and persistent digital identifier to distinguish individual researchers. While NSF encourages the use of an ORCID ID, its inclusion is optional