CAREERS

Technicians can have duties ranging from washing glassware to doing their own original research.

LAB PERSONNEL

Technically gifted

A good technician can be vital to a successful lab. But how to become one, and how to select the best in a diverse market?

BY HEIDI LEDFORD

When James Damore was looking for a job as a technician, he made it clear from the start that he didn't want to just wash dishes or make reagents. He wanted to do research. He e-mailed a dozen or so professors around the United States to check for openings. "I was direct that I didn't want to do lab chores," he says. "Not many labs had that kind of position."

Damore, fresh from an undergraduate degree in molecular and cellular biology at the University of Illinois at Urbana-Champaign, eventually got a post in Jeff Gore's physics laboratory at the Massachusetts Institute of Technology in Cambridge. He will have spent only about a year there when he heads off to study for a graduate degree in systems biology. Was it

worth it for Gore to hire and train a technician with little previous experience and an aversion to mundane lab duties, who would be sticking around for such a short time? "I have two first-author papers with Jeff in press right now," says Damore. "I think I've been worth it."

In academia and industry, lab technicians are often the unsung heroes of successful research programmes. Many, like Damore, are newly out of college and are using the position to boost their prospects of getting into a good graduate programme. Others have more experience and education. Either way, they are in demand, says Alan Edwards, senior director of science at Kelly Scientific Resources, headquartered in Troy, Michigan. "It's a healthy growth market."

The definition of 'technician' varies depending on whether the position is academic or industrial. In academia, the duties can extend

from ordering supplies to being a fully fledged researcher. In industry, technicians may also have important roles in manufacturing and quality control.

Accordingly, the educational path can vary. An undergraduate with an eye to pursuing a PhD may want to bolster his or her CV with a short stint as a laboratory technician. Although such students might have little practical experience, they can be highly motivated, and are often attracted to positions that will allow them to gain research experience and a slot on the author's list for any resulting publications.

For others, being a technician is itself a career. Many community colleges offer specialized technician training as part of a bachelor's or master's degree programme, especially in fields such as biomanufacturing. In California alone, there are 32 community-college programmes that train technicians for the biotechnology industry, says Travis Blaschek-Miller, director of communications at BayBio, an association of Northern California life-science companies based in South San Francisco. Local companies fund some training programmes, he notes. "US industry has a high demand for quality research technicians," he says.

The US Bureau of Labor Statistics estimates that the market for scientific technicians will grow by 12% between 2008 and 2018. In Europe, the number of technicians and associated professionals grew by 23% between 2000 and 2009, according to Eurostat in Luxembourg, which keeps statistical records for the European Commission (see 'A varied market'). Demand differs according to the field, however. Edwards says that scientists on temporary visas are making up an increasing proportion of the US technician workforce in some disciplines, as the need for qualified labour outstrips the homegrown supply. In the United States, biology and environmental-science technicians are particularly sought after. But the market for chemical technicians is dropping as companies downsize and find cheaper labour overseas.

In fact, many companies are now structuring their businesses to take advantage of distinct talent pools in different regions of the world. China is flush with molecular biologists, for example, so there is increasing interest in ▶

> *"There are many people that could do lab chores. And not many that can do top-flight research."*

MOODBOARD/CORBIS

setting up molecular biology labs there — and hiring biology technicians. Meanwhile, Eastern Europe and Latin America, home to burgeoning clinical-trial markets, are training technicians with that in mind.

But financial pressures have affected the qualities that firms are seeking in technicians. Rather than hiring permanent employees, companies worldwide are increasingly interested in temporary workers who can be easily — and cheaply — let go as needs change. "A contingent workforce is the new paradigm," says Edwards. Many companies also want technicians who can hit the ground running, and that means that they value experience. "To wait six months for somebody to get up to speed is less desirable today" than in the past, says Edwards. Many technician-training programmes place an emphasis on internships in academic and industrial laboratories.

But in academia, principal investigators often place more emphasis on motivation than on experience, leaving room for inexperienced candidates such as Damore, who have a clear interest in a research career. Academic technicians will often be paid less than their industry and government counterparts. In the United States, the average annual salary for biological technicians working in research and development across all sectors — academia, government and industry — was US$44,730 in 2009. Damore earns about $36,000 a year — typical for an academic technician fresh out of college.

So what is the best way to choose a technician?

