



NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 21-076

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

April 27, 2021

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 Dear Colleague Letter announces a new supplemental funding opportunity for awardees of the [Advanced Technical Education \(ATE\) Program](#) and the [Industry-University Cooperative Research Centers \(IUCRC\) 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 through research internships that involve IUCRC Centers and associated Center research projects. These internship opportunities will support 2-yr IHE students, faculty, and student/faculty teams in acquiring core professional competencies and skills to support careers in sectors of the U.S. economy served by IUCRCs and provide chances to directly interact with industry representatives.

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. Adding to the near-term urgency, a National Academies of Sciences, Engineering, and Medicine report predicts a shortfall of nearly 3.4 million skilled technical workers by 2022².

This represents 13% of the U.S. workforce ages 25 and older, and these skilled technical workers 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 that include, but are not limited to, advanced manufacturing, pharmaceuticals, motor vehicles, aerospace, energy-providing industries (such as oil and gas extraction and power generation), and critical service activities (such as telecommunications and software design) ¹.

SUPPLEMENTAL FUNDING OPPORTUNITY

This Dear Colleague Letter supports students, faculty and faculty/student teams from 2-yr IHEs in gaining experience working on state-of-the-art, industrially driven IUCRC research projects at IUCRC Sites. 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 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 workforce for positions generally requiring less than a 4-year baccalaureate degree but more than a high school degree.

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 research projects of industrial importance.
- To pursue new activities aimed at acquiring further professional development experiences that will enhance their preparation for multiple career pathways.
- To work in collaborative teams and with diverse individuals, including developing skills and knowledge in communication, innovation and entrepreneurship, leadership and management, and policy and outreach, all of which are increasingly valuable for all sectors of the workforce.
- To provide advanced research and technology skills to individuals especially from

underrepresented groups such as women, persons with disabilities, and underrepresented minorities and those from geographically underrepresented areas in science, technology, engineering, and mathematics (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

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.

Open to all active ATE grantees working with and/or establishing active ties to one or more IUCRCs to support a research experience for participants (students/faculty) in IUCRC industry-driven projects. (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 the institution, in their 2-yr IHE.

SUPPLEMENTAL FUNDING REQUEST PREPARATION INSTRUCTIONS

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 should 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 PI/co-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 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. An agreement on how intellectual property (IP) will be handled. The NSF awardees (IUCRC and ATE) involved in the START traineeship must agree in advance and submit to NSF a signed agreement on IP (including publication and patent rights) prior to award of the supplemental funding. The NSF is responsible neither for the agreement reached nor the IP information exchanged between participating parties.
7. A Budget and a clear justification for all requested budget costs.

SUPPLEMENTAL FUNDING DETAILS

Support will be provided through START supplements to existing ATE or IUCRC awardees. The IUCRC 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 or IUCRC award. Supplements to ATE awards may include subawards to one or more partner IUCRC 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.
- 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 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 project during the internship.
- The grantee is permitted to request indirect costs in accordance with their approved/negotiated indirect cost rate. The total requested budget cannot exceed the limits specified in this DCL.

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 FY2021 with a target date of June 15, 2021 to be reviewed for possible funding prior to October 1, 2021. 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 internally reviewed by NSF.

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 a 2-page (maximum) summary of the planned funding request. You will then be contacted on how to proceed.

- V. Celeste Carter, ATE Program Director, Division of Undergraduate Education, Directorate for Education and Human Resources (EHR). 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
- Behrooz A. Shirazi, IUCRC Program Director, Directorate for Computer & Information Science & Engineering, telephone: (703) 292-8343, email: bshirazi@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

Sincerely,

Joanne S. Tornow, Assistant Director
Directorate for Biological Sciences (BIO)

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

Karen Marrongelle, Assistant Director
Directorate for Education and Human Resources (EHR)

Dawn Tilbury, Assistant Director
Directorate for Engineering (ENG)

William E. Easterling, Assistant Director
Directorate for Geosciences (GEO)

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

Arthur Lupia, Assistant Director
Directorate for Social, Behavioral and Economic Sciences (SBE)

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.