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Old Boys' Lab

Where are the women in America's greatest scientific laboratories?

By Jane Hu



Fifty-two percent of biology Ph.D.s are women, but their representation shrinks to 39 percent at the postdoc level, and only 18 percent at the tenured professor level.

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A few years ago, Jason Sheltzer and Joan Smith were at a dinner party, chatting with a physics graduate student. When she offhandedly mentioned that she was the first female student her adviser had graduated in 20 years, they were appalled. “We thought that that was amazing,” Sheltzer told me. “Twenty years without a single woman!”

So Sheltzer, a biology graduate student, and Smith, a software engineer at Twitter, decided to take a more comprehensive look at the gender balance of American science labs to see if the physics student was part of a wider trend. They looked at 39 biology departments in more than 20 top research institutions in the United States and noted the numbers of male and female trainees (including graduate students and postdoctoral researchers) in each lab. Their results, published today in the *Proceedings of the National Academy of Sciences*, show that male faculty members are significantly less likely than female faculty to bring female trainees into their labs. On average, men's labs had 47 percent female graduate students and 36 percent female postdocs, whereas women's labs had 53 percent female graduate students and 47 percent female postdocs. Even more depressing: If the male professor had won a prestigious award, he was even less likely to take women into his lab. The study found that male postdocs were 90 percent more likely than women to have an adviser with a Nobel laureate. This feeds into a cycle: Because female trainees are boxed out of elite labs, it's less likely that they'll be considered for top academic jobs, where they could start their own labs and, hopefully, reverse the trend.

The finding isolates just one stage in what researchers call “the leaky pipeline problem”: Though women are well-represented in undergraduate science courses, fewer and fewer women appear at each subsequent level of study. Fifty-two percent of biology Ph.D.s are women, but their representation shrinks to 39 percent at the postdoc level, and only 18 percent at the tenured professor level. It's not just biology, either: A 2012 study found that while 50 percent of Ph.D. candidates across the sciences are female, only 21 percent of tenured professors are women.

Even in traditionally female-dominated subfields like child psychology, the pipeline still leaks. One clinical psychologist who studies children told me that while the graduate students in her program are 95 percent female, only one of the seven tenured professors in her department is a woman. And a paleoanthropology graduate student said that while her department has been around for decades, it was only in the last few years that the first woman got tenure. “If you're going to name someone famous in the field, 90 percent of the time, it's a man,” she said.

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While Sheltzer and Smith's study shows that there are fewer women in high-powered academic positions, it doesn't tell us why. And like all survey studies, this one can't tell us anything about the practices and motivations of any individual male professor. "Not everyone who runs a lab with greater than 50 percent men is sexist or discriminating," Sheltzer told me. One explanation proffered by gender essentialists is that women don't like or just aren't good at science and math. In a particularly unempirical *Scientific American* blog post published earlier this year, sociology student Chris Martin claimed that women "have a stronger nurturing tendency than men," speculated that "this might explain why women show more interest in veterinary medicine than human medicine, animals being childlike in their behavior," and asserted that "men, on average, are superior at mathematical reasoning." These claims are scientifically questionable (gender differences could be a result of socialization, not innate traits, among other problems). But they also can't explain why scientific programs experience a steady loss of women at each level. If women are truly uninterested in the sciences, why is the gender balance equal at the undergraduate and even the Ph.D. level, but unequal at higher levels? And why are female trainees less likely to end up in labs led by men?

When I interviewed nine female science students about their own experiences, they spoke to an alternate theory. Three of the students spontaneously disclosed that they or a close friend had been sexually harassed or assaulted by lab-mates or professors. The threat of harassment or assault can directly affect the decisions women make about their academic plans:

Anonymous science blogger Acclimatrix wrote earlier this month that being harassed by a colleague led her to turn down a potentially career-advancing research trip with him because she felt unsafe.

Women in the sciences also report small but constant microaggressions from oblivious male colleagues. A former biology graduate student told me that a male postdoc in her lab said that her ponytail was "too flouncy for cancer research." When she pressed him on what he meant, he smiled and said she didn't belong. The paleoanthropology grad student mentioned that on a research trip, a male professor split up students by gender. "Women are good at sewing, and we want people with precise hands at this site," he said. And a chemistry grad student recounted how after her organic chemistry class received their molecular model kits, her male professor warned the class that women would have to practice more, since men are better at 3-D reasoning. "From what I can tell, there are many people who mean well, but don't understand the perspective of a [woman]," an electrical engineering graduate student told me. "[They] don't know how their actions, although intended as jokes or a harmless comment, affect the recipients and bystanders."