

THEN & NOW

A reminder of the pace of change, and of timeless truths, from a 1994 brochure for Dartmouth Medical School's graduate program in molecular and cellular biology (MCB):

"Overall, there is a thriving community of students engaged in graduate education and research, and interaction among students in all the graduate programs is common and encouraged. . . . Dartmouth has a long-standing tradition of close student-faculty ties [that is] heartily endorsed by the MCB Program."



40

Faculty in the MCB Program in 1994 (compared to 69 in 2004-05)

75

MCB students in 1994 (compared to 140 in 2004-05)

Summer SURFers in Dartmouth labs are happy campers

Dr. George O'Toole is as upbeat as any camp counselor. Only instead of leading his "campers" on canoeing, hiking, and swimming expeditions, he's got them pipetting, centrifuging, and peering into microscopes. The "camp," based at Dartmouth, is called the Summer Undergraduate Research Fellowship (SURF).

Labs: O'Toole, a DMS microbiologist, started the program in 2002. He wanted to give undergraduates from other institutions hands-on experience in scientific research so they could see whether they liked it enough to pursue it as a career. While Dartmouth students are welcome to apply to O'Toole's program, most can make their own arrangements to work in DMS or Dartmouth College labs. Students at other institutions often don't have that choice.

Research opportunities were limited at the University of Hawaii, where Nel Venzon, Jr., was a student, so he applied to and was accepted in the competitive SURF program. He got to work with O'Toole and Dr. Christine Toutain, a postdoctoral fellow, studying the biofilm formation of *P. aeruginosa*, an opportunistic pathogen common in people with cystic fibrosis. Venzon loved doing research so much that he's now back at DMS as a graduate student in the molecular and cellular biology program. "Both mentors showed



Pictured here are six of the eight 2003 SURFers: from the top in white, Maaza Mehzun, Gladys Mouton, Ricky Fok, Donald Jolly, Nel Venzon, and Erica Leung.

me the fundamentals of being a scientific researcher and were fun to work with," says Venzon.

Such mentoring relationships "can lead to recommendations and long-lasting sources of information and advice," says another SURFer, Maaza Mehzun, who graduated from Dartmouth College in 2004 and is now a graduate student at Dartmouth's Thayer School of Engineering. She's working with her former SURF mentor, Tillman Gerngross, to engineer bacteria to secrete certain proteins.

The 10-week SURF program—which is funded by the National Science Foundation, the National Leadership Alliance, and Dartmouth—provides students with a stipend plus room, board, and travel expenses. And not only do they get to see what working in a lab is all about, but they also form important friendships with scientists and students; take courses to prepare for the Graduate Record Exam; and participate in career workshops to learn the ins and outs of applying to grad school. "For some of these students who go to small

colleges, they really aren't exposed to any aspect of graduate education," says O'Toole.

In addition, students visit the Marine Biological Laboratory in Woods Hole, Mass., and take part in the Leadership Alliance National Symposium, where they network with and present their work to students, faculty, and graduate program administrators from institutions around the country. "The communication aspect of the training is as important as learning how to do an experiment," says O'Toole. "If you discover new knowledge and you can't communicate it to your peers, it's useless."

O'Toole keeps in touch with former SURF students—there's even a newsletter and a website (<http://www.dartmouth.edu/~surff/details.html>). He is gratified by the fact that most either plan to apply to or are already enrolled in graduate programs.

Secret: And here's a secret. As intense as the research experience is, the SURFers *do* get to do some canoeing, hiking, and swimming, too.

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