

CAREERS

PAID NETWORKING A diplomatic need for scientists **p.491**

APPLIED ABILITIES A short guide to recognizing your skills go.nature.com/2b12gds

NATUREJOBS For the latest career listings and advice www.naturejobs.com

KATE PATTERSON / WASHINGTON POST



Adam Kavalier developed the logo and concept for his company, Undone Chocolate, during his postdoc at Weill Cornell Medical College in New York City.

MOONLIGHTING

Dip your toes

Wayward eyes? You can explore a calling outside academia while still in the lab.

BY AMY MAXMEN

Like a marital affair, testing the waters of another career while working at the bench can feel wayward and illicit. Only later do scientists who have two-timed realize how important their digression was in shaping their career.

For some, fantasies of other careers emerge as passion for their current research fades. “I knew the evolution of this group of snails I was studying was important to some people, but I started to ask myself if it really mattered,” says Stephanie Aktipis, recalling her days as a graduate student at Harvard University in Cambridge, Massachusetts. For others, academia starts to feel impractical. Forty years ago, 55%

of those who gained a biology doctorate in the United States secured a tenure-track position within 6 years; by 2006, that number had dwindled to 15%, and it still seems to be dropping (see *Nature* **472**, 276–279; 2011).

Given that fall, why would a graduate student or postdoc not explore other options? “The culture in academia is to keep your head down and get your work done, but that’s crazy,” says geneticist Ethan Perlstein, who founded and runs a drug-discovery start-up in San Francisco, California. “You should constantly be in the process of discovery. You should think of your career like a project and experiment.”

For those who do branch out, the pay-off can be life-altering. Aktipis interrupted her doctoral work to earn a master’s degree in science

policy, and it eventually led to her position as foreign-affairs officer at the US Department of State. Perlstein built the foundation for his own privately funded lab while doing a postdoc at Princeton University in New Jersey. He had become disenchanted with academia after receiving more than 20 rejection letters for faculty jobs.

Researchers who want to explore different options need not wait until they have finished their PhD or completed a postdoc or contract position (see ‘A delicate path’). Launching a start-up, completing an internship or pursuing another degree are some of the ways in which scientists have tested the waters of a new career. To explore the entrepreneurial world, junior researchers can attend specialized ►

► gatherings, including those listed on meetup.com, in cities with thriving technology sectors such as Boston, London and San Francisco. Social-media platforms, particularly Twitter, can show what's happening in various start-up spheres, and provide a way to contact people with similar aspirations who could weigh in on your proposed project.

Many universities have incubator spaces where scientists can nurture start-ups. Such spaces usually offer free advice from alumni who have become chief executives, venture capitalists and lawyers. A neuroscience postdoc in the northeastern United States (who wished to remain anonymous for fear of repercussions at the university) recently used such an incubator to develop a food-related venture with three partners. Initially, they spent 10–20 hours each week on the start-up. Since incorporating the company last year, they now devote 30 hours a week to it.

The postdoc manages to juggle research and company obligations because all the experimental work is done and some flexibility is allowed in writing up publications. Once the postdoctoral stint is over, the researcher aims to focus exclusively on running the venture — a task that requires both business skills and scientific expertise. “I’m not just selling,” they say. “Fifty per cent of what I do is technical and analytical.”

Internships, too, provide windows into different careers, and the time commitment is more tightly controlled than it is for entrepreneurial ventures. While studying environmental microbiology as a graduate student at Harvard, Meredith Fisher began to think that she might like a science-related career in law, policy or business. She interned first with the Union of Concerned Scientists, an advocacy group in Cambridge, then with a local environmental lawyer and finally with Mass Energy, a non-profit group that promotes green energy.

Fisher created the internships by volunteering for unpaid work. Each one lasted for 2–3 months and took 8–10 hours a week. Encouraged by her experiences, she decided after earning her PhD to pursue a Master's of Business Administration, and this helped her to land her current position as a partner at a venture-capital fund in Boston, Massachusetts. “Even if you can't find internship opportunities near you,” she advises, “so much can be done virtually that you can ask an organization what you might do for them remotely.”

