



## 6. Diversity Issues in Science

### Family Trailblazers

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By Susan Gaidos— First published May 23, 2008

**R**ebecca Conry, who grew up on an Indian reservation, was the first member of her family to go to college and also the first to become a college professor.

Professors like Conry are more numerous than you might think, although their representation has declined as college attendance has risen. Data from the 2006 Survey of Earned Doctorates, an annual census of research doctorate recipients conducted by the National Opinion Research Center at the University of Chicago, show that in 1976, 44 percent of doctorate recipients reported that neither of their parents had an education beyond a high school diploma. By 2006, that number was halved to a still-substantial 22 percent. No one knows how many research doctorate recipients go on to become members of college faculties, but Ohio State University reports that it has 450 or so on a faculty of approximately 3,500 on its campuses.

Now a tenured professor at Colby College in Waterville, Maine, Conry has much in common with other professors who, like her, are family trailblazers on college campuses. Such faculty members often report feeling like outsiders, alienated from the culture and not knowing the rules. And when they could really use help, they tend to go it alone instead. “Looking back, I

never really got the fact that I needed to find a mentor. I just decided I needed to figure it out, and I figured it out on the fly,” Conry says.

### **Finding the Trailhead**

Conry is not Native American, but she grew up on the Yakama Indian reservation in central Washington. She says she always knew she wanted to go to college; she just didn’t know how to make it happen. With no family experience or advice to fall back on, she set out to negotiate the maze of applications and scholarships on her own.

Once she got there, it took her a while to settle on a major. “I went in thinking I would be a doctor, but I didn’t have the confidence that I would get into medical school. So I chose the nursing track.” A defining moment came, she says, when she took her first chemistry course and found herself at the top of the class. “My professor encouraged me to major in chemistry. The rest of the class hated me because I ruined the curve.”

Some “serious soul-searching” was required, but Conry took her professor’s advice and set her sights on a tenure-track academic career. With what she calls “no real understanding of what graduate school was,” she applied to a single institution, the University of Washington, and was accepted.

### **Under the Microscope**

After making it through graduate school, Conry was surprised to find that the maze of requirements and expectations permeating the academic culture didn’t end. On the tenure track, Conry says, she began to feel pressure to “fit in” to the academic environment. She found herself navigating a culture with an unfamiliar set of rules.

“In academics, the big prize is tenure. But if you ask people in any department what it takes to get tenure, they probably can’t tell you. The problem is, it’s a moving target,” she says.

Although teaching and scholarship are generally recognized as “the big two” requirements for tenure, the ability to get along and fit into the academic department is equally important. The hidden, often imperceptible, expectations can catch some first-generation graduates off-guard, Conry says. “You have to be savvy to all the nuances, the position, the place, and the institution’s policies. This can be difficult if you come from a very different culture.”

By the time she got to Colby, Conry had grown more savvy. But she was late, she says, in picking up on some of these messages during her first tenure-track position, at the University of Nevada, Reno. After seven years as an assistant professor, she was denied tenure. “It was a split decision. I was close. I just wasn’t enough above the bar, and, being different, you get looked at under more of a microscope,” she says.

### **Social Challenges**

Although being a first-generation student may present some unique challenges, it need not stand in the way of success. John T. Groves, Hugh Stott Taylor Professor of Chemistry at Princeton University, says he was the first in his family to attend college. Unfamiliar with the school’s orientation process, when it came time to register for classes his father pulled up to 77 Massachusetts Avenue in Cambridge—the front door of the Massachusetts Institute of



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Technology—and dropped him off. Groves found his way to the registration office and on, eventually, to a named chair at Princeton.

In hindsight, Groves says, he recognizes that his sons, who are both Ph.D. chemists, “enjoyed an abundance of opportunities and experiences” that he never had. “They used to visit me at the laboratory, and one of them did a high school project using a mass spectrometer.”

Because many first-generation graduates come from less affluent families, such socioeconomic differences are common, says Rebecca Lamb, assistant professor of plant cellular and molecular biology at Ohio State University in Columbus and a first-generation college grad. “Many of my peers in graduate school had parents who were college professors or professionals. They often talked about places they had been or research opportunities that they had been able to pursue on a volunteer basis.”

