Profile of a Field: NEUROSCIENCE

The Pipeline Is Leaking

by Marcia Barinaga

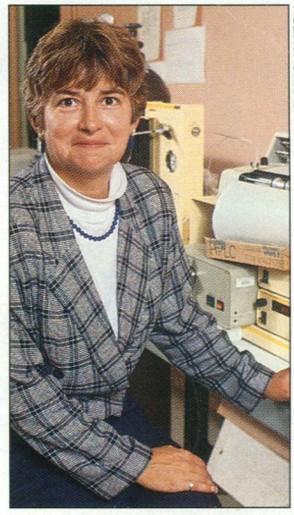
Linda Spear's heart sank when she saw the results of her own survey. Spear, a psychopharmacologist at the State University of New York at Binghamton, polled neuroscience training programs for the Association of Neuroscience Departments and Programs—and she expected the data to bear out her sense that women are making it to the top in the discipline. After all, she reasoned, for more than a decade nearly half of all students in neuroscience graduate programs have been women. Surely those women should by now be moving into positions at the top of the academic pyramid: tenured professorships and membership on powerful committees. "Many of us assumed the problem was solved," Spear says. But her data supported a different notion: that although the pipeline supplying the field of neuroscience starts out with lots of women in it, it is leaking—like a sieve. "We are losing women all along the way," says Spear.

Although roughly 45% of the students entering neuroscience graduate programs for the past decade have been women, last year's survey showed only 38% of Ph.D.s going to women. And that's just the beginning: Only a third of postdocs are women—in spite of the fact that women are more likely to wind up doing second and third postdocs rather than moving into faculty jobs. Then comes the worst news of all, at the faculty level. There, although women fill fully 36% of non-tenure-track jobs, up from 26% in just 5 years, they hold only 18% of the positions on the tenure track.

Why are women in neuroscience leaking out of the pipeline that leads to tenure? According to dozens of female neuroscientists interviewed for this article, the answer lies in a complex and stubborn set of problems that stem largely from two factors: the attitude, held by men—and often internalized by women—that women don't have what it takes to be top achievers, and the double burden of being a female scientist and a wife and mother in a society that expects women, but not men, to put family ahead of career.

Nearly all the women interviewed for this article said these factors operate in different ways during different phases of their careers. Deeply ingrained societal attitudes and expectations come into play early, undermining a woman's chance of seeking out and landing a tenure-track job. For those with enough persistence to get onto the tenure track, the mid-career period is dominated by a severe time crunch—especially for women with young children. Later, when a woman's career is in full flight, sexist attitudes return to center stage, keeping a woman out of the circles of power in her sub-field.

The problem begins early. Most women come to neuroscience, as to other areas of science, feeling the effects of society's view that women aren't as good at quantitative subjects as men. As a result, they have a much higher level of insecurity than their male colleagues. "Women in general have more self-doubt," says developmental neurobiologist Carol Mason, a tenured professor at Columbia College of Physicians and Surgeons. "It's very common for women to say, 'Oh, my God, I can't do this.'"



SUNY AT BINGHAMTON

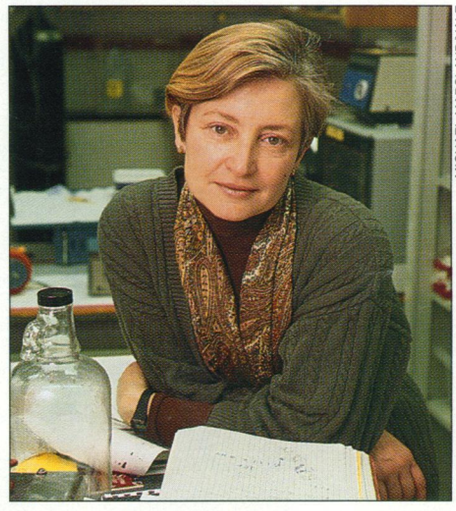
Those limited expectations take their greatest toll when women are completing postdocs and deciding whether to take another postdoc, apply for a tenure-track job, or settle for a non-tenure-track position. "That's the time when your self-confidence faces the biggest challenge," says Yale developmental neurobiologist Martha Constantine-Paton. And that challenge is compounded by the fact that combining the tenure track with family life is not for the faint-of-heart, according to Columbia's Mason, who has a 6-year-old son and a commuting marriage with a husband who works at Yale: "The women who have made it and are trying to do it all are leading crazy lives," she says. "I'm sure that's scary [for young women] to look at."

