

Concept Clearance

Branch: GEHB

Council Period: 202005

Concept Title: NIEHS Research Intensive Short Courses and Educational Opportunities (NIEHS RISE)

Introduction

The rapid pace of modern science has led to the development and deployment of advanced approaches and methods in many areas of science. To remain effective and to advance their research, scientists must stay on the cutting-edge of these new developments by adopting and adapting these new methods and approaches. However, it is a challenge, particularly in environmental health sciences, for researchers to find training in these new skills that will allow them to advance their work in novel directions. This is because, in addition to needing theoretical training, learning new skills often requires hands-on training and practical exposure to working with these new approaches or methods. Currently, NIEHS funds training and career development in many ways for environmental health scientists from undergraduate through early and mid-career investigators. However, these various mechanisms are primarily around institution-based training (e.g. T32, R25 UP) or supporting individual researchers (e.g. K99, F30, F31). These mechanisms are not designed to provide targeted training for a broad audience of researchers in a specific topic or approach. One option that has been adopted in many fields of science to provide hands on training to broad audiences have been short courses. These courses are typically one week to a month long and combine lectures from experts in the field with hands-on or lab-based training. Despite interest from the community and need for this kind of training, opportunities remain limited in environmental health sciences. Shorter opportunities, generally 1-2 day bootcamps, are more readily available, a good example are the SHARP courses hosted by Columbia University, but these are limited in the type and amount of hands-on training that they can provide participants due to their shorter duration. Students and researchers at smaller or less research-intensive institutions face additional barriers in accessing training in advanced approaches or methods. To address these gaps in environmental health training, we are proposing an NIEHS Research Intensive Short Courses and Educational Opportunities (NIEHS RISE) Program.

Research Goals and Scope

This NIEHS RISE program will support recurring short courses of no more than a month that include hands-on in person training in novel and/or advanced approaches specifically geared towards the environmental health sciences. Rather than focusing on any one area of environmental health sciences, this program will be directed at developing training in applied approaches and methods. It will be expected that the goal of the supported courses is to enable participants to return to their home institutions and adapt what they have learned as part of the program into their research, such that environmental health researchers are more fully incorporating cutting-edge tools, methods, and approaches into their research projects. Some topics and gap areas that could be addressed by these courses are:

- Concepts and methods for studying emerging and/or high priority chemicals, classes of chemicals or mixtures (e.g., air pollution, endocrine disruptors)
- New technologies and sensors for exposure assessment
- Modernizing neurotoxicology by incorporating state-of-the art neuroscience methods
- Qualitative study designs for environmental epidemiology
- Building effective community engaged research programs

To achieve the goal of enabling the adoption of new skills by participants, the incorporation of best practices and models for science training and education that may better enable student/participants to apply the skills that they develop during their training will be encouraged. Modern pedagogy (e.g., project-based or experiential models) and educational tools (e.g., online lectures or networking), can help enhance the experience of students/participants and enable them to better apply their new skills to their research questions. These methods and tools should be used to support the hands-on training component of the in-person coursework. Examples include, but are certainly not limited to, using project-based learning to focus on appropriate study designs for a new technology, or reducing time spent in didactic lectures by providing access to webinars prior to the in-person course.

These courses will also help training in environmental health sciences to reach a broader audience and increase the diversity of environmental health science researchers. Each course will draw participants from a national audience of researchers interested in environmental health sciences, which includes researchers from across career stages and size and type of organizations. This will give researchers from institutions that do not have environmental health curricula or deep expertise access to training from experts in advanced approaches and methods.

Mechanism and Justification

The R25 Education Projects is the appropriate mechanism to support these short courses to train participants in environmental health relevant skills using research intensive hands-on training. Several NIH institutes and centers have successfully used this mechanism in the past to support similar educational opportunities. This program will be structured around courses for skills development to provide:

- advanced courses in a specific discipline or research area, clinical procedures for research, or specialized research techniques
- require a hands-on training component, in a form relevant to the topics being covered by the course

- courses will not be longer than one month in-person, although participants may engage in remote activities for longer
- participation should be open to attendees from across the career stage and institutions, as such courses cannot be for institutional credit

NIEHS is planning to fund 2-3 awards per year for 3 years at a cost of up to \$200,000 direct per year for 5 years. Each award is expected to host a short course at least once per year of the award for an audience of around 20 participants per course. Funding will support the costs for hosting such an event (e.g., space and A/V, supplies needed for hands-on components, food and lodging for participants from out of town, honoraria for guest lecturers). It is expected that the programs will charge some form of tuition or fees to help support the courses in addition to NIEHS funding. Applicants may request funds for travel awards or scholarships to ensure that there is a diverse participant pool.

Since the course is expected to be held multiple times, investigators should include funds for an evaluation both for course improvements and refinements and potentially for a larger program level evaluation conducted by NIEHS.