The routine socializing and networking in an academic community may also cause feelings of insecurity. “The wine, the beer, the fancier foods—when I got out of undergraduate school, I simply wasn’t familiar with all that. I don’t think anyone went out of their way to make me feel bad. Still, I felt awkward at times and sometimes still do,” Lamb says.

Because many of the social cues are subtle—people discussing art films or books with intellectual vigor, for instance—Lamb says finding a way to fit into a culture that comes with its own set of rules can sometimes be confusing. “I go to artsy movies, too, but sometimes you don’t want to admit that you saw the latest shoot-’em-up escapist film.”

Struggles to fit in at the new workplace are often matched by struggles to fit in back home, as some first-generation scholars find themselves losing the support of their families. Sheila Smith, assistant professor of chemistry at the University of Michigan, Dearborn, says her family encouraged her to go to college and become a high school teacher “because that was a good career for women.”

She entered North Carolina State University on a fellowship that required her to teach in the state’s public schools after graduation. But during her sophomore year, Smith got involved in research and discovered that she loved solving problems that people didn’t have answers for. When it came time to do her student teaching, she was told she would have to give up her research to fulfill the requirement. “I had a manuscript in preparation and wouldn’t have been able to continue with my project. From then on, I wasn’t getting an education degree, I was going to graduate school.”

Because her new career path required years of additional study and obligated her to repay the state loan, Smith says, her decision didn’t go over well with her family. “My parents didn’t go to college, so they expected me to go and instantly get a job making twice as much as my father ever made. Instead, I chose to go to school again. It was a source of great friction between me and my family for a while.”

## Financial Challenges

Even with the emotional support of family and peers, first-generation students who come from a background in which money is tight may continue to grapple with the financial aspects of college long after they are awarded a degree.

Although his parents saved to send him and his sister to college, Marcus Chacon, assistant professor of neurology at the University of Wisconsin, Madison, School of Medicine and Public Health, borrowed nearly \$200,000 to complete medical training. “I’m certainly at the higher end of debt of anyone that I know,” Chacon says, “and to a certain degree it affects what I can do.” He has considered getting some additional training, either through a master’s or Ph.D. program, but financially, he says, it’s just not feasible.

Chacon comes from a large, extended Hispanic-American family and says concerns about money might also include “background issues” that can bring additional stress while attending school or embarking on a new career. “I’ve often wondered if there are some of us who worry about how our parents are doing financially. I’ve seen people in even more extreme situations than myself, who are actually sending money to their parents.”

Chacon, who juggles a medical practice and a faculty position, says the medical school administration has been very supportive. The dean and others, he says, have helped him navigate the system and plan for his career. “It was one of the reasons I chose this medical school, and it has been a very valuable resource.”

## Nurturing Women Scientists

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By Jill U. Adams— First published February 8, 2008

**W**hen the US National Institutes of Health (NIH) surveyed its postdoctoral fellows in 2003, more than 1,300 of them answered questions ranging from marital and family status to their views on the value of a good salary, flexible hours, and other workplace issues. One result was particularly worrying. While women and men both felt equally well trained for a career in academic science, women were less confident about their chances to land a position, much less achieve tenure.

Elisabeth Martinez, who was a postdoc at the time and helped design the above survey, expected preparedness and career outlook to be in alignment. With her task force colleagues, Martinez, now an instructor at the University of Texas Southwestern Medical Center, predicted that women might feel less ready—but they didn’t. “By and large women felt equally well prepared, and yet there was still a bit of a confidence issue,” she said.

This finding bodes poorly for efforts to close the gender gap in representation at higher levels of the academic ladder. And yet, those involved in such efforts—in academia, government, and industry—continue to move forward, casting a wider net for hiring, pushing family-friendly initiatives, and increasing the emphasis on mentoring.



When the Princeton survey team looked beyond the quantitative data, one thing they found was that women were less likely to request extensions of tenure for childbirth than were men.

“It is reasonable to assume that those women who have assessed the situation carefully recognize that they’re going to have more problems than men,” says Phoebe Leboy, the president-elect of the Association of Women in Science (AWIS). “So you can call it lack of confidence or you can call it an accurate perception of the situation.”

