

Many students in the College participate in research as undergraduates, taking major roles in important studies and publishing their findings even before they graduate.

Creating Knowledge Through Research

AS UNDERGRADUATES

“Students who participate in undergraduate research take responsibility for innovative projects and become key members of the faculty mentor’s research group. There is no better way for our students to engage in the bold excitement of a research university and excel in their quest for knowledge.”

By Dan Gordon

Matthew Pimentel admits that his decision to engage in research as a freshman at UCLA was practical.

“I was pre-med, and I figured it was something I needed to do to get into medical school,” he said. “It was only after I got involved that my attitude changed.”

For the last two years, the senior majoring in microbiology, immunology, and molecular genetics has been studying the effects of stress on breast cancer metastasis in the laboratory of Dr. Lily Wu in the Department of Molecular Medicine and Pharmacology. He has traveled to scientific meetings to present his work and, last September, was co-author of a paper published in the peer-reviewed journal *Cancer Research*.

Research is no longer something Pimentel has to do; it’s something he wants to do—well beyond graduation.

“You’re surrounded by brilliant people who have such interesting ideas, and you’re challenged to think about new ways to ask questions,” said Pimentel, who intends to pursue a Ph.D. in immunology as a result of the experience. “It’s really exciting.”

Pimentel was one of four UCLA seniors honored in April as part of the national celebration for Undergraduate Research Week. The students were selected, based on their outstanding independent laboratory contributions, by a committee of faculty and staff involved in administering programs in the Undergraduate Research Center/Center for Research and Academic Excellence (URC/CARE) in the Division of Undergraduate Education. The quartet is a representative sample of the multitudes of undergraduates engaged in research on the campus, according to Tama Hasson,

director of URC/CARE.

“One of the major successes of UCLA is that we have so many undergraduates who are contributing to the research enterprise,” said Hasson, who estimates that more than 2,000 undergraduates took part this year.

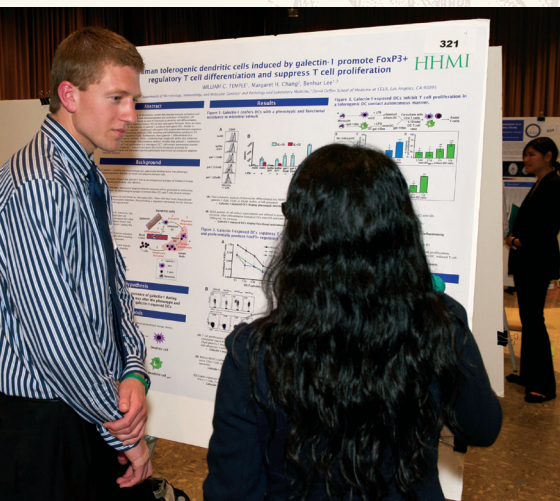
The U.S. House of Representatives designated the week of April 11 to recognize the value and contributions of undergraduate research. But at UCLA, such recognition is not new. Each year in May, the campus holds its own Undergraduate Research Week, including Science Poster Day, in which undergraduates present their work and are eligible for awards. As an indicator of the growth of undergraduate research at UCLA, this year there were 312 posters—more than double the number of participants just five years ago.

“Students who participate in undergraduate research take responsibility for innovative projects and become key members of the faculty mentor’s research group,” said Judith L. Smith, dean and vice provost for undergraduate education, who has been a strong proponent of undergraduate research since her appointment to the position in 1996.

“There is no better way for our students to engage in the bold excitement of a research university and excel in their quest for knowledge,” said Smith.

The opportunity to participate in one of the world’s leading research enterprises is what drew Kimberly Frutoz to UCLA. Frutoz was a junior-college student when she experienced research for the first time during a summer program at UC Irvine.

“I went into it without really knowing what it was going to be like, and I came out if it thinking it was amazing—this is how we generate new ideas, how we improve knowledge,” Frutoz said. “It opened



William Temple (left) presents his findings at UCLA’s Undergraduate Science Poster Day in May.



Undergraduate research scholars (from left) Kimberly Frutoz, William Temple, Matthew Pimentel, and Paula Wu.

my eyes to the opportunities offered by the UC system.”

Since transferring to UCLA, Frutoz, a physiological sciences major and a biomedical research minor, has capitalized on those opportunities. Working in the lab of Dr. Bennett Novitch in the Department of Neurobiology, Frutoz is studying the development of progenitor cells in the spinal cord. In addition to her participation at Science Poster Day, she won an award for her presentation at the California Alliance for Minority Participation 2011 conference in Irvine and was selected to be a Howard Hughes Medical Institute EXROP (Exceptional Research Opportunities) student for the summer of 2011. Frutoz hopes to submit a publication in the next year as she continues her work in Novitch’s lab while applying to M.D./Ph.D. programs.

For Paula Wu, a senior neuroscience major and biomedical research minor and editor-in-chief of UCLA’s *Undergraduate Science Journal*, basic science represents the best of two worlds—an ideal intellectual challenge with humanitarian ends.

“A career where you have to be really creative and also think critically and scientifically is a unique combination,” Wu said, “and I find it really fulfilling to know that it’s not just esoteric—what we’re doing will one day contribute to helping people.”

Working in the lab of Dr. Ronald Harper in the Department of Neurobiology, Wu is using state-of-the-art imaging techniques to study the function of various sub-regions within the brain’s insular cortex that are related to cardiovascular control. The research may lead to better understanding of how the brain regulates basic physiological responses.

Wu has worked at the National Institutes of Health for several years, continuing the project she started in the NIH Summer Internship Program; like Frutoz, she plans to enroll in a joint M.D./Ph.D. program.

As a high school student, William Temple read with fascination about stem cell research and the potential for a new era of personalized medicine resulting

from completion of the Human Genome Project. But Temple didn’t envision participating in the pursuit of discovery until a conversation with a resident assistant at his dormitory.

“She was a pre-med student involved in research, and she told me how to get involved,” Temple said. “I had no experience, but I was enthusiastic.”

That was enough for one investigator, who allowed Temple to get his feet wet as a freshman. The next year, Temple began work in the lab of Benur Lee in the Department of Microbiology, Immunology, and Molecular Genetics, where he has been working ever since.

Temple is studying the role of a carbohydrate-binding protein and how it modulates the behavior of dendritic cells and T cells of the immune system. His group found specific cells that appear to suppress the immune response, suggesting their potential for a therapeutic role in patients with autoimmune diseases. A paper with Temple as a co-author was recently submitted to the *Journal of Immunology*. He was selected to present his findings at the 2011 National Conference on Undergraduate Research.

“This is a new frontier,” said Temple, who plans to continue in Lee’s lab next year while applying to medical schools.

“I’m doing experiments that no one else in the world has done, and building on research conducted by world-renowned scientists who have contributed to what we know about the immune system,” said Temple. “Working with a pediatric oncologist, I see children with cancers related to immune system problems, which shows me how my research is relevant. It’s been amazing to experience this all as an undergraduate.” 