And if their own insecurity and the logistical difficulty of the task aren't enough to drive women off the fast track, all the signals coming from society are telling them that they should be willing to make sacrifices in their careers. "If a man gets a job in a really good place, he's probably going to take it," says developmental neurobiologist Lynn Landmesser of the University of Connecticut. A woman, on the other hand, is more likely to consider the strain on her relationship if the job involves an inter-city commute or requires her husband to make a move, Landmesser adds. "She might choose to do something that is not as good career-wise" but is less stressful for the relationship. Landmesser knows this scenario personally: She gave up a tenured position at Yale and accepted tenure at the University of Connecticut to live and work in the same town as her husband.

For many women, the price for living with their husbands is foregoing a tenure-track position—what is often referred to in academia as a "real" job. "It's very difficult to find two [tenure-track] positions together unless you're both superstars," said one female neuroscientist who requested anonymity. After searching for several years, she and her husband accepted a tenure-track position for him—and a non-tenure-track slot for her. "I felt like I was being denied what I should have had," she says, "which was a real job. It was depressing."

Women who persist in competing for the tenure track often encounter sexist attitudes in their most overt form and must walk a narrow line to be acceptable, says developmental neurobiologist Mary Beth Hatten of Columbia. A female applicant who seems "too femi-

Challenging women. Linda Spear *(left)* collected data on women in neuroscience; Martha Constantine-Paton thinks a woman's self-confidence faces its "biggest challenge" at the end of the postdoc.



MICHAEL MARSLAND/YALE

nine" risks not being taken seriously, says Hatten. On the other hand, she says, successful, confident women are often considered unpleasantly aggressive, while "a man with those very same qualities is viewed as a go-getter."

A woman who does manage to dodge the obstacles and get onto the tenure track finds herself struggling to set up a lab, keep it running, and turn out enough quality research to

CASE WESTERN RESERVE

Efficiency expert. Story Landis, chairwoman of neuroscience at Case Western Reserve.

justify tenure, just as the demands of child-rearing are peaking. Even if marriage partners share equally in the burden, says developmental neurobiologist Carla Shatz of the University of California, Berkeley, the collective impact is still greater on women. "With every professional [married] woman comes a professional man, automatically. It is extremely rare to have a house husband." But, she adds, "behind almost every successful, senior professional man is an extremely helpful wife who does not necessarily have her own full-time position."

Caught in the squeeze, women often decide to throttle back on their careers to accommodate family. "There are certainly more responsibilities I have because I chose to have two kids," says Cynthia Lance-Jones, a developmental neurobiologist at the University of Pittsburgh. "I do not get as much work done as many of my colleagues; there is no doubt about it." Though Lance-Jones' research on the development of motor neurons has been successful enough to get her tenure, she has deliberately kept her lab small, maintaining only one grant, to give her more time with her husband and children.

For women like Lance-Jones, life resembles a page from the notebook of an industrial-efficiency expert. "Most women end up working a much more defined time period once they have kids," says Story Landis, who had her son while she was an assistant professor at Harvard and is now chairwoman of neuroscience at Case Western Reserve University. While learning to be more efficient has its advantages, she says, the need to plan your day around a 5 o'clock stop at the day-care center takes its toll on such things as the spontaneous discussions with colleagues that can lead to valuable new research insights. A tenure-track mother is constantly aware that "the clock is ticking," says Landis. "She can't sit down and shoot the breeze over a cup of coffee."

Suppose a woman has enough confidence to overcome self-doubt and enough energy to cope with the demands of family and research, and makes it to what should be the peak: heading her own lab as a tenured faculty member and making important contributions to her field. Is she going to get into the inner circle in that field as easily as a male colleague would? Probably not, female neuroscientists say, because at this stage of their careers some of the most exclusionary tendencies kick in.