One reason women might have grounds for less confidence in their careers than men has to do with the pressures of raising a family, says Leboy. But even putting family issues aside, she says, “Women are going to have a harder time than men succeeding” at every stage of the tenure-track academic career.

Leboy points to data made available by the NIH that showed women lagging behind men in terms of grants per investigator, dollars per grant, success in getting grants renewed, and responsibility for big budget center grants. And because success is so closely tied to funding, particularly in academic health centers, says Leboy, all of these things mean that women are having a harder time achieving tenure than men.

Add all this to what Leboy calls “the escalating rat race in academia” and it paints a bleak picture.

### Looking Past the Numbers

It’s no longer a pipeline issue, says Nancy Nielsen, president-elect of the American Medical Association. She cites the National Academy of Sciences (NAS) report from last year which showed that although women have earned more than half of the Bachelor’s degrees awarded in science and engineering since the year 2000, their representation on university faculties remains woefully low. Indeed, for those with Ph.D.s in engineering and science, four times more men than women hold full-time faculty positions. And minority women with doctorates are less likely than white women, or men of any racial or ethnic group, to be in tenure positions.

It’s a problem of numbers, but as is so often the case, numbers do not tell the whole story. A survey of faculty at Princeton five years ago looked at promotion, compensation, and retention by gender. “The major finding was that we have made progress in attracting and retaining women faculty,” said Joan Girus, a psychology professor who serves as a special assistant to the dean of faculty, a post that was created as a direct recommendation of the survey’s task force. “But, we still found that women were under-represented.”

When the Princeton survey team looked beyond the quantitative data, one thing they found was that women were less likely to request extensions of tenure for childbirth than were men. “Now this is really odd, right?” Girus said. “When we asked people to comment, they said things like: we don’t know if it’s okay to ask for it, we’re afraid we’ll be seen as less serious, we’re afraid we’ll be penalized in the tenure consideration.”

Princeton’s response? Make the extension of the tenure clock automatic. When a tenure-track faculty member, male or female,

brings a new child home, the dean of faculty sends a letter with a new tenure date and a book for the baby, said Girgus.

In addition to the postdoc study run by Martinez, the NIH conducted an extensive survey of its tenure-track and tenured scientists (as well as other staffers) to examine gender issues. In general, “women do not perceive the NIH as a female-friendly environment,” said Joan Schwartz, an Assistant Director in the Office of Intramural Research. “But to tell you the truth we don’t know how exactly to define that because we didn’t ask them what they meant by it.”

Schwartz is presently conducting followup focus groups on the same populations to try to get at specifics. “We need to understand what the issues are so we can work on coming up with solutions,” she said. “That’s the ultimate goal—to develop practical solutions.”

### **Beyond Education and Training**

Obviously, progress has been made. One success story found in the NAS report is the number of women getting Ph.D.s in science and engineering. In biomedical science, some 45 percent of postdoctoral fellows are women. As the problem—women leaving science or their careers stalling—moves to a later juncture on the career path, the solutions must be tailored to a different set of circumstances.

Put a different way, the problem of equal representation of women has moved from the education and training realm to the employment realm. Academic science might look no further than corporate America to find expertise in the practices of hiring, career development, and family-friendly policies.

“Attention to career development and advancement is more part of the culture of industry than it is in academia,” says Gail Cassell, who is vice president of scientific affairs at Eli Lilly and Company and was previously a department chair in microbiology at University of Alabama Schools of Medicine and Dentistry at Birmingham. “Lilly certainly invests a lot of time and resources in nurturing the careers of females in both technical and management positions.”

Employees at Eli Lilly undergo evaluations twice a year and, in addition to being evaluated by their bosses, those in supervisory positions receive performance reviews from peers and the people they manage. With multiple inputs going into an employee’s review, the process is more objective than the opinion of a single person, like one’s boss. This continual feedback “improves the individual, improves the system, and builds a better relationship between employee and employer,” says Cassell.

From an employer’s perspective, evaluations help identify talent and hold onto it. “So you don’t turn around and they’re being courted by one of your competitors. Succession planning is a very important part of human resources here. I’m not so sure that’s the case at universities, particularly with administrative positions.”

