

NSF Funds Summer Research Program Abroad For Undergraduates At UC San Diego

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Undergraduate students from the University of California, San Diego will be living and working this summer thousands of miles away from the La Jolla campus, doing research at leading technology laboratories in Japan, Taiwan and Australia. They will take part in a three-year, \$156,000 program funded by the National Science Foundation (NSF) to help prepare more U.S. engineers and scientists to work on international projects. "The conduct of science itself is global," said Gabriele Wienhausen, Provost of UCSD's undergraduate Sixth College and principal investigator on the project. "This program will give undergraduates a unique opportunity to do cutting-edge research, while at the same time fostering the type of international collaboration that is rapidly becoming critical to scientific advances in many disciplines."

"We are trying to address the imbalance in the high number of students coming to the United States, especially in the sciences, compared to the number of American researchers going overseas," said William Chang, program manager at NSF. "In today's global marketplace, you want members of your society to understand what it's like to live and do work in a much more global environment. We hope these U.S. students will serve as cyber-ambassadors between the U.S. and East Asia."

Students will work on projects with dual mentors, one international and one at UCSD, spend the summer at an international institution, and participate in an international meeting to help demonstrate the results of the project. The foreign sites participating in the inaugural summer program will allow students to work in a wide array of scientific fields related to cyberinfrastructure, including telescience, sensors and the environment, earthquake engineering, computational chemistry, cardiac physiology, structural biology, systems biology, as well as grid computing, middleware, distributed data and networking.

The pilot project builds on the NSF's previous efforts to promote collaboration between U.S. and international researchers as part of the Pacific Rim Applications and Grid Middleware Assembly (PRAGMA). The group was formed to establish sustained collaborations and advance the use of grid technologies in applications among a community of investigators working with leading institutions around the Pacific Rim. The first three destinations for the summer program are all institutions affiliated with PRAGMA: Osaka University's Cybermedia Center in Japan; the National Center for High-performance Computing (NCHC) in Hsinchu, Taiwan; and Australia's Monash University in Melbourne.

UCSD officials believe that getting young students involved will pay dividends in the long run. "An international experience at this level will follow these students throughout their careers, whether they are going into business or on to graduate school," noted Peter Arzberger, co-PI on the project and director of the Life Sciences Initiative at UCSD, who also chairs the PRAGMA Steering Committee. "But science will also benefit, as each of these undergraduates becomes more comfortable working on research projects across borders. Students are the glue that will hold together future international collaborations."

Arzberger and Wienhausen will co-direct the summer program along with Linda Feldman, director of UCSD's Academic Internship Program (AIP). The program leverages activities already underway at AIP, Sixth College, the California Institute for Telecommunications and Information Technology [Cal-(IT)²], San Diego

Supercomputer Center (SDSC), Center for Research in Biological Systems, and other campus organizations. UCSD researchers involved in the project include SDSC's Philip Bourne and Phil Papadopoulos, chemistry professor Kim Baldrige, Jacobs School of Engineering bioengineering professor Andrew McCulloch, and School of Medicine neuroscientist Mark Ellisman.

Recruiting the first group of undergraduate researchers will begin on Thursday, April 8, at an Orientation session, from 5-6:30 p.m. (Provost's Conference Room, Sixth College). Participants must be full-time UCSD undergraduate students with U.S. citizenship and a minimum 3.0 grade point average (out of 4.0). The program is encouraging sophomores to apply, but special cases will be considered. The deadline to submit application materials is April 30, and students accepted into the program will be notified in mid-May. Participation in this program will meet the Practicum requirement at Sixth College, and students may enroll for academic credit, but enrollment in Sixth College is *not* a requirement.

"This project can provide a unique opportunity to train students to routinely use cyberinfrastructure for communication and research," added Wienhausen. "This could open their eyes to the immense potential this technology has to impact science."

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