Four years into her doctoral work in organic chemistry, Sarah Webb began surfing the Internet for potential postdoc positions. Since her first year as an undergraduate, she had always thought she would become a professor at a liberal arts university. That was about to change. “As I read research descriptions, I had this visceral, gut reaction that said, ‘Wow, this is really interesting science, but I don’t want to do it’,” Webb recalls. She then had what she describes as her mid-graduate-school crisis and a psychological meltdown. “If you think like an academic, you have your whole life mapped out and then all of a sudden it was ‘Oh no!’”

Webb, now a freelance science writer based in Brooklyn, New York, approached her dilemma with a methodical plan of action to find what other careers might suit her. To avoid making a wrong move, career advisers encourage young scientists to make a careful analysis of what they like about science, what their strengths are, and how they could transfer those strengths to another career track.

Start thinking about your ‘plan B’ as early as halfway through your doctorate. Even if you think you want to stay in academia, investigate other options. And if you do plan to leave academia, the bench, or even science altogether, you should network and gain experience in the new area before making a switch, career advisers say.

Go with your gut
The academic track is a well-beaten path with a clear set of steps towards a particular destination. It can become comfortable staying on a familiar path, even if your talents and interests no longer match the end goal. “It is easy to get stuck in a rut and end up in the world of someone else’s expectations — advisers, colleagues, family,” says Webb. “Ultimately, you are the one who has to live with the career expectations you have.”
Pay attention to the warning signs, career advisers say. Are you unhappy in the lab because one experiment isn’t working, or because a particular colleague is getting on your nerves, or because of trepidation about big-picture career issues? “Do an honest evaluation and be tough on yourself,” says Keith Micoli, chair of the board of the US National Postdoctoral Association. And get evaluations from both science and non-science friends and colleagues. Ask them what they see as your professional strengths and weaknesses. Some scientists find they need time away from the research environment to answer these questions.

“Ask yourself what your day job would look like if you could choose it,” says Rosana Kapeller, vice-president of research at Renegade Therapeutics in Cambridge, Massachusetts. Do you love working in teams on big projects? Then the pharmaceutical industry might be for you. Do you like reading literature and figuring out where the holes are? Patent law might be for you. Do you love bench work, but hate writing grant applications? You might consider a research associate position.

Micoli says that many young scientists let their fears prevent them from searching out the best career options. It’s common to think that one step off the academic path will earn you the label ‘not serious about research’, says Micoli, now a research instructor at the University of Alabama, Birmingham. But the sooner you bring up other career interests with your adviser the better, he says.

**Taking the blinkers off**

How do you go about making a big career transition when you have only been exposed to academia? Michael Alvarez, director of the Stanford School of Medicine’s career centre, says that every graduate student should commit to going to at least one seminar or activity per week to explore other career opportunities and make more informed career decisions, says Alvarez. Alvarez also suggests working with a professional career counsellor, consulting books, and doing some rough mental exercises to identify career priorities. In one test, he has the scientist draw a bar graph with three bars, one for geography, one for professional opportunity and one for personal life. The person has 100 units of value to ascribe to the different categories across three different points in time, say at ages 25, 35 and 45.

When trying to decide between two options, make the usual list of pros and cons, but set up a list of different points in time, say at ages 25, 35 and 45. Make a connection between a disease and the state of your protein. Marketing is just about delivering a set of facts so that people come to the conclusion you want them to — it was a natural extension for me.

Did you make the right choice? The moment I got my first job and had my own office and sat down at my desk, I knew I had been like a plant in a pot that was too small.

**How is working for a large drug company different from academia?** At 2 p.m. on a Friday, I can’t shut down and go for a beer because an experiment failed. That freedom is gone. But if you take that 18-hour-day work ethic from graduate school and apply it here, even with weekends off, you’ll be really successful. I now work on projects that have budgets greater than the research budget for my old university. But if my kids get sick, my colleagues say: “Go home, we’ll take care of it.”
For example, don’t choose to move into industry solely because of the downsides to academia, such as writing grants or working long hours. “It’s not that the grass is greener on the other side of the fence, but just a different shade of green,” she warns. Instead make choices based on what you like about science. But don’t be fooled into thinking the next academic stage will be easier, says Micoli. If you are stressed and overwhelmed now, moving up is unlikely to solve your problems.

Find something you’re passionate about before fleeing the lab, suggests scientist-turned-artist Tia Vellani. She finished a postdoc in biochemistry at the University of Miami in Florida before deciding to follow her passion for jewellery designing. “It was finally obvious to me that I could never be a good scientist, because I just really didn’t want to be,” she says.

And finally, if you do decide to leave academia, don’t drop a bomb on your adviser by waiting until the last minute to make your plans known. “Leave as many doors open as you can,” advises Micoli. “You never know when you might need a recommendation. Be professional.”

