

DMS's North stars as a mentor for women

In 1990, nearly half of all women undergraduates arrived at Dartmouth interested in science, but only 12% graduated with a science major. Within less than a decade, that percentage had doubled. The turnaround came about thanks to an initiative called the Women in Science Project (WISP). And key to its success has been the involvement of hundreds of faculty members like Dr. William North, a professor of physiology at DMS.

WISP was cofounded by the late Dr. Karen Wetterhahn, a professor of chemistry, and Dr. Carol Muller, former associate dean at Dartmouth's engineering school. They recognized that women were underrepresented nationally in the sciences and realized that changing that would require intervention at the undergraduate level. WISP's key intervention was recruiting first-year women to work in labs all across campus, exposing them to scientific mentoring before they had committed to a major. The program has been so successful that it has been replicated at colleges across the U.S.

Today, more than 60 women have such an experience each year. And 275 members of the Dartmouth faculty—from DMS, Thayer, and the undergraduate science departments—have had WISP interns since 1990.

But over WISP's 15 years of existence, only one of those 275 faculty members has had at least one trainee every year: DMS physiologist North. In fact, by

doubling up a few years, he has mentored a total of 18 interns. For that contribution to the program's success, he was given a special award this year at the annual Karen Wetterhahn Science Symposium. During the event, WISP interns share the results of their experiences in the form of poster presentations.

It is not only North's constancy that makes him a star of the program. Of his 18 trainees since 1991, only two selected nonscience majors. In 2005, 14 of the 18 responded to a survey conducted by the program; of them, three were in medicine and seven in other health-science fields. And North believes even those who chose other careers "had a good experience in the program, and that it will be with them all their lives."

He has been impressed with "the maturity of the WISP students, their preparation for what is to come, and their ability to walk into a strange laboratory and almost immediately go to work." Funding for WISP permits the interns to be paid a modest stipend—ensuring that students who must work as part of a financial aid package can take part—but the faculty who participate are not reimbursed for their efforts. "The only reward," North says, "is having a young person in the lab with a mind like an open book, ready to learn and to contribute."

Joys: He hopes trainees take away firsthand experience about what it is like to conduct original research—including all of the



Physiologist Bill North guides Grace Snow, a first-year student at Dartmouth, in the fine art of pipetting.

joys of discovery and frustrations of failure. "For the first time, they are able to be part of a credible project," he says, "and it seems to be something that they value a great deal. It also helps them to see their formal course work in an entirely new light."

North's very first student, Michelle Serlin, DC '94, has no doubt about the impact of the experience. When she was interviewed for admission to the University of California at San Francisco (UCSF) Medical School "by a world-renowned cardiologist," she recalls, "he happened to be experimenting with the then-still-fledgling technology of literature searching via the web. He demonstrated for me its wonders by typing in my name and viola—there [was] an impressive-looking article about vasopressin" she'd worked on while she was in North's lab. "I was off to a great start at UCSF."

And Danielle Chang, DC '99, says, "I still remember my WISP internship as one of the most important learning experiences of my time at Dartmouth."

ROGER P. SMITH, PH.D.

Terrorism response training—available anytime, anywhere

As most people walk or drive through their communities, they see houses, businesses, schools, hospitals. Terrorists see targets. They see patterns and connections, causes and effects. An explosion on a chlorine tanker *here* sends a toxic cloud downwind *there*, toward a crowded stadium and an adjacent hospital. The release of a virulent biological weapon *here* spreads disease *there* and *there* and *there*.

Casualties: Such events would lead to mass casualties, and they would thrust senior health-care providers into roles to which they may not be at all accustomed. Such officials would need to collaborate closely with first-responders—EMTs, firefighters, and police officers—and with federal agencies using command structures defined by the National Incident Management System. Indeed, public health officials and medical leaders could find themselves assuming primary leadership roles during mass-casualty incidents, especially following a biological attack.



DMS's Interactive Media Lab is creating virtual terrorism response training.

That's where Dartmouth's Interactive Media Laboratory (IML) comes in. The IML, part of DMS's Department of Community and Family Medicine, produces interactive educational programs. The group recently won a competitive \$3-million grant from the Department of Homeland Security to create the Virtual Medical Incident Management Institute (V-MIMI). How competitive was the grant? "Dartmouth Medical School was one of only 15 grantees selected out of a pool of 267 applications," says Marlene Phillips of Homeland Security's Office of Public Affairs.

