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National Science Foundation
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Dear Colleague Letter: EFRI Research Experience and Mentoring (REM) Program

September 1, 2014

The National Science Foundation (NSF) Directorate for Engineering (ENG), Office of Emerging Frontiers in Research and Innovation (EFRI) continually seeks to further the progress in EFRI topic areas while broadening participation of underrepresented groups in science, technology, engineering, and mathematics (STEM) fields. This letter seeks to call your attention to an opportunity to pursue both of these goals through supplements to active EFRI research awards.

Awardees with active EFRI research grants may apply for supplemental funding for this Research Experience and Mentoring (REM) program. REM funding will support costs associated with bringing Research Participants (RPs) into the laboratory over the summer to participate in research aligned with the EFRI-supported research goals. REM funds may also be used to extend the duration of structured mentoring into the academic year.

INTRODUCTION

NSF seeks to encourage EFRI-supported researchers to create carefully mentored research opportunities for people who may not otherwise become engaged in a research project, and to utilize contributions and talents of these participants to make further progress toward research goals. Ideally the experience should be mutually beneficial. Research experiences are correlated with STEM success, while effective mentorship is impactful for all learners. An extensive 2011 study by The Committee on Science, Engineering, and Public Policy at the National Academies, Expanding Underrepresented Minority Participation, describes how mentorship is of even greater value for underrepresented populations in STEM. The National Science Board has also highlighted the value of strong, expert mentoring in the development of engineers in its 2007 report, Moving Forward to Improve Engineering Education.

The REM program seeks to pursue this idea by offering the Principal Investigator (PI) flexibility to design their research experience and mentoring plan to leverage local expertise and infrastructure already supported by NSF.

PROGRAM DESCRIPTION

EFRI supports the active involvement of research participants: high school students and STEM teachers, undergraduate STEM students and faculty (including community college students and faculty), professors, and veterans in hands-on research in order to bring this rich research experience and contact with suitable STEM mentors into their lives. The main goals of the REM program are to enhance EFRI-supported research while providing research experiences and mentoring opportunities to STEM students and/or educators that may ultimately enhance their career and academic trajectories. REM may also enable the building of long-term collaborative partnerships among EFRI-supported researchers, the NSF university research community, and local school districts.

Each REM supplemental funding request should be specific to the local setting, resources, and skills of

the PI/team. EFRI especially encourages partnerships with one or more of the following types of institutions:

- inner city schools or other high-needs K-12 schools;
- community colleges that serve historically underrepresented populations; and
- four-year colleges that serve historically underrepresented populations.

Requests for supplemental funding must include a recruitment plan, describing how at least six members of one or more of the following groups will be recruited as RPs in each EFRI topic area:

- underrepresented minorities (African-Americans, Hispanics, Native Americans, Alaska Natives, Native Hawaiians, and other Pacific Islanders);
- females;
- veterans enrolled in post-secondary education; or
- persons with disabilities.

EFRI seeks to encourage activities that are unique, creative, innovative, and site-specific. Effective summer research programs typically have many of the following characteristics, which are provided here as general guidelines:

- Six to ten weeks of summer research;
- Continuing interactions/mentorship of RPs throughout the academic year;
- Well-designed, introductory training for RPs;
- Mentorship training for researchers;
- RP's participation in meetings and their creative contributions; and
- Guidance for RPs in co-authoring publications and/or posters.

Supplemental funding requests must include an evaluation component, including but not limited to a pre-and-post survey of RPs (and possibly mentors, especially if graduate students serve as mentors). Attitudinal changes and/or changes to career trajectory should be measured; an initial Logic Model (describing expected outcomes of the activities undertaken, and the mechanism(s) to measure and evaluate those outcomes) should be provided. Longitudinal data will be expected where appropriate for renewals. The evaluation must be provided in the final report, so that NSF can gauge the value of providing these experiences and relate the program to the STEM pipeline.

RPs and mentors are expected to conduct poster presentations at the annual EFRI-REM grantee meeting, held in conjunction with the Emerging Researchers National Conference (ERN Conference) in Washington, DC in February of 2016.

ANTICIPATED TYPE OF AWARD

The Awardee may request REM supplements for up to 12 months (summer plus the academic year).

ELIGIBILITY

A request for supplemental funding may be submitted by the PI or CoPI of a currently active EFRI research award. Supplemental funding requests may include collaboration with and/or placement of RPs in other EFRI-supported laboratories. REM RP candidates must be United States citizens, nationals, or permanent residents. It is the responsibility of the submitting institution to verify eligibility of the REM RP candidate.

PREPARATION OF AN EFRI-REM SUPPLEMENTAL FUNDING REQUEST

Information about requesting supplemental support is contained in Part II: Award and Administration

Guide (AAG) of the NSF Proposal and Award Policies and Procedures Guide (PAPPG), available online at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp.

