



Photo by Kevin Burke

What makes politicians run? When is a tattoo considered art? These questions—and hundreds more—are answered through the auspices of Oxy's ever-growing summer research program

analyze this

BY ANDY FAUGHT
PHOTOS BY MAX S. GERBER

As a 6-year-old growing up in San Bernardino, Peter Wright '05 could recite the names of the 41 presidents whose portraits hung on his bedroom walls. He was so taken with history and presidential biographies that the budding scholar could even expound on the virtues of his two favorite commanders in chief: John F. Kennedy and Teddy Roosevelt. "They could sit down at a table and be reasonable when it called for being reasonable and in a fighting mood when the situation called for it," Wright says.

Fifteen years later, Wright is expanding his political explorations with the help of a \$3,000 stipend from the Lilly Endowment Values & Vocations Fellowship Grant. The funds are helping him examine the values and ideals that motivate candidates to seek public office. "Are skeptical Americans who view politicians as power-hungry correct in their assessments?" Wright asks. "Do people

seek public office for want of power and fame, or because they see politics as the best way in which they can contribute to society? There has been extensive research completed on successful political campaigns as well as how best to influence change, yet there has been no major research accomplished on why candidates run for office."

Wright is one of 103 Oxy students who this year took part in the College's nationally recognized summer research program, which over the last four decades has evolved into a cornerstone of the liberal arts experience. "Occidental views summer research as a vehicle to promote inquiry in unsolved questions and as a framework for the mentorship of future scholars," says Chris Craney, director of the Undergraduate Research Center and professor of chemistry. "In many cases this is the first chance students have to engage themselves fully in the life of scholarship. For this 10-week period, this is all they're doing."

"Undergraduate research is a signature program at Occidental that makes it distinct from other liberal arts colleges," adds Kenyon Chan, vice president for academic affairs and dean of the College. "The power of an undergraduate research experience carries over into whatever our graduates decide to do. It helps them get into graduate school, medical school, law school, or prestigious jobs."

Oxy can trace its research roots back to the 1960s, but it was then mostly a department-focused activity with an emphasis on the sciences. At that, only five to 10 students per department took part, Craney says. Research got a boost in the early 1990s, when the Ford Foundation allocated two awards to the College. The funds sustain an

ABOVE: Rachael Williams '04 and her research mentor, chemistry professor Tetsuo Otsuki. **RIGHT:** Peter Wright '05 attended both the Democratic and Republican conventions this summer, waving the flag for bipartisan study of the political psyche.



endowment that generates \$80,000 annually, while Oxy adds another \$130,000 in operating support every year. In the late 1980s and early 1990s, at least 30 students worked on summer research projects each year—half of them supported by Ford funds. Then in 1998, the College received the National Science Foundation Integration of Research and Education Award, which allotted \$500,000 and allowed 57 students to take part in research over five summers. The College also received major grants from the Howard Hughes Medical Institute: an \$800,000

award in 1996 and a \$900,000 grant in 2000. Roughly a third of each award was earmarked for undergraduate research.

Craney regards the awards as ringing affirmation of the quality of undergraduate research at Oxy, and outside observers agree. In 2001, a consortium of private foundations cited Occidental as one of the country's best colleges for undergraduate research. Of the 46 Oxy students awarded a National Science Fellowship or Rhodes, Fulbright, Goldwater, Beckman, or Marshall scholarship since 1993, each has participated in undergraduate

research. Students also regularly publish their results in professional journals and present their work at scientific conferences. At the Southern California Conference on Undergraduate Research, Oxy students have presented more papers and posters than students from any other college or research university in the region over the past seven years.

While undergraduates conduct research throughout the academic year, summer allows students to give their undivided attention to their areas of interest (“Analyze That,” page 19). This summer's participants received average stipends of \$3,000, as well as support for the cost of room and board. While 56 percent of projects are in the sciences, the rest are in the social sciences, humanities, and the arts.

Wright, a resident of Solvang, will continue his research through the current academic year. He expects to complete a 50-page report that he will present as his senior comprehensive, a requirement for graduation. This summer he attended the Democratic and Republican national conventions, where he had conversations with Arizona Sen. John McCain, South Dakota Sen. Tom Daschle, and Illinois Senate hopeful Barack Obama '83 (page 24). Wright also spent up to 40 hours a week in the field visiting city halls throughout Santa Barbara and Los Angeles counties. He has yet to draw any conclusions about candidate motivations. “It's still a work in progress,” Wright says.

In most cases, undergraduates must wait until graduate school to embark on serious research. Not at Occidental, where some of the nation's brightest students get a head start on their national peers. Oxy science majors, for example, continue their studies at institutions such as Caltech, Harvard, Yale, Princeton, Stanford, and the University of California.

While other liberal arts colleges have caught on to undergraduate research, Oxy is a bellwether for expanding research beyond the sciences. “We've tried to use this model of creative engagement to promote student development across all the disciplines,” Craney says. “A lot of people across the country have come around to recognizing how important this approach is.”

Participation is competitive. Summer research candidates spend three months with a faculty mentor fashioning their research

proposals, which are then reviewed by up to a dozen faculty members from diverse academic fields. “You have to be able to communicate to a broad group of individuals,” Craney says. But, he adds, candidates are equal to the task: “These are students who have strong academic records who initiated relationships with a faculty member.”