MIT

> "I have two first-author papers in press. I think I've been worth it."
>
> James Damore

A VARIED MARKET

Mean salaries for US lab technicians across academia, government and industry vary according to the field in which they work (left). In the European Union, the number of people employed as lab technicians and associated professionals across all sectors and fields has grown since 2000 (right).

SOURCES: LEFT: US BUREAU OF LABOR STATISTICS; RIGHT: EUROSTAT
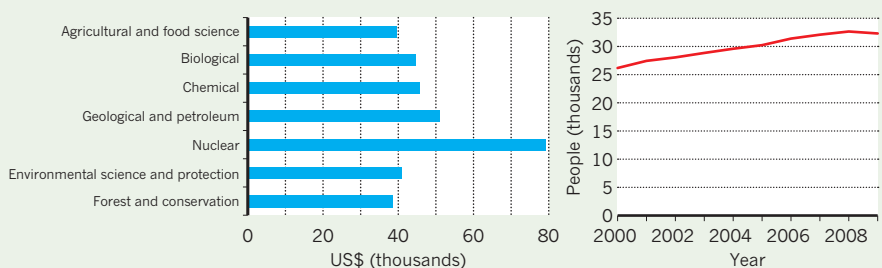
It is a step that some say is among the most important in getting a laboratory up and running, given that it takes time to attract academics to an unproven lab. But getting the right technician can also be a lengthy process. Months before Richard Baxter arrived at Yale University in New Haven, Connecticut, to set up his chemistry lab last year, he had already started advertising for his first technician. "I knew it would take months simply because of the bureaucracy of the hiring process," he says. Still, the time spent is worth it because a technician can get started immediately, helping to set up the lab and getting projects under way. "Several people told me that technicians helped them get the data for their first grants," says Mamta Tahiliani, a biochemist who this year took a post at New York University's Langone Medical Center in New York City.

A new lab-runner can have specific concerns when picking a technician. Baxter worried that while he was off teaching, his recruit would often be alone in the lab, so he asked the referees for each person that he interviewed to describe the applicant's level of independence (see 'How to choose a technician').

A more experienced technician might chafe at taking orders from a young principal investigator, cautions Joanna Chiu, a molecular geneticist at the University of California, Davis. Still, the key factor for many early-career academics is cost. Chiu estimates that it would be almost twice as expensive to hire a technician who has a PhD as one with only an undergraduate degree. Tahiliani agrees, saying that it would be hard to imagine a PhD-holder being satisfied with an academic job that pays only about $35,000, when industry wages are far higher.

Ultimately, Baxter received applications from both new graduates and experienced technicians with advanced degrees. Although he didn't put a premium on young recruits, he hired a technician just out of university, whose lack of experience hasn't been a problem. "She has rapidly learned to culture cells as reliably as, if not more reliably than, me," he says. "And most important, she's organized and is a friendly face in the lab every day."

Damore's boss, meanwhile, considers his technician's salary to be money well spent. "There are many people that could do lab chores," says Gore. "And not many that can do top-flight research." ∎

Heidi Ledford *reports for* Nature *from Cambridge, Massachusetts.*

INTERVIEWING TIPS

How to choose a technician

Questions for applicants

Determining whether a prospective technician is the right fit for the lab can be challenging. Interviewers can test the waters by posing technical questions relevant to the applicant's past work experience. Possible questions include:

● What kind of work would you like to do?
● Would you rather work on one project at a time, or several projects at once?
● Would you be willing to help others with their projects?
● What would you do if something in the lab didn't work?
● Where would you seek help?
● What did and didn't you like about your previous job?
● What kind of supervision did you have?
● With whom did you discuss ideas?
● Did you share equipment with other lab members? How did you prioritize between your work and theirs?
● Talk about a project or situation in your previous job that required initiative. Why did you choose that particular approach?

Questions for referees

Talking to referees can be more revealing than interviewing the candidate, says Joanna Chiu, a molecular geneticist at the University of California, Davis. Mamta Tahiliani, a biochemist at New York University's Langone Medical Center in New York City, agrees. But she cautions that referees tend to be very positive, so it's important to pay close attention to negative comments. A few key questions include:

● Can the applicant work independently?
● What is his or her record-keeping style like?
● Do they have good technical skills?
● Is their work reproducible?
● How do they take criticism?
● Do they understand projects easily?
● Would you rehire them? **H.L.**