Kourtney Davis, senior director of worldwide epidemiology at GlaxoSmith-Kline, can speak to her company’s helping her meet her objectives. Earlier this year, she co-chaired a women in science program that pulled together women across the whole R&D organization to offer networking and mentoring. Davis says it was a great chance to promote opportunities for women. “It was also on my development plan, because I want to work on leadership outside of my



department.” She credits the company’s human resources team for trying to find opportunities for women scientists to increase their leadership skills.

With regard to family-friendly policies, both GlaxoSmithKline and Eli Lilly were recognized by *Working Mother* magazine as two of the top 100 companies in America, based on measures of work force, compensation, child care, leave policies, and the like.

Davis jokes that she’s a poster child for the company’s family-friendly programs. With each of her two children, Davis took advantage of extended leave—time beyond paid maternity leave—and then came back at reduced hours for another three to six months. “I also telecommute one day a week,” she says. “My supervisor has been incredibly supportive.”

The biotech firm Genencor has gone so far as to provide a lactation room and the services of a lactation consultant, says Lisa Zanetto, director of human resources for R&D. Employees at the company also take advantage of flextime schedules, backup day care, and using sick days to take care of sick children.

Zanetto notes that men use family-friendly policies too, like the single dad who works a reduced-hour schedule. The philosophy behind these programs is based on the belief that employees are the company’s greatest asset. “We put programs into place, not just to have a program, but so it will actually benefit employees,” she says. “We do these things because we believe it’s right.”

Eli Lilly’s commitment to diversity has led the company to create a new position, a vice president of diversity. The company also helped fund the NAS report on academic science and has encouraged the academy to do a followup study on women scientists and engineers in industry.

“With our scientific talent pool being what it is today around the globe, you want that diversity to ensure success,” Cassell says. “You have to have it.”

### **Changing Culture**

Industry differs from academia in how achievement is measured. “In industry, as in much of corporate America, rewards are considered for the team, for how the team does,” says Nielsen, which affects not only how science is done, but how scientists are judged.

By contrast, the emphasis in academia is on individual achievement. That works against women, says Nielsen, who adds that for all the talk about partners sharing home and family duties, “the reality is women still do the brunt of that.”

Nielsen, who is senior associate dean for medical education at the University at Buffalo School of Medicine and Biomedical Sciences, illustrates the contrast with a change she’s witnessed in clinical medicine. Thirty years ago obstetrics and gynecology was dominated by men, but now the majority of residents in any OB/GYN program are women, she says. “I think it was because the life of an OB/GYN being on call all the time was very difficult. In the old

days solo practice was the model.” Now group practice is more common and allows doctors in a large group to have a very reasonable call schedule. “They can have a life,” says Nielsen. “And those are issues for my medical students, male and female. They want a reasonable life balance.”

Several universities have launched initiatives to change the culture of academic science and to increase the representation of women on the faculty at the highest ranks. The National Science Foundation has been funding many of these efforts through its ADVANCE program.

One of the first awardees in NSF’s ADVANCE program was the University of Wisconsin at Madison. “The unique thing about these awards is they’re really working on the institution level,” says Jennifer Sheridan, who directs UW-Madison’s Women in Science and Engineering Leadership Institute. “This kind of money has never been put at the top, at a system level before. It’s always been a ‘fix-the-women’ approach.”

One of UW-Madison’s approaches is to educate faculty—those who serve on hiring and tenure committees—about research-based evidence on unconscious bias. Studies have shown that identical resumes are perceived differently depending on the gender of the name at the top. “We use the research as a way in,” says Sheridan, to persuade science faculty that if they’re not paying attention, these biases can emerge. “It takes the blame off men,” she says, “because women do it, too.”

The hiring workshops have been effective at Wisconsin, says Sheridan, who has measured a positive correlation between departmental participation in hiring workshops and more women hired. In addition, responses on climate surveys showed that new hires were more satisfied with the hiring process. “The workshops talk a lot about the interview process and treating candidates respectfully,” she says.

