

## Defining Moments of Discovery and Design

### The Winning PRISE Experience

“How can we shape undergraduate science education so that it will be more engaging, exciting, and fun?” That question has long intrigued Barbara Grosz, Higgins Professor of Natural Sciences and Dean of Science at the Radcliffe Institute for Advanced Study. One answer, recommended by the Task Force on Women in Science and Engineering, which Grosz chaired, debuted this summer as the 10-week residential community called PRISE (Program for Research in Science and Engineering). Living in Leverett House and dining together in Dudley, each of the 119 PRISE fellows—68 women and 51 men—pursued their own research project with a Harvard faculty member.

In Scott Edwards’s Organismic and Evolutionary Biology lab, two PRISE fellows investigated genetic adaptation among birds. Hannah Frank ’09 sequenced pieces of the house finch genome to construct that bird’s history of diversity, while Anh-Thu Elaine Vo ’08 studied a gene that contributes to the regulation of metal toxicity in the black-footed albatross. Frank, who has long wanted to be a veterinarian, “used PRISE as a vehicle to see if my heart is in a lab,” while Vo, who plans to pursue future research on international conservation and ecology, enjoyed “interacting with the grad students and postdocs in the lab, hearing about their life stories and the amazing roads that have brought them here.”

“PRISE offers students an opportunity to learn what it’s like to be a researcher and what the research life is all about,” affirms Edwards, Professor of Organismic and Evolutionary Biology and Alexander Agassiz Professor of Zoology in the Museum of Comparative Zoology. Bioengineer Kevin Kit Parker, Assistant

Professor of Biomedical Engineering on the Gordon McKay Endowment, agrees. “Classroom problem sets and canned laboratory exercises don’t adequately communicate the spatial and temporal aspects of the phenomena we’re trying to understand. The only way to do this is to grapple with real problems in a working lab,” he says.

Patterning heart cells into geometric shapes in Parker’s lab, Chimdimma (Chi-Chi) Esimai ’08 replicated the cellular conditions surrounding a heart attack. As she probed cardiac structure-function relationships, Esimai also came to appreciate relations in a research community. “Many see science as a cut-throat environment of overly competitive researchers crushing one another to meet grant deadlines and publish papers,” she says. “Now I know that researchers are just like me, driven by questions that help them create new knowledge. ‘You’re not alone’ is the most important lesson I’ve learned in PRISE.”

Leverett House Co-Masters Ann Georgi, Undergraduate Research Adviser in Life Sciences, and Howard Georgi, Mallinckrodt Professor of Physics and Harvard College Professor, hope PRISE helps undergraduates to overcome the cultural stereotype of scientists and recognize scientific communities as “vibrant collections of outstanding people, connected by their common fascination with important questions and united by their shared belief in the significance of the scientific enterprise.”

PRISE participants discovered commonalities through a distinguished speaker series; workshops on public speaking and other practical topics; and leisure activities, including a Tanglewood concert and a whale-watching trip. “Fellows valued the opportunity to get to know their peers in other disciplines, while forming close working relationships with faculty in a research environment,” says PRISE Director Gregory A. Llacer. A longitudinal study will help Llacer evaluate the program’s impact on this next generation of leading scientists and engineers.

Not every fellow worked inside a lab space. From a table at Tealuxe in Harvard Square, Scott Kominers ’09 reflects on his PRISE experience. A mathematician studying classification problems for “even unimodular lattices,” Kominers conducted most of his summer research from this unusual scientific perch, checking in regularly, but informally, with Professor of Mathematics Noam D. Elkies.

“By providing facilities and a social framework for all of us to interact, PRISE creates connections that will continue,” Kominers predicts. “With its fantastic opportunities, PRISE has accelerated my own research trajectory,” he says. “Plus, it makes for a fun summer!”



Scott Kominers '09 in Tealuxe café, Harvard Square