

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCiENCES
Division of Extramural Research and Training
Cellular, Organs and Systems Pathobiology Branch

NATIONAL ADVISORY ENVIRONMENTAL HEALTH SCIENCES COUNCIL
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Concept Clearance

Plans for Undergraduate Training

Introduction

The NIEHS Strategic Plan describes the critical challenges facing the environmental health sciences and outlines strategic investments which will enable the NIEHS to have the greatest impact on preventing disease and improving human health. An essential element of the Strategic Plan is to recruit and train the next generation of environmental health scientists who will further the understanding of the impact of environmental exposures on human health.

NIEHS has a demonstrated a long-term commitment to the training and support of talented and creative new environmental health scientists. The NIH Ruth L. Kirschstein National Research Service Awards (NRSAs) for pre- and postdoctoral training have been the primary means of supporting graduate and postdoctoral research training programs since enactment of the NRSA legislation in 1974. Currently, the NIEHS supports approximately 270 predoctoral and 145 postdoctoral trainees through our 48 T32 Training programs, and approximately 55 pre- and post-doctoral fellowships through the various F mechanisms. In addition, the NIEHS supports a variety of Career Development Awards, including opportunities for clinically trained scientists (K08 and K23), the K99/R00 Pathway to Independence awards, and the Outstanding New Environmental Scientist (ONES) Award for highly creative and promising researchers in the early stages of their careers in the environmental health sciences.

An ongoing effort of the NIEHS concerns the so-called “pipe-line” issue; that is, attracting talented high school students and science undergraduates to graduate research careers in the environmental health sciences and particularly attracting students from groups which have been designated as underrepresented in Science, Technology, Engineering and Mathematics (STEM). Over the years, the NIEHS has established several programs and initiatives that support summer research opportunities for high school students and college undergraduates, including the Short-term Research Training for Minority Students (T35) program, the Short Term Educational Experiences in Research (STEER) R25 program, and administrative supplement opportunities to support high school student and college undergraduate summer research experiences for PIs with NIEHS research grants. Described below are options for moving forward with training for these students.

Short Term Educational Experiences for Research (STEER) in the Environmental Health Sciences for Undergraduates and High School Students (R25)

The STEER program (RFA-06-009) provides summer research and educational opportunities in the environmental health sciences for high school students and college undergraduates. Eleven programs received funding, ranging in size from 4 to 8 students. These programs have now completed three summer rotations, and are entering their fourth year of funding. Each summer, these programs enroll 16 high school students and 58 undergraduates. Several programs received 1- or 2-year ARRA supplements to expand their number of slots.

The NIH has recently created and released an omnibus program nearly identical to our STEER program. Like the STEER program, the NIH Summer Research Experience Program (PAR-11-050) utilizes an R25 grant mechanism to create programs for summer research experiences for high school and college students, while also including summer opportunities for science teachers. Application due dates occur once per year with reviews done at the participating ICs. NIEHS will be participating in this program, transitioning our STEER program from a once every 5-year RFA program to a program funding several applications per year from the omnibus announcement and ultimately maintaining a steady state portfolio of summer research programs.

NIEHS Undergraduate Diversity Training in the Environmental Health Sciences

The NIEHS has supported the training of diversity undergraduates through the T35 Short-term Research Training for Minority Students program. NIH rulings on the use of institutional training mechanisms resulted in the termination of our T35 minority training program, as well as the proposed follow up NIEHS Undergraduate Diversity Training Program in the Environmental Health Sciences (T34) program. The NIEHS continues to work on creating new competitive funding opportunities in an effort to provide comprehensive support for academic and research training for talented science and mathematics undergraduates while ensuring that a diverse and highly trained workforce is available to assume leadership and research roles in environmental health science research.

One option under consideration is an R25 Undergraduate Program (UP) to Environmental Health Sciences Research Careers. These programs would provide funding for undergraduates from the diversity categories at the junior and senior level to gain hands-on experience with research activities in the Environmental Health Sciences. The undergraduate students could be supported for up to 15 hours/week during the academic year and 40 hours/week during the summer. Applicant programs would need to demonstrate the presence of a strong graduate program in the Environmental Health Sciences as evidenced by the presence of a funded T32 Training program, or a strong base of funded research in the environmental health sciences and a graduate program with a focus on environmental health sciences research training. Alternatively, an applicant can propose a collaboration between an undergraduate program and the graduate program in the environmental health sciences.

Another option under development is to offer competitive/administrative supplements to the NIGMS T34 Minority Access to Research Careers (MARC) Undergraduate Student Training in Academic Research (U-STAR) Training programs. The MARC U-STAR awards provide support for undergraduate students who are underrepresented in the biomedical and behavioral sciences to improve their preparation for graduate training at the Ph.D. level. The program also supports efforts to strengthen the science course curricula, pedagogical skills of faculty and biomedical research training at institutions with significant enrollments of students from underrepresented groups. The NIEHS supplements would enable the T34 PIs to add additional training slots to their programs provided those additional trainees were guided towards summer research experiences in the environmental health sciences. Supplemental funds could also be requested for the development of didactic coursework in the environmental health sciences as a way of supporting and/or enriching the academic learning environment for these students within the T34 training programs.

Administrative Supplements to Support High School Student and College Undergraduate Research Experiences.

Since 2007, the NIEHS has offered administrative supplements to NIEHS grants enabling the PIs to provide summer research experiences for students. The NIEHS program was originally a small program limited in size and scope to PIs with R01, R37 and P01 awards and to high school students and undergraduate participants. With the addition of ARRA funding and a more broadly defined eligibility under the ARRA program announcement, the program grew to an enormous extent. Over the two years of ARRA funding, 117 summer supplements were funded resulting in the creation of approximately 360 summer positions at a cost of \$3.6 million.

In the absence of ARRA funding, our plan is to continue to offer this summer student opportunity, but at a scale similar to the original intent of our NIEHS program. PIs with NIEHS R01, R37, R15, and P01 may apply. A PI may only have one summer participant (regardless of the number of NIEHS grants under the PI's direction). To keep the program comparable to the new omnibus NIH R25 announcement described above, eligible summer participants include high school students, undergraduates, and teachers.