Another NSF grantee is Rensselaer Polytechnic Institute, which has created a program called RAMP-UP (Reforming Advancement Processes through University Professions). Rensselaer President Shirley Ann Jackson said the program is focused on two things: “We are working to improve career progression for women from the junior faculty ranks to the senior ranks, and to expand recruitment of accomplished women at the senior level.”

Startup packages and access to resources will be looked at more carefully. In addition, the institute is expanding its mentoring and coaching services to better guide women faculty through the advancement process.

“It starts at the departmental level, because that is where hiring starts and where the promotion and tenure process occurs,” Jackson said. In addition, the “tone at the top” is important, she says. “It is essential to set clear expectations. I am very focused on the need to ensure that the processes affecting the progression of women faculty—and of all people in their careers here at Rensselaer—are fair and consistent.”

To fill looming gaps in the science, technology, engineering and mathematics (STEM) work force, Jackson says the United States must engage more women and minorities. “Demographics are changing. Women and minorities now constitute one-half to two-thirds of the population, yet they have



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traditionally been underrepresented in the STEM fields. If we are to sustain our capacity for innovation, it must be an all-in proposition. You cannot presume to have tapped the best talent if you do not tap the complete talent pool.”

## Opening Doors for Scientists with Disabilities

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By Laura Bonetta — First published November 16, 2007

Chad Cheetham is pursuing a Ph.D. in neuroscience at the University of Alabama in Birmingham. He is one of six students at his institute to have received a coveted Howard Hughes Medical Institute scholarship for his graduate work. Megan Nix, an electrical engineering graduate of the University of California, Riverside is looking for a full-time position, probably at the Jet Propulsion Laboratory (JPL) where she interned in the spring of 2005. She received first place in a competition from the Institute for Electrical and Electronics Engineers for her project at JPL.

These are typical success stories of students pursuing careers in scientific fields, except that the students happen to have a disability. Cheetham has no left visual cortex, which means he lacks the right visual field and depth perception, while Nix has fibromyalgia, a chronic condition that causes widespread pain in the body and exhaustion.

In many cases, disabilities are not barriers in science and technology fields, where mental capacity and creativity are keys to success. Nonetheless, individuals with disabilities face unique challenges as they transition from high school to college and from college to employment.

They might need software or other technologies to help them follow along in classes, face problems finding adequate living arrangements close to their university, or come up against faculty or employers who are fearful of dealing with a person with a disability. A number of programs and resources are helping to alleviate such challenges.

### The Voice of Experience

Ted Conway did not divulge to prospective employers that he had cerebral palsy. When invited for an in-person interview, he would explain he had a loss of muscle action caused by a lack of oxygen during birth to the part of the brain that controls muscle movement. “I always describe what the disability does rather than calling it by its name,” says Conway. “If people hear cerebral palsy, or

muscular dystrophy, or cancer, they always think the worst.”

A professor and associate dean at Virginia Commonwealth University, Conway has, for the past 21 years, been going up the academic ladder in the fields of mechanical, aerospace, and, more recently, biomedical engineering. He has held jobs in industry, government, academia, and as a consultant. “The only challenges that I have faced have been overcoming other people’s predetermined ideas about what a person with a disability could do,” he says.

An effective way for attitudes to change is for more people to see individuals with disabilities in established positions. “Role models serve as examples, but also act as mentors for people who want to acquire that position,” says Conway. “Someone has to blaze that trail and then the next person who comes along can ask ‘What do I have to do to get there?’”

### **Increasing Numbers**

A handful of programs are trying to increase the numbers of individuals with disabilities in science, technology, engineering and math (STEM) fields. Eleven years ago, the American Association for the Advancement of Science (AAAS), publisher of the journal *Science* and *Science Careers*, established EntryPoint! The program provides internship opportunities to students with disabilities at IBM, Merck & Co., the National Oceanic and Atmospheric Administration (NOAA), the National Institute of Standards and Technology (NIST), Lockheed Martin, CVS, NAVAIR, and NASA.

“A persistent student can get an undergraduate degree. There are barriers, but if you want to do it, you can do it. It may be harder at the graduate level. But it is harder still to get employment in your field,” says EntryPoint! Director Virginia Stern. “The internship is critical. The employer gets to know you and what you can do. And you find out what you want to do.”