Landing on your feet
Open and early communication with an adviser may help you find ways to gain experience in a new area. When Webb was searching for a new path, she volunteered to do a few hours a week at a local science museum and enrolled in a science-writing course on her campus. Others have gained insights from volunteering to sit on committees for professional organizations such as the local biotechnology board or even non-science committees, just to build business skills and savvy. Kapeller suggests seeking out a 6–8-week summer internship with a local biotech or drug company (positions that are common, but often unadvertised).

Although some advisers may be dead-set against anything that detracts from time at the bench, most will be reasonable about a request to explore other interests, says Micoli. Explain that you would like to take on more teaching duties, offer to help the technology-transfer office with a patent application, or suggest an industry internship that will lead to a collaboration. Webb negotiated with her adviser to have two months away from the lab to work half-time on writing her thesis and half-time building her science journalism portfolio.

Most importantly, find people who are already doing the job you want to do and talk to them about their own transition. See if you can visit them at their workplace or shadow them for a day. If possible, find someone who has made exactly the same transition that you are contemplating.

For those pondering a switch to industry, Kapeller strongly advises doing an academic postdoc before making the jump. Not only will it let you step on to the corporate ladder on a higher rung, she says, but it will confirm your ability to work and publish independently more effectively than the doctorate alone or an industry postdoc would. If you know you will be moving to industry, she suggests choosing a postdoc with a focus on animal models,
BY PETE BERQUIST
Williamsburg, Virginia
Research assistant, National Park Service employee, adjunct professor

You were encouraged by your master’s supervisor to stay on and get a PhD in geology. What made you decide against it?
Overall, graduate school was a great experience. I loved doing research and teaching, but both of these took so much time. One conversation I had with a friend stuck with me. He asked: “Are you working too hard?” And I said: “I don’t know, how do you tell?” His response was telling, he said: “Well, are you having fun?” I felt as though there were other parts of life that I was missing.

So what have you found?
I went to Maine and worked for a non-profit advocacy group in Acadia National Park. I was outside hiking all day, so it was hard to call it a job. I then interned with the National Park Service, teaching at a residential science camp for middle-school students and teachers. I came back to work with my undergraduate adviser as a research assistant doing geologic mapping. He jokes that I’m doing a “post-master’s” instead of a postdoc. And I’ve been a visiting professor, teaching geology at the College of the Atlantic, a very small liberal arts college in Bar Harbor, Maine.

What have you learned from these experiences?
I discovered that I want to pass on and share what I’ve learned with people who may not have had a lot of geology or Earth science. Interacting with a more diverse group of people than in academia, it is satisfying to introduce a geological perspective that they might not get anywhere else.

What advice do you have for others searching out their own career paths?
Be open. There’s a lot of room in there to open your eyes to new things. Every time I’ve done that, I’ve made new contacts.

by KENDALL POWELL

Kendall Powell is a freelance writer based in Broomfield, Colorado.

by STACEY IVANCHUK

Toronto, Ontario, Canada
Training to be a patent agent

Why did you leave academic science for patent work?
Seven years after starting my doctorate, I was struggling to finish it. I had two potential manuscripts, but nothing that was going to point me in the direction of being a professor. I have a lot of friends who are lawyers, familiar with intellectual-property law, and they suggested that maybe I was burnt out on the lab and needed a new perspective. They said, “It’s still science, but coming at it from a different angle.”

What are the pros and cons of working for a law firm?
Suddenly, it’s no longer the flexibility of the lab. You have a deadline, sometimes before the day is over — you must get back to a litigator by 5 p.m. That part takes some getting used to. As for the pro side, I get exposure to so many different inventions in the world of molecular biology.

Pharmacology or imaging that would be applicable in a corporate setting.

Those who have left science suggest making sure that you can live with the prospect of never being a scientist again. Being away from the swift changes in the literature and technologies of specialized fields for even a few years can make returning an uphill battle.

And finally, maybe you could learn from Katy Hinman, the executive director of Georgia Interfaith Power and Light, a non-profit organization in Atlanta that counsels religious communities about environmental stewardship. Her job certainly never appeared in any ‘alternative careers’ books or panels.

But she identified two things that were important to her — conservation and her faith — and followed where they led after her PhD in ecology and evolution from the State University of New York in Stony Brook, even though it meant going to seminary.

“People get into a kind of trap, thinking that if a job doesn’t require a PhD in its description, then they are underemployed,” says Hinman. “If you are doing something you love and are good at it, then you are not underemployed.”

by TIA VELLANI

Tia Vellani’s site
www.artistbynighnt.com
Sarah Webb’s site
www.sarahnewebb.com

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