The following instructions supplement the AAG guidelines:

In the **Supplementary Documents** section, provide a **Research Participant Mentoring Plan**. In no more than three pages, describe the individually customized mentoring activities that will be provided to the RPs supported by this supplement.

Mentoring activities may include, but are not limited to:

- Establishing a mutually agreed-upon list of expectations and goals;
- Meeting in advance of the research experience in order to orient RPs, learn their research interests/preferences, and arrange placements;
- Providing or arranging for didactic training in advance of the laboratory experience;
- Providing or arranging for mentorship training for those working closely with RPs;
- Providing timely evaluations of progress towards expected goals;
- Providing professional development activities such as career/educational counseling, workshop participation, networking and internships;
- Providing guidance in effective scientific writing for publications and presentations at conferences/meetings;
- Accompanying RPs at professional conferences and/or funding their participation;
- Providing opportunities for RPs' interaction in seminars or symposiums;
- Encouraging networking among RPs, mentors, and PIs at periodic working lunches or occasional outings;
- Providing guidance on ways to improve teaching, leadership, communication, and mentoring skills;
- Providing guidance on how to collaborate effectively with researchers from diverse backgrounds and inter-disciplinary areas; and
- Providing field trips to related facilities and/or local facilities of engineering interest.

Prepare a budget, including a budget justification for the funds requested and their proposed use. The maximum annual amount (including any associated indirect costs) is $100,000. The budget will include travel/registration expenses for RPs and mentors to participate in the EFRI grantee meeting. It cannot include tuition at the EFRI-supported institution(s). Costs related to hosting RPs may vary from laboratory to laboratory; the budget should include expenses related to providing RPs with appropriate mentoring, materials, and laboratory access.

REM RPs must be provided with a stipend for their participation. Details are left to the PI, but EFRI offers the following guidelines based on figures from similar NSF programs:

- High School student: not less than $2800
- University/College/Community College (CC) student: not less than $4000
- K-12 Teacher or CC Faculty: about $6000
- College/University faculty: about one tenth of their average annual salary
- Veteran: approximately 2-months of the Post-9/1 GI-Bill Housing Basic Allowance for Housing (calculator at https://www.defensetravel.dod.mil/site/bahCalc.cfm, setting pay grade to E-5.)
- Housing stipends may be provided for out-of-town RPs, 18 years of age or older. Local High-school students or recent graduates (under 18 years of age) should be lodging with a parent or guardian, or may be housed in on-campus housing facilities (if the university has a record of successfully housing minors). RPs (under 18 years of age) may travel with the research team to the annual EFRI conference. Appropriate safety waivers and transportation waivers should be obtained from all participants, but are required for those under 18 years of age. Out-of-town RPs may be offered an allowance for occasional home visits.

After you have prepared the request for supplemental funding, forward it to your organization's Sponsored Research Office, which will submit the request to NSF via FastLane. For questions related to the use of FastLane to submit the supplement request, contact the FastLane Help Desk: email fastlane@nsf.gov or telephone 1-800-673-6188.

CONTACTS FOR ADDITIONAL INFORMATION

For questions or information on submission of an REM supplemental funding request, contact the managing Program Officer for the current EFRI award or one of the following REM Coordinators:

Garie Fordyce, gfordyce@nsf.gov
Mary Poats, mpoats@nsf.gov

REVIEW PROCESS

An award decision will be based on internal review and/or review by a panel of external experts from academia and industry, and upon availability of funds. We anticipate notifying successful PIs by the end of January 2015 so that the recruitment plan can be implemented at that time.

AWARD SIZE AND DURATION

The maximum amount of an REM supplement is $100,000. The Awardee may request REM supplements for up to 12 months (summer plus academic year). REM supplements are nontransferable.

AWARD INFORMATION

Anticipated FY-2015 budget for the REM program is $1,000,000, subject to the availability of funds and the merit of proposals received.

SUBMISSION DEADLINE

The deadline for submission of a REM request is 5:00 p.m., submitter's local time, on November 21, 2014.

SPECIAL REPORTING REQUIREMENTS

The annual and final project reports must discuss the impact of the supplemental funding on increasing the participation of underrepresented groups in engineering. Quantitative data on race, gender, and disability are expected. EFRI anticipates that REM will open and facilitate new avenues for increasing the participation of underrepresented populations in engineering disciplines, and in turn, enhance the development of the U.S. engineering workforce in accordance with the America COMPETES Act (https://www.govtrack.us/congress/bills/110/hr2272/text) and the Engineer of 2020 report of the National Academy of Engineering (http://www.nap.edu/catalog.php?record_id=10999) that foresees an engineering profession that remains underrepresented with respect to women and minorities in the year 2020.

We hope that you are inspired by this opportunity to design and implement a program that serves your research needs while simultaneously working to develop engineers of the future; we look forward to reading your innovative proposals.

Sincerely,
Sohi Rastegar, Director
Emerging Frontiers in Research and Innovation (EFRI)