To participate in EntryPoint! a student with a disability not only has to be interested in STEM careers but also have a 3.0 or above grade point average. “The organizations we work with want the diversity, but they need competitive students,” says Stern. “We do the talent search.”

Cheetham spent a summer at Merck & Co. where he was in charge of developing an assay to screen compounds related to obesity. “EntryPoint! does not lower expectations. They only take the best,” says Cheetham. “They are advocates for people with disabilities, but they want really qualified students. It’s not ‘Poor me give me an internship because you feel sorry for me.’ It’s ‘Give me an internship because I am really good!’”

Successful work experiences are not only critical to opening career doors; they also change the attitudes of employers who may be wary of hiring individuals with disabilities. “We make sure that the employer has a positive experience,” says Sheryl Burgstahler, director of the Disabilities, Opportunities, Internetworking and Technology (DO-IT) program at the University of



Washington. “If there is a problem we intervene, and most of the time it is not a disability-related issue. That is what we help the employer see.”

DO-IT, a multifaceted program to help people with disabilities succeed in college and the work force, includes an online mentoring network and an internship program that are part of the program entitled Access to Science Technology, Engineering and Mathematics (AccessSTEM). It provides about 50 internship placements a year in the states of Oregon, Washington, Alaska, and Idaho.

### **Enabling Technologies**

Established in 1992, AccessSTEM makes extensive use of computers, assistive technologies, and the Internet to help students with disabilities become more independent in their academic and career activities. “An employer might say ‘How can you have a blind person do programming?’ But it is not hard. You need a standard computer with a refreshable braille display and a braille printer,” explains Burgstahler. “We want to show that with the right technology people with disabilities can succeed.”

Help obtaining those technologies can be a boon to students. “Most assistive technology is overpriced and yet may be a student’s sole means of communication or may give someone the ability to use a computer,” says Chris Schlechty, a senior at the University of Washington studying computer science.

Slechchty has limb girdle muscular dystrophy and uses a power wheelchair to get around. “I need an accessible workstation, which consists of a certain keyboard and mouse set, a height adjustable desk, and an alternate headset or handset for the phone as I cannot lift up the receiver,” he explains.

Slechchty interned at Microsoft through the DO-IT program. After graduating in June 2008, he hoped to obtain employment at Microsoft or one of the other major software companies in the area. “A student should not prematurely label classes or careers as inaccessible. By working with the professors and using a bit of creativity, we were always able to make accommodations that worked, and I have been able to successfully complete all of my courses, including those that seemed to require a fair amount of physical activity,” says Schlechty.

The National Science Foundation has supported DO-IT’s AccessSTEM and other similar programs through its Research in Disabilities Education (RDE) program. Other RDE awards include projects that develop new assistive technologies for people with disabilities. One example, developed by a team at Pennsylvania State University, University Park, is a hand-held submersible audible light sensor that fits in a test tube and converts the light intensity to an audible signal to help blind scientists conduct chemistry experiments.

## **STEM Careers Make Sense**

Individuals with disabilities are generally underrepresented in science and engineering professions. Nevertheless the employment rate for scientists and engineers with disabilities is 83 percent, much better than the estimated 26 percent for the overall US population with disabilities. These statistics suggest that the engineering and science fields provide careers in which individuals with disabilities can find success.

“I actually think those fields are good ones for students with disabilities to get into, because there are just so many opportunities available to help get women, minorities, and now people with disabilities involved, since they are so underrepresented,” says Alison Ecker, a junior at the University of Oregon majoring in comparative literature.

Ecker, who is hard of hearing, completed a DO-IT internship in viticulture, an area outside her field of study. Because of the internship, she would now consider a career in scientific research. “I would highly recommend having an internship, possibly even before deciding a major, as it allows you to get real-life experience, to see if it’s a career that you might actually be interested in,” she says.

Why are STEM careers a good match for individuals with disabilities who have an interest in these fields? “It is a combination of things. There tends to be an increased use of technology in those fields which makes it easier to integrate assistive technologies,” says Burgstahler. “STEM jobs are often not physically demanding jobs. You are using your head, not your muscle.”