Projects are anything but pedestrian. Craney says students are challenged to pursue “authentic scholarship” that will push the boundaries of higher learning. That mindset resonated with Rachael Williams '04, who graduated with a biochemistry degree and is doing graduate studies at Johns Hopkins University. She came to Oxy in 2000 after turning down admission offers from a dozen other institutions. “Oxy was the only one where you wouldn't have to have had those basic sciences to start working in the lab,” Williams says. She wasted no time getting involved, participating in summer research all four years she was in Eagle Rock.

Williams's research with her mentor, chemistry professor Tetsuo Otsuki, involved synthesizing a less complicated derivative of a molecule that could be used as an anti-tumor drug. She presented findings at several conferences, including both the Southern California and National Conferences on Undergraduate Research. “I definitely felt like being in the lab was putting me on the front lines of something,” Williams says. “You're trying to be more creative than the cancer, trying to think one step ahead.”

It didn't matter to Williams that summer research meant forsaking other holiday pastimes. “While my friends went to Europe, I was working away in lab,” she says. “I was invested in the project, really interested in what I was doing, and wanted to see this come full circle.” Since completing her research at Oxy, Williams feels even more strongly about the experience: “On a scale of 1 to 10, it's probably an 11. The research program contributed to the development of my communication and writing skills, and the all-around undergraduate experience.” Otsuki adds that Williams was an aggressive protégé: “I've never had a student like Rachael who seeks for improvement all the time,” he says. “Someday she'll be a wonderful researcher.”

The push for original scholarship can bring some novel efforts. Stefanie Flaxman '05, a philosophy major from Beverly Hills,

titled her project “The Philosophical Functionality of the Tattoo.” “My project is focused on arguing for tattooing as an art form by discriminating between circumstances when tattoos are what I call ‘tattoo art,’ and when they are merely tattoos,” Flaxman says. “Whether the tattoo in question is a work of art lies in the circumstances under which the tattoo came into existence.”

Flaxman researched the use of body markings dating back to 3300 B.C., but her aim was to study tattoos independent of their sociocultural significance. She instead developed her own criteria for the production of tattoo art. Flaxman places great importance on an individual—not pop culture or fads—conjuring up an idea for a tattoo. “I call it the artist-medium condition,” she says. “The person who conceptualizes the content is also the medium on which the tattoo is inscribed.”

Flaxman says she hopes her research removes some of the stigma associated with tattoos, namely that they are superficial body alterations linked with rebellion and the lower class. Saul Traiger, professor of philosophy and director of the Cognitive Science Program, calls Flaxman's project “one of the best that I have been the mentor for in several years.” Adds Flaxman: “I am grateful to have had the opportunity to do research at the undergraduate level. It was a great 10 weeks.”

Not surprisingly, Oxy's research program has become a victim of its own success. About 25 percent of meritorious student research projects in 2003 went unfunded, and growing demand from first- and second-year students for research experience has created an immediate need to expand the program. Together with last fall's opening of the Hameetman Science Center, the College is working to meet that need by aggressively pursuing grant funding. In May, Oxy received a \$1.5 million grant from the Howard Hughes Medical Institute to increase the number of student research summer fellowships and academic-year apprenticeships in the sciences. HHMI support will allow Oxy to increase the number of students participating in undergraduate research by about 25 percent, to more than 130 students per academic year.

“The challenge is to enable more students to participate in research at greater length—or at an earlier stage—in their undergraduate career, and to provide more opportunities for multidisciplinary study

and research that will lead to a greater educational experience for all our students,” Craney says.

With all of its successes, “The program has become inherently unstable,” Craney notes. “It's imperative we raise six- to seven-figure grants on a regular basis. If this program is not self-supporting in 10 years, I will not have done my job.” But all signs point to the right kind of chemistry for future success. Craney will even now and then indulge in a moment of self-satisfaction. “I'm really, really proud of what's become of this program.”



A great deal of original thought went into Stephanie Flaxman '05's examination of “The Philosophical Functionality of the Tattoo.”

Photo by HBO/Reuters



ANALYZE THAT

A full list of research projects, organized by department, can be found on the Undergraduate Research Center Web page at <http://departments.oxy.edu/urc/projects/departments/projects.htm>. A sampling of what students were looking into this summer:

Costume in “Sex and the City”: Outfitting Ideas of Femininity (Rosalba Curiel '05)

- The Crimes of Tobacco (Mario Dominguez '05)
- The Economic and Social Implications of Women's Education in India (Ashley Luth '06)
- Magnetospirillum magnetotacticum Bacteria as a Prey for Bdellovibrio bacteriovorus Bacteria (Anil Sindhurakar '06)
- Meaning and Demeaning: Life Accounts on the Worth of Work (Erin Jo Richey '06)
- Molecular Phylogenetics of the Dark Kangaroo Mouse, Microdipodops megacephalus (Nathan Upham '06)
- Nonprofit Organizations & Values of Self-Empowerment: Helping People Create Their Own Fulfillment in Life (Nathan Baptiste '05)
- Perceived Social Reputations of Popular and Well-Liked Adolescents (Tara McKay '05)
- Prison Expansion, the U.S. Criminal Justice System, and the Danish Alternative (Alessandro Morosin '05)
- Restoration of Native Plants on Mount Fiji: Drought Tolerance and Seedling Establishment of Toyon, a Target Species (Bryden Johnston '06)