V-MIMI, which is still in the early phases of development, will offer health-care leaders "virtual tabletop" simulations and guidance on how to best use resources such as ventilators, hospital beds, and burn and trauma supplies—all with the look and feel of a video game. "The simulations we'll use will look familiar to anyone who's played games like 'SimCity' or 'Civilization,'" says Joshua Nelson, administrative director of the IML.

In addition to teaching health officials how to integrate their operations with formalized command structures, the simulations will require trainees to make critical decisions regarding how best to allocate finite resources when the demand for them outstrips supplies. Then they can watch the consequences of those decisions—good or bad—unfold. "They can see if their decisions overwhelm a particular trauma center, or burn facility, or if they run out of

INVESTIGATOR INSIGHT

In this section, we highlight the human side of biomedical investigation, putting a few questions to a researcher at DMS-DHMC.

Mary Jo Mulligan-Kehoe, Ph.D.

Research Assistant Professor of Surgery (Vascular Section)

Mulligan-Kehoe, a member of the Angiogenesis Research Center, studies how the anti-angiogenic activity of a truncated recombinant plasminogen activator inhibitor-1 protein inhibits tumor growth.

What was your career path in becoming a scientist?

I have a B.S. in biology and chemistry but waited to begin my career until my children were grown, a decision I will never regret. I took several graduate-level biology courses and—despite feeling certain I was enrolled in foreign language courses—I soon realized that molecular biology was for me. I completed my Ph.D. and, at the age of 43, began my postdoctoral training at the National Institutes of Health (NIH). In 1998, I accepted my first academic appointment in the Department of Surgery at Dartmouth.

Why did you decide to go into science?

Science provides me with an opportunity to express my creativity at each level of the investigation process. You conceive of, conceptualize, and design an original project. You watch the data emerge and evolve into a story that answers a significant biological question. The enthusiasm to forge ahead is infectious.



Of what professional accomplishment are you most proud and why?

I am proud that I was motivated and determined to continue my education despite my age. I think it sets an example for other women who choose to stay home with their growing children.

What about you would surprise most people?

My energy level surprises everyone. I move at a

rate that surpasses most people who are 25 years younger than I am. I attribute my high energy to eating healthy foods and to my zest for life and learning. The best part is that it is contagious.

What are your favorite nonwork activities?

Photography, skiing, and kayaking. My digital 35mm camera accompanies me to most social and special work events. Skiing is exhilarating. And I love kayaking after work in the summer (I live on Lake Mascoma).

What was the last book you read?

Ernest Hemingway's *For Whom the Bell Tolls*. I have reread many of the classics, mostly Hemingway, Steinbeck, and F. Scott Fitzgerald, and I have a better appreciation for their life messages than I did 30-plus years ago. I also recommend Leo Buscaglia's *Love* and Tim O'Brien's *In the Lake of the Woods*, which kept me wide awake on a flight from New York to Athens.

What advice would you offer to someone contemplating going into your field?

Be certain that you can handle negative results and negative feedback. You learn as much (if not more) from negative results as you do from an experiment that works perfectly the first time. And reviewers who make negative comments and reject your manuscripts and grant proposals are, for the most part, only trying to help you be better.

What do you admire most in other people?

I admire people who are direct and get straight to the point and those who follow through with what they said they were going to do.

What is the hardest lesson you ever had to learn?

The high energy level and passion related to my work is also prevalent in my personal life. The hardest lesson I have had to learn is that not everyone reciprocates at the same level of intensity. I have developed a philosophy, though: "Recognize and graciously receive the way in which another person chooses to show you that you are important in their life."



ventilators,” says Timothy Elliott, associate media producer for IML. “Obviously, having them be able to learn from their mistakes in a virtual environment is a lot better than having them do it for real.”

The grant for V-MIMI is actually the second one awarded to the IML by the Department of Homeland Security. Three years ago, the agency funded the creation of the Virtual Terrorism Response Academy, a training program for first-responders that is expected to be available for distribution early next year.

