



Debrah Rud, a Harvard doctoral student, dropped off her year-old son, Jack, at day care. (Dina Rudick/Globe Staff)

Women in science weigh lab-vs.-life goals Motherhood tests career aspirations

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By Marcella Bombardieri, Globe Staff | December 27, 2005

CAMBRIDGE -- At the beginning of her Harvard biochemistry class, Debrah Rud proudly told her students that her year-old son was sporting his first haircut. At the end of class one recent afternoon, she warned that if anyone failed to tell her where to return the last homework assignment, "it will just get lost in my apartment and Jack will color on it."

Then, in the elevator with three freshmen, Rud burst out excitedly, "I have to go pick up my little man!" The three younger women exclaimed in adoring unison: "Aw!"

As a graduate student at Harvard University and also a mother, Rud hopes to inspire female undergraduates to pursue both a career in science and a family. The trouble is, she's still figuring out if she herself can have both.

Rud nearly dropped out of her doctorate program after she gave birth, and she still fears that her family would suffer if she devoted herself to an academic research career.

The career choices of young women like Rud will to a great extent determine whether their generation will approach equality with men in university science departments.

In Rud's field, biology, women are 46 percent of the doctorate recipients from the nation's top 50 biology departments. But they make up only 30 percent of assistant professors and 15 percent of full professors. A similar "leaky pipeline" is seen in other sciences, as well. A sizable number of the women who train in the sciences never enter the academic profession -- and the desire for more family time is a major reason.

"I don't know how many tenured female professors there are who have children and are a really big part of their children's lives," said Rud, 27. "I don't know of any who go to soccer games and sometimes pick up their kids from school. I don't need to be there for all of it -- frankly it's a little mind-numbing -- but I want to be there for some of it."

Rud is a little unusual in having given birth to her first child in graduate school, but her soul-searching was echoed by more than two dozen other young female scientists in interviews with the Globe. Many of them are preoccupied with the question of whether to stay in academia at all, or whether to settle for less prestigious instructor positions.

These women, most of them studying in the booming field of life sciences, often describe working in laboratories where women are a robust minority, or even a majority, of graduate students and post-doctoral fellows. Few of them say they have experienced much discrimination. The primary barrier, they say, is the conflict between lab and family under the grueling demands of today's academic culture.

While it was Harvard president Lawrence H. Summers' suggestion last January that women lack the same "intrinsic aptitude" for science as men that drew international attention, Summers also cited "the high-powered job hypothesis" as the biggest obstacle to women's advancement.

"A large part of what is observed," he said, is women in their mid-20s deciding "that they don't want to have a job that they think about 80 hours a week."

Princeton University president Shirley M. Tilghman, a molecular biologist, has spoken about how in her field, women are nearly half of new doctorate recipients, but only a quarter of faculty job applicants at top-tier universities.

"It does not take much imagination to recognize that the drop coincides with prime child-bearing years," Tilghman said in a speech this year at Columbia University.

The typical scientist is 32 by the time he or she earns a doctorate. In most cases in the life sciences, graduates then have to spend several more years as low-paid postdoctoral fellows, or "postdocs," before getting their first academic jobs.

In a 2000 survey of University of California at Berkeley postdocs, most of whom were scientists, 60 percent of married women with children said they were considering leaving academia.

Rud's adviser, James A. DeCaprio, said few of the graduate students and postdocs he has trained, male or female, have gone on to academic research positions. Those who have made it tend to work about 70 hours a week. The rest end up choosing business or law school, the pharmaceutical industry, or teaching in less prestigious positions.

"If you work 80 hours a week, you will be twice as successful" than if you work 40 hours, he said, explaining that more hours translates directly into more experiments, and more discoveries. "They move the science along faster than the competition."

DeCaprio called Rud smart and creative, and said she has "as good a chance as anybody to be extraordinarily successful." What happens will depend mostly on how many hours she is able, or willing, to put in at her bench.

Raised in Pasadena, Calif., by a single mother, Rud always knew she wanted children. Her love for science came later. Today, Rud gushes about the elegance of biological systems -- how clever viruses are, for example. "It's like an art critic discussing a work of art," said her husband, Ryan Rud, an English teacher at English High School in Boston.

Debrah Rud's mentors have mostly been male, but she credits a woman with inspiring her to consider a science career. In college at the University of California at Los Angeles, she signed up for a chemistry class taught by "E.A. Carter," and was taken aback when a stylish woman showed up to teach. She was doubly impressed when she found out Emily Carter was a mother. "I could identify with her, as opposed to the scientist in the lab coat with goggles and exploding beakers," Rud said.

Still, like many of her peers, Rud found herself in graduate school uncertain about what she wanted to do with her life, except that she and her husband wanted to start their family early.

Her pregnancy brought her confusion to the boiling point. She worried about the hours it would take to

succeed -- hours away from her family.

At the same time, she wasn't sure if she loved the repetitive work at the lab bench, altering the salt levels in experiments, for example. And she couldn't imagine taking a job in a pharmaceutical company lab, where she'd have better hours but feel like "a drone."

A six-week maternity leave ballooned into a year-long leave of absence, although she worked as a teaching assistant this fall.

Ultimately, Rud decided to return to school. When she joins her new viral oncology lab in January, she hopes to work weekdays from about 7:30 a.m. to 5:30 p.m.

Her thought now is that she'll probably pursue a career that's mostly teaching, for which she has an obvious gift. But if she doesn't put in 70-hour weeks, she has no idea whether she could still get a tenure-track job at a liberal arts college, or whether her only academic option would be a low-paid instructor position. Maybe, she thinks, she'll go into patent law.

Rud doesn't blame her struggles on Harvard. Still, a growing chorus of scientists says that the responsibility for this lab-vs.-life conflict lies with institutions. Recently, the presidents of nine leading universities, including Harvard and MIT, pledged to do more to make academic careers "compatible with family caregiving responsibilities."

That will mean changing expectations about work hours and offering more support to families. The Ruds could not afford Harvard day care. They get by on their salaries only because Jackson attends the subsidized center for babies of teenage mothers at Ryan's high school.

A Harvard task force on women in science, convened after Summers' comments on women, recommended paid maternity leave and child-care scholarships for doctoral students. It is not yet clear whether Harvard will adopt these recommendations.

A survey of people who received Harvard doctorates between 1997 and 1999 found that three years later, slightly more women than men who studied natural sciences remained in academia. It's a result that cheers Harvard officials, although they can't explain the difference.

Whether or not Rud stays in academia, she sees value in trying to combine science and motherhood.

"On both sides, you can think that what you are doing is not important," she said one day, driving home from day care, just before she had to launch into a round of "Wheels on the Bus" to quell Jackson's fussing.

"On the child side, it's changing diapers and singing songs. You can also think, 'Gee, I'm studying one protein from one virus. What am I doing to improve the world?' " she continued. "That's why even though I'm worried about trying to combine the two, I think it's great that each will give me perspective on the other."

Marcella Bombardieri can be reached at bombardieri@globe.com. ■