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Summertime and a Research Opportunity

Offer a summer hands-on science research program for high school students and teachers and the excitement of scientific discovery will begin.

If anyone should know, it's Dr. Matthew Tarr, University of New Orleans (UNO) professor of chemistry, who refers to himself as "living proof that it works."

"Even if the research just confirms what their teachers or others have told them, learning it first-hand is exciting," says Dr. Tarr.

"When I was in high school I was allowed to work two or three times a week in a University of Miami chemistry laboratory. And as an Emory University undergraduate I was given the opportunity to work for three years in a professor's research lab," he says.

It was the time spent in those labs that eventually led Dr. Tarr to pursue a science career, the first in his family. In addition to research and teaching, he also serves as the Outreach Coordinator for the UNO Scientific Summer Internships for High School Students and the Scientific Research and Teaching Summer Internships for Secondary Educators programs.

Offered by UNO's Advanced Materials Research Institute (AMRI), the summer outreach programs are primarily funded by the Louisiana EPSCoR program. Funding is also provided by the Academy of Applied Science/Army Research Office, AMRI, and UNO. The 2007 sessions will be held June 7 – July 27.

In each of the summers of 2002-2006, about five high school chemistry or physics teachers and 10 high school students attending the seven-week programs were given the unique opportunity to work in state-of-the-art scientific research facilities alongside experienced research scientists. Despite the difficulties caused by Hurricane Katrina, the 2006 program was held with six high school students, two high school teachers and eight undergraduates.

The high school interns reported the results of their research projects at a poster session at the end of each summer. They and college undergraduate interns also co-authored research articles and presentations at local and national scientific meetings.

The benefits didn't stop there. The participating teachers, who conducted independent research projects in chemistry, physics, or materials science, also learned useful techniques for incorporating research concepts into their classrooms. The new insights and perspectives, as well as innovative new topics for improving science teaching at the secondary level were passed on to the hundreds of students they teach each year.

"Over 700 high school students, some from other states, applied for a total of 40 positions from 2002-2006," says Dr. Tarr. "Because we can't provide housing, we try to accept those who can attend on a regular basis, which means that the interns are usually from

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Success Stories

Brittany Oliva

Home town: Metairie, LA
High School: Mount Carmel Academy
Research Project: Gold-Titania-Magnetite Nanoparticles
Current Status: UNO chemistry sophomore
Special Accomplishments: Presented research results at American Chemical Society National Meeting; Co-authored 2 research publications

Andrew Dugue

Home town: Gretna, LA
High School: St. Augustine
Research Project: Biomagnetics – Polymer Coated Magnetic Nanoparticles for Immunoassay
Current Status: UNO mechanical engineering senior
Special Accomplishments: Participated in AMRI's REU program; Presented research poster

Jeffrey Anderson

Home town: Slidell, LA
Position: Chemistry Teacher
High School: Academy of the Sacred Heart (all girls)
Research Project: Electron Microscopy of Nanomaterials
Special Accomplishments: Developed a new research course at his high school; Co-author of conference presentations and research publication

2006 AMRI Summer Outreach Program undergraduate student intern James Webb (left) in the lab with high school teacher intern Steve DeLeon.

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our region. We do offer stipends in order to allow them to turn their full attention to the program and their research." He adds that approximately half of the interns have been female and about half were from underrepresented minority groups.

The high school program ran concurrently with two additional NSF-funded summer programs: the Research Experiences for Undergraduates (REU), which funds undergraduates who complete nine weeks of summer research, and the Nanoscale Interdisciplinary Research Teams (NIRT), a large program that includes funding for summer research internships for both undergraduates and secondary science teachers. Undergraduate participants in these programs have been predominantly from historically black colleges or universities or from underrepresented minority groups. The REU funding has been renewed through 2010 and a similar proposal has been submitted to NIRT.

"We typically have seven to nine REU interns, three to four NIRT interns, and two to six high school teachers who often work in labs with the high school students. Together they attend such enrichment activities as educational meetings, meet-the-faculty programs, and field trips, "says Dr. Tarr.

AMRI Director Dr. Charles O'Conner adds that the impact of the summer research on high school students is probably best summarized by a student who wrote:

"[The program] made me confident in the career choice that I made . . . This experience got me into college; no question about it . . . It was one of the best and most beneficial experiences in my life. I think everybody interested in chemistry should get to do this before college."

For specific information and details about the UNO AMRI summer programs, go to http://www.amri.uno.edu.

LONI To Add Six Dell HPC Clusters

The Louisiana Optical Network Initiative (LONI), a fiber optics network connecting supercomputers at Louisiana's major research universities, has increased the computing power with standards-based technology from Dell, making LONI's 85 teraflop grid one of the nation's largest.

LONI will install six clusters comprised of Dell PowerEdge 1950 servers at the six LONI member campuses: Louisiana State University, University of Louisiana – Lafayette, University of New Orleans, Southern University, Louisiana Tech, and Tulane. Each 132-node cluster will feature five teraflops of storage. In addition, LONI will soon install a network that features a 50 teraflop Intel Linux Cluster to be housed at the State's Information Systems Building.

The new computers, along with additional system and hardware upgrades, will provide a significant increase in computational resources for academic research, including the ability to perform hurricane tracking and storm surge modeling at much higher speeds and with greater accuracy than currently possible.

2006 AMRI Summer Outreach Program high school student intern Cinnamon Mitchell (left) in the lab with mentor and program coordinator Dr. Matthew Tarr.

Louisiana EPSCoR
P.O. Box 3677
Baton Rouge, LA 70821-3677
#4475