TAKING THE PLUNGE

For some, however, toe-dipping is not as effective as total immersion. That was the route taken by Aktipis. Rather than waiting to complete her PhD on snails, she took a year's leave of absence from Harvard and travelled to the London School of Economics and Political Science to do a master's degree in science policy. The programme delayed her PhD, but she learned that she loves life in the policy world.

EASING THE WAY

A delicate path

Moonlighting requires a time commitment that is likely to be noticed. Those who have taken the plunge say that anyone considering doing likewise should consider discussing it with their principal investigator (PI). At the very least, the PI can try to understand changes in your schedule.

For Rachel Haurwitz, co-founder and chief executive of Caribou, a start-up that is developing the genome-editing tool CRISPR, that discussion turned into a dream come true. When Haurwitz began her PhD at the University of California, Berkeley, she kept quiet about her interests in industry. But her ears pricked up whenever her adviser, Jennifer Doudna, mused about potential commercial applications of technologies developed in the lab. When those musings turned to CRISPR, the subject of Haurwitz's doctoral research, Haurwitz confessed to her interest in biotechnology. Soon the two were brainstorming names for the CRISPR company that they would co-found.

Writing CRISPR-related patent applications taught Haurwitz that she did not enjoy patent law — one career that she had quietly considered in her first year of graduate school. But she loved building the company. During her PhD programme, she took a class taught by venture capitalists, which paid off when she later became chief executive of Caribou.

Students considering jobs outside academia can learn which lab heads will be open to the idea by listening for encouraging comments about former

students and colleagues now working in industry, or about discoveries being made outside the ivory tower. When Meredith Fisher was being interviewed for graduate school, she homed in on mentors who were likely to be supportive by telling every professor whom she spoke to that she did not intend to continue in academia after her PhD. Many senior faculty members indicated their disapproval, and Fisher, now a partner at a venture-capital fund in Boston, Massachusetts, ruled them out.

Some PIs expect a full commitment to lab research, and see themselves purely as mentors in academic science. Certain graduate students and postdocs say that they regret having been frank with their bosses because it cost them grant money or teaching opportunities, and it sometimes caused a personal rift. Discretion may be the best choice. A neuroscience postdoc who is nurturing a food-related start-up never works on the company in the lab, and weekly catch-ups allay any concerns that the PI might have about the progress of the research. In addition, many science departments have policies on outside employment, particularly when the university is supporting a researcher with funds. Before earning money on the side, or becoming a stakeholder in a company, students should learn about these policies from their institution's human-resources staff or office of graduate-student affairs.

Those who decide to have ‘the talk’ with an adviser should be positive about their research and open about their long-term goals, Fisher says. “Rather than say, ‘I don't want to do this,’ you might say that your talents may lie somewhere else,” she advises. Beforehand, consider how an adviser could help you, and try to recognize their needs so that you can pre-empt any concerns. And be prepared for objections. “I was asked why I wanted to waste my time with a PhD when I didn't intend to be a professor,” Fisher recalls. “I would say my PhD offers the training I want in science, and the recognition it provides will be a boon to my future career.” She adds: “Be proud of what you're doing.” **A.M.**



Rachel Haurwitz, co-founder of Caribou.

Prasanna Bhogale took a similar approach by diving into a full-time internship. Towards the end of his PhD in physics at the University of Cologne, Germany, he was feeling unsure about a postdoc. Rather than wait to finish his PhD, he applied for internships that he found on LinkedIn and other sites.

When he got an offer for a paid six-month

stint with a German investment company, he put his research on hold and accepted the post. Although he learned that finance is not his calling — he'll start work at a small analytics company in Cologne this year after completing his degree — he says that the internship transformed his thinking. “For the first time, I learned I had marketable skills,” he says. “This



Aleksis Karme is juggling his PhD in palaeontology with running his own virtual-reality company.

was psychologically hugely important, since academia can be a soul-crushing experience. It was extremely liberating to find out I was appreciated in other contexts.”