Interactive: The IML—whose 13-member team includes an art director, medical illustrators, graphic designers, programmers, and editors—takes terrorism-response training very seriously. But, as Nelson points out, “the fact that this program is interactive and fun to use gives it a tremendous advantage over a video or a lecture. It means people will want to use it.”

Another important advantage of V-MIMI, which is expected to be ready for distribution through Homeland Security by 2008, is that computer-based interactive programs are a convenient and cost-effective way to disseminate training across the country, from major cities to remote towns. “Every community in the nation has medical personnel who may find themselves in the hot seat,” Elliott observes. “And these people are already very busy. With V-MIMI, you get the advantage of training millions of people anytime, anywhere.”

ANN PATTERSON

MEDIA MENTIONS: DMS

Among the people and programs coming in for prominent media coverage in recent months was a DHMC pediatrician. “*The Ring* was one frightening flick,” began a recent *Newsweek* story. “But to **James Sargent**, the scariest part was all the smoking by stars like Naomi Watts. . . . In the next issue of *Pediatrics*, Sargent and his colleagues



report on a survey they conducted of 6,522 kids between 10 and 14,” the article continued. “The researchers calculated that 38 percent who’d tried smoking did so because of their exposure to smoking in movies.” Dozens of other news outlets covered the study, too, from major papers like the *Chicago Daily Herald* and the *Los Angeles Daily News* to international outlets like the *Hindustan Times* and Agence France Presse. “Anytime a director directs someone to light a cigarette,” Sargent told *Forbes*, “anytime an actor lights a cigarette, they should understand that they’re partially responsible for the teen smoking epidemic.”

“Honey, have some smokes. Do you like smokes? I like smokes.” This quote from “an unnamed six-year-old offering pretend cigarettes to a doll” in another DMS study also caught *Newsweek’s* eye—earning a spot on the magazine’s “Perspectives” page. Though neither DMS nor the researchers were named in the item, more complete coverage of the study showed up in papers worldwide. “Preschool children pretending to shop for a Barbie doll’s social evening bought alcohol and cigarettes if their parents smoked or drank wine or beer,” the *Irish Examiner* wrote. “Parents who watched from behind a one-way mirror,” the *Washington Post* noted, “were surprised by their children’s choices, said **Madeline Dalton** of Dartmouth Medical School, a coauthor of the study.” (See page 7 in this issue for more on the study.)



A DMS study about variations in end-of-life care in California drew varying headlines: “LA leads in costly care for the dying” in the *Los Angeles Times*, and “End-of-life care in Sacramento region

praised” in the *Sacramento Bee*. “Providers serving Los Angeles relied much more on inpatient care, aggressive use of intensive care units, and medical specialists and frequent referrals, while care in the Sacramento region was characterized by greater reliance on primary care and parsimonious use of inpatient care, physician visits, and referrals,” said Dr. **John Wennberg**, director of Dartmouth Medical School’s Center for the Evaluative Clinical Sciences,” to the *Bee*.

“Birds do it, bees do it, even human beings do it,” began a recent *Baltimore Sun* piece. “We all follow



the internal clock that keeps us ticking.” To explain how important circadian rhythms are, the *Sun* quoted a DMS expert. “There’s no limit to the role these rhythms play,” said **Jay Dunlap**, chair of genetics at Dartmouth Medical School, who studies circadian rhythms in fungi. “There’s enormously rich biology behind this phenomenon.”

The *Los Angeles Times* reported on an increasingly popular therapy for people with severe mental illness: employment. “Helping people with mental illness find work can be a major step in their



recovery and an important part in helping them develop a healthy psychological life,” said **Deborah Becker**, a research professor at Dartmouth Medical School and a national expert on employment issues with the mentally ill,” to the *Times*. The article continued: “Becker predicts up to a third of the 8 million Americans with a severe mental illness may eventually work alongside the general public. Currently 5% to 10% hold jobs.” (See page 3 in this issue for more on her work.)

Most dialysis patients aren’t getting a relatively low-tech procedure that’s safer, cheaper, and more effective than other more high-tech options, the *Washington Post* reported in December. “Fewer than four in 10 dialysis patients nationwide have a fistula”—a surgically established connection between an artery and a vein, which strengthens the