Perhaps because these senior-level women are the ones who really do constitute a threat to the male establishment, many women neuroscientists believe they are being shut out of the real centers of power: the powerful university committees and the small groups that organize elite meetings. "It is easy for women to share power with men on committees as long as those committees are not powerful," says Patricia Goldman-Rakic, a full professor who studies neuroanatomy and neurophysiology at Yale. "But when it is near the center of power...the committee is likely to be all male."

It's not as if neuroscience doesn't have any models for including women in its power structures, says Goldman-Rakic. The Society for Neuroscience, which she has served as president, not only includes 28% women in its 20,000-strong membership, it also has women well represented as officers and councilors, she says. Large democratic groups like the society generally have the best records for including women in high positions, she adds, but they are not where the crucial power in a scientific field is concentrated. A look at the foundation boards, or the university committees that allocate funds and space, she says, will confirm that "the glass ceiling" for women is still very much intact.

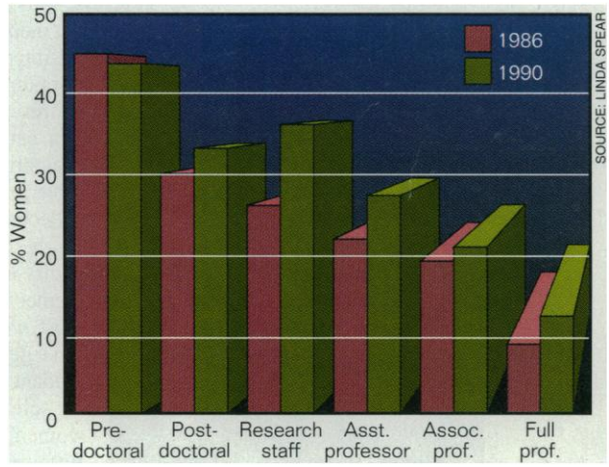
That transparent barrier is maintained, according to Yale's Constantine-Paton, by the fact that men are more comfortable with male colleagues and think of them first when it comes time to put a group together. "It's hard to call it a prejudice," she says. "It's just human nature."

Women have a difficult time altering those habits, says Case Western's Landis, because of the pernicious societal attitudes about what constitutes feminine conduct. Leadership qualities such as boldness and aggressiveness in women are frequently spoken of in negative terms by men—and they are correspondingly hard for women to accept in themselves. "I had an experience recently where someone said to my face that he had no concerns about my effectiveness in negotiating something," says Landis, "because I would certainly be 'brassy' enough to get what I wanted. My first thought was, 'My God, I don't want to seem brassy.' Then I realized it was a backhanded compliment."

Given the barriers to women's achievement in neuroscience, it's not astounding that the pipeline has leaks. One of the problems in dealing with the situation—and one of the frustrations for women in the field—is that despite all the anecdotal evidence, there is little hard data on exactly what is happening to women, and why. "There are no facts here, which is so frustrating," says Susan Hockfield, a neuroanatomist at Yale. "You feel like you're trying to see through mud."

The Society for Neuroscience's committee on the status of women, headed by Columbia's Mary Beth Hatten, hopes to clear up some of the mud. In the next few months the committee will begin a study of the female membership of the society in an attempt to find out why men are being chosen over women for choice jobs in the field and why, in other cases, women make decisions that limit their professional success. The committee will then make recommendations for remedies.

Regardless of what the committee recommends, it is unlikely—and, some women argue, undesirable—that the leaks in the career pipeline will ever be completely patched. Some capable women will continue to step out of the tenure track for personal reasons, says Hockfield, simply because "there are more options for women, and they are taking advantage of them." The ideal goal, says Hatten, is not to make the career paths of women look precisely like those of men, but rather to equalize opportunities for women and extend to more men the freedom women now feel to choose alternative routes. "We don't want to just make women into men, but to broaden the system, to accommodate different styles," she says. "The name of the game is freedom."



Sinking feeling. Women's numbers in neuroscience have improved recently, but women are still underrepresented at the highest levels of academia.