

Published August 5th, 2009

Research Program Gives Insight to Undergraduates

By Jennifer Wake



Ozone project team members Matt Jackson (front left), Easar Forghany (back left), Joel Burley (standing) and Katy Orr (right) Photo Valerie Burke

total of nine monitors now, one of which might become a permanent mountain-top installation, and we go on data collecting trips every two to three weeks."

The REU program allows students to experience the challenges, frustrations and rewards of research, explained Burke, so they have an idea of what to expect if they choose graduate school or employment in industry. "And they get to contribute new knowledge in their disciplines. . . . They study something no one has ever done before." REU student Jill Rea-Dilling has been spending the past several weeks culling through data to present to a production company that is creating a documentary on recidivism within the prison system. She has done so with the benefit of experience. Rea-Dilling spent 22 months incarcerated at various prisons following an identity theft conviction.

"I never thought about the prison system before I was there. It was a life-changing, humbling experience," she said. While in prison, Rea-Dilling saw many women return after being released, and believes a lack of quality vocational programs is one reason for the high recidivism rate. "In 2007, fifty percent of people in prison that year sat idle," she said. "They're not teaching the young ones who are getting out what will help them."

For Rea-Dilling, the REU experience has given her the opportunity to search for answers as well as to discuss her findings, and brainstorm her own personal goals with her faculty mentor, Saint Mary's sociology and anthropology professor John Ely, Ph.D., who is heading the recidivism project. This close interaction with Saint Mary's faculty is one of the unique benefits of the REU program.

"In addition to teaching advanced techniques and instrumentation, for example, the faculty may chat about their experiences in graduate school, and talk about colleagues working in industry," Burke said. "In subtle or overt ways, we try to open our students' eyes to the many possibilities ahead of them."

Rea-Dilling now plans to pursue a degree in penology - the study of punishment and prisons.

As for the REU program, Saint Mary's is working hard to have it mix smoothly with the ongoing School of Science Summer Research Program, (which has been part of Saint Mary's curriculum for the past 20 years).

"Knowing how valuable the research experience can be," said Burke, "we will keep working to improve and expand the research opportunities for SMC students, and for students outside SMC who do not have comparable research programs."

This summer, 10 additional undergraduate students have been conducting research alongside top faculty thanks to a one-year \$117,000 grant from the National Science Foundation to create a Research Experience for Undergraduates (REU) site at Saint Mary's College. More than 60 students applied for the coveted research positions, which gave undergraduates an opportunity to tackle a research problem that provides academic development, and hands-on problem-solving skills, beyond what can be accomplished in a classroom, or even in a teaching laboratory, said Saint Mary's associate chemistry professor Valerie Burke, Ph.D. Students conducted research in the life, physical, social and behavioral sciences. For SMC senior Katy Orr, the experience led her and her research team, headed by SMC chemistry professor Joel Burley, Ph.D., to mountain peaks at Yosemite, and to the White Mountains just east of Bishop to collect national park air quality data.

"There are only a handful of permanent mountain-top ozone monitors in the world, which records ozone levels in each location every five seconds," Orr said. "We have a



Summer research students working on their poster presentations, which will be presented at a research symposium on August 14 Photo Valerie Burke



Elizabeth Sandoval-Torres uses a rotary evaporator to remove solvent and isolate her reaction product Photo Valerie Burke

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