SMART WORKING

Adding ten or more hours a week into an already-busy schedule is not easy, so efficiency is vital. Researchers who have successfully managed the extra workload suggest making a schedule for each day. Anything that does not contribute to the goal of the research should be cut. Social media, e-mails, phone calls and other potential time-wasters should be restricted to certain hours.

Even so, scientists who are committed to a side pursuit say that they sacrifice their social life, and sometimes their rest. “I didn’t do much else besides my research and making chocolate,” says Adam Kavalier, a chemist who developed the logo and concept for his company, Undone Chocolate, during his postdoc at Weill Cornell Medical College in New York City. “I didn’t sleep much: I worked weekends and nights. I did not take vacations,” he says. “But I already had a passion for making chocolate, and once I decided to make it a business, that became an obsession.”

Passion also drew Aleksis Karme, a PhD student in palaeontology at the University of Helsinki, to his test project. He co-founded a virtual-reality company, and is now juggling that with his dissertation.

He admits to overworking, but the upside is that he can apply techniques that he creates for his lab work to real-world projects in

construction and engineering. “I can control my own career better this way,” he says. “I’m finding a way around the conveyor belt from a PhD to a postdoc.”

NO REGRETS

Many researchers who eventually left academia for other jobs they’d sampled while at the bench say that they published less than they might have done had they focused on science alone. But that never worried them, because they knew that it would not matter in the long run. Meanwhile, those who stayed in academia say that they do not regret temporarily veering from the path.

As a postdoc, microbiologist Robin Kodner served on the board of a biofuel start-up and consulted for the biofuel industry. The experience assured her that academia was the right choice for her, and she is now a faculty member at Western Washington University in Bellingham. “Venture capitalists would ask me if I could have a product in two years, and I was like, are you joking? Being from academia, I was totally comfortable saying, ‘Well, we don’t really know that yet, and here are the caveats on what we do know,’” she says. “But that’s not how you talk with investors. I wasn’t a good fit. I’m still so glad I did it because I got a taste of what that life was like, and at the same time I didn’t really lose traction on my academic career.”

Junior researchers need to remember that looking elsewhere is not cheating. “My advice is that you have control over your life,” Aktipis says. “Know you can do this. Know it is an option.” ■

Amy Maxmen is a freelance writer in Berkeley, California.

TRADE TALK

Binational liaison



After completing a PhD and postdoc in neuroscience, Sabine Blankenship took a job as the science liaison officer at the German Consulate General in San Francisco.

She describes how

she helps her compatriots to stay up to date with scientific developments across northern California and the Pacific Northwest.

What do you do?

I build professional networks, engaging researchers and learning about scientific developments. Recently, I participated in an industry day at Lawrence Berkeley National Laboratory, California. Before that, I spoke to relevant researchers to learn about the CRISPR–Cas gene-editing technology and wrote a report for German government officials. When German delegations visit, I organize their agendas. I can spend a lot of time at the computer requesting meetings, but our work depends on getting out and getting to know people. The communicative part is something I totally enjoy — that and the ability to keep learning.

How do you apply your training?

Very rarely is it factual knowledge. Anything in life sciences, I can follow in depth, but I’m also responsible for energy and information technology. What I really learned in graduate school was how to research something deeply and structure that information into a useful format. Also, self-management is important. I have to take the initiative and see that my projects keep running.

How did you get the job?

What tipped me to this position was a conference run by the German Academic International Network, which helps German nationals to find jobs back home. I thought it was the wrong conference to go to since I wanted to stay in the United States, but then I found the job ad for the consulate. Friends introduced me to two people who work at consulates and I had coffee and lunch with them. Talking to them made me realize that consulate work is something I could be good at and love. And it proved to be useful for preparing for the job interview. ■

INTERVIEW BY MONYA BAKER

This interview has been edited for length and clarity. See go.nature.com/Zauauki for more.