## **The Employers’ Perspective**

And if STEM careers make sense for people with disabilities, it also makes sense for employers to hire them. “We are competing with countries that have plenty of individuals with technical expertise. We cannot afford to leave any talented people out of the work force,” says Ted Childs, former vice president of global diversity at IBM.

Like IBM, the Center on Polymer Interfaces and Macromolecular Assemblies, an NSF-sponsored center and a joint effort between Stanford University and IBM Almaden Research Center, has had students with disabilities as summer interns for the past six years.

These internships required making some changes in the buildings, such as adding touch plates to doors, and making other accommodations, including hiring sign language interpreters during meetings and seminars as well as purchasing some special software. “It is a combination of changes in the buildings and working with the students to find out what they need,” says center director Curtis Frank, who had two students with disabilities in his own lab.

But Frank sees many advantages to these internships. “For the other group members, it gives them an example of what can be accomplished. My group already has a good collegial working relationship. But having someone with special needs helps bring the group even closer together,” says Frank. “It requires more folks to pay attention to what is happening in the lab.”

Julie Peddy, program manager at NOAA’s Northwest Fisheries Science Center and EntryPoint! coordinator for NOAA, has also had good experiences



hosting students with disabilities as summer interns. “Some employers are worried about what the cost will be, but for the most part it is not costly to provide some accommodations for a person with a disability,” she says. “The response has been very favorable. A number of interns have been repeat interns and a couple will be picked up as permanent employees.”

### **Changing Attitudes**

Many scientists with a disability, particularly one that is apparent, say it is important to discuss the disability with teachers and prospective employers and advocate for whatever accommodations are needed to succeed. “As a student you have to make sure that you are not excluded from obtaining the same skills, or equivalent skills, as everyone else in the class,” says Imke Durre, a physical scientist at NOAA. “Part of that responsibility falls on the teacher, but it is also up to the student to say, ‘This is how I could do it.’”

After completing her Ph.D. in atmospheric science from the University of Washington, Durre applied for a fellowship from the National Research Council. Durre, who is blind from birth, added a “personal statement” in her application explaining what accommodations she uses. “I wrote ‘This is how I handle graphics. This is how I read print documents,’ and so on,” she explains. “The approach worked for me.”

She landed a postdoctoral position at NOAA’s National Climatic Data Center, which later converted to a staff position in the Climate Analysis Branch. Durre got hooked on climate science as a child, when her mother would read her the newspaper’s weather page. It never occurred to her that this was something she could not do. “I did encounter a teacher in junior high school who did not think I could do higher-level math, but I did not pay much attention,” she says. “I figured she did not know me.”

Incight, a not-for-profit organization based in Portland, Oregon, works with high school and college students with disabilities to help them overcome their own fears and become better advocates for themselves. “When we hear ‘I would like to do this but I don’t think I can do it,’ that is when we get really motivated,” says Incight’s Aubrie Abbott. “We work with them and say ‘Well, actually, we think you can. Let’s figure out the steps you need to get there.’”

Incight works closely with a set of college students from all over the country, providing them with scholarships, mentors, and assistance in finding internships. This year the scholarship program, which started only four years ago, received 800 applications for 70 spots. In addition, Incight helps prepare Oregon high school students for life after graduation, through training and mentoring. “By the time they get to college they are better at being their own advocates,” says Abbott.

Programs like EntryPoint!, DO-IT, Incight, and many others are working to change the face of research by providing tools and advice to talented students who have disabilities. They are also creating networks of students and professionals with disabilities who can serve as role models for others to follow. “Eventually we would like to put ourselves out of business,” laughs Abbott. “In a perfect world you would not need us. We are trying to develop leaders who can remove barriers and pave the way.”

### **Additional Articles Online**

#### **Top Five Challenges for Pregnant Scientists**

[sciencecareers.sciencemag.org/career\\_magazine/previous\\_issues/articles/2006\\_04\\_07/the\\_top\\_five\\_challenges\\_for\\_pregnant\\_scientists/](http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2006_04_07/the_top_five_challenges_for_pregnant_scientists/)

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#### **Affinity Groups for Diversity**

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