

Project Outcome Report: GLOBES IGERT at the University of Notre Dame

The Global Linkages of Biology, Environment, and Society (GLOBES) program at the University of Notre Dame was launched in 2005 by an Integrative Graduate Education and Research Traineeship (IGERT) award from the National Science Foundation. The award primarily supported graduate student trainees for up to 2.5 years while undergoing interdisciplinary training and research activities that supplemented a traditional doctoral degree program in one of eleven participating departments across the College of Science and the College of Arts & Letters.

The IGERT award made possible an innovative training program that 1) linked distinct academic spheres and engaged more than 30 affiliated faculty and 47 trainees and associates, 2) developed new, team-taught courses by faculty from the biological and social sciences examining the principles that underlie interactions between humans and the environment, 3) supported work in more than 15 research labs studying environmental and human health questions, 4) developed a highly successful communications workshop series that trained students to frame their research message for different audiences and culminated in a leadership practicum in Washington DC where students engaged policy-makers and journalists on the national scene, 5) awarded 42 fellowships to undergraduates from across the country for summer research experiences mentored by GLOBES-IGERT trainees, 6) helped advance a successful proposal for the establishment of the Environmental Change Initiative at Notre Dame, and 7) contributed to the newly launched Sustainability Minor degree for undergraduates.

GLOBES supported 33 graduate students in six departments with IGERT traineeships. An additional 14 associates were actively involved in training and several hundred students benefitted from GLOBES courses, training modules, guest speakers, and outreach activities. An REU award supplement made possible 22 summer research experiences for undergraduates matched by University funding for an additional 20 Notre Dame students. The ten-week summer program provided an important mentoring and leadership opportunity for trainees while exposing undergraduates to cutting edge environmental research.

This award also funded an international component that supported the exchange of ideas and practices across cultural and disciplinary boundaries. Almost half of the IGERT trainees developed real world practicums in foreign settings. Research in third world sites included the study of lymphatic filariasis control and policy in Haiti, tradeoffs between artisanal fisheries and hydroelectric power plants in Zambia, environmental links to Buruli ulcer infections in Ghana, the study of malarial policies and drug quality in Uganda, and comparison studies of mosquito behavior and capture techniques in Tanzania. Other international experiences strengthened collaborative research and expanded training across borders. Trainees studied constructed wetlands and nitrogen removal techniques with collaborators at the University of Monash in Melbourne, Australia; examined the impact of nonindigenous crayfish on native ecosystems in Wuhan, China; tested new tracking techniques in the study of macaque-human population interactions in Singapore; and received international training in ecometagenetics in Grenoble, France.

Under GLOBES, interdisciplinary training and student initiative have coalesced to produce very tangible results. Research by trainees has resulted in 59 publications in numerous journals including *Science*, *Nature*, the *Proceedings of the National Academy of Sciences*, *Conservation Biology*, and more. A GLOBES trainee had a commentary published in the journal *Nature* (2011) and was interviewed on National Public Radio regarding invasive plant species in the nursery trade. Two trainees were finalists (top 25 out of 120) in the IGERT annual poster competition. Three trainees attracted national attention and media coverage on a blog they cofounded on “invasivores,” those who eat invasive species to control their spread. One trainee developed the SEEDS summer ecology program for underprivileged children. Another led the “Sensing Our World” science program on campus for middle school students. The Science Café, founded and organized by GLOBES trainees as a public outreach effort, is a well-attended science speaker series in downtown South Bend.

GLOBES-IGERT trainees from the first two of six total cohorts are finishing up their PhD degrees and several have accepted positions within and outside academia. These include an economist with the US Census Bureau, post doctoral researchers with the National Institutes for Health/ National Institute of Allergy and Infectious Disease, the Weller Laboratory with the Smithsonian Environmental Research Center, the Odum School of Ecology at the University of Georgia, Aarhus University and the Danish National Environmental Research Institute. Career goals for other trainees include a position in science policy and a start-up company based on developing a novel scientific device.

The major training components of GLOBES are the foundation of a new graduate minor degree proposal in environmental health that seeks to define and advance the science of Earth Stewardship. As recommended in the 2010 report by the GLOBES External Advisory Board, the new GLOBES Minor will provide a mechanism to further strengthen the synergistic research, education, and training connections among Notre Dame’s Strategic Research Initiatives and make possible a new model in graduate education capable of growing Notre Dame’s interdisciplinary research enterprise.