CAREERS BEYOND THE BENCH

After completing their graduate studies, many scientists have moved away from the bench and found rewarding careers in areas from grant administration to venture capital. While still making use of the training and skills gained during graduate school, these “alternative” careers are a better match for many. By Laura Bonetta

Did You Hear the One about the Former Scientist?

A December 15, 2009, New York Times article with that headline described the plight of a biologist who completed his graduate studies at the University of California, Davis before becoming a stand-up comic. Although comedy is an unusual choice, most Ph.D.-trained researchers will eventually pursue, out of choice or necessity, nonacademic careers, according to a survey by the National Postdoctoral Association. In 2003, among Doctorate degree holders who received their degree four to six years previously, only 19.8 percent were in tenure-track or tenured positions at four-year institutions of higher education.

For Ph.D.-trained scientists who do not end up with faculty positions, there are research opportunities in private or government institutions and industry. But increasingly career choices take scientists not just away from academia but away from the bench altogether—into areas like science writing and editing, public relations, science policy, scientific program or grant management, science teaching, patent law, and venture capital.

So how do you move beyond the bench?

Find What You Are Good At…

Both as a graduate student and postdoc, Maryrose Franko took every opportunity to volunteer in science education which made her realize that “I have good people skills that I really enjoy using,” she says. “I also discovered that, although I enjoyed doing benchwork, I always looked forward to going into a school or giving a talk or judging a science fair.”

While conducting her postdoctoral research at the US National Institutes of Health (NIH) in Bethesda, Maryland, she helped with the Student-Teacher Internship Program run jointly by NIH and the Howard Hughes Medical Institute (HHMI). Through the program she became acquainted with some of the administrative staff at HHMI. “When a position opened up at HHMI, they suggested I apply,” she recalls. “I thought that this would be a great way to utilize my people and scientific skills. And this was a wonderful opportunity to make the best out of all my strengths.”

She joined HHMI in the spring of 1995 as a program officer and has since moved through the ranks to senior officer in charge of several fellowship programs for graduate students and postdocs. “I spend a lot of time talking to people in the science education community, giving presentations, talking with my grantees, reading reports, and preparing reports,” says Franko. To be successful at this job, she adds, “it takes a collaborative person and one who doesn’t need or want credit for his or her ideas.”

Both private and government-run funding agencies typically hire grant administrators and program officers with graduate degrees. “My job is to evaluate science education needs. I also give feedback to graduate student applicants and make sure that the research they are proposing is fundable by our mechanisms. I assign applications to review based on research area. I organize conferences by grantees and assign talks to different sessions based on research field,” says Franko. “I could not perform any of these tasks without a Ph.D.”

…And Follow That Path

Andrea Stith joined HHMI straight from graduate school. “I met an HHMI investigator during a symposium when I was a biophysics Ph.D. student at the University of Virginia,” she recalls. “He helped me set up an informational interview at HHMI, which several months later resulted in my applying for a position administering grant programs.”

But after a few years at HHMI, Stith discovered that her true passion was science policy. She is currently at Shanghai Jiao Tong University doing research on higher education and research policy. “I anticipate returning to the United States in the next year.”

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or so and would like to continue pursuing international policy issues, possibly taking a position in the government or in the nonprofit sector,” she says.

Stith got her foot in the science policy door through a fellowship at the National Science Foundation’s Office of Legislative and Public Affairs through AAAS’ Science and Technology Policy Fellow program—but her path is far from typical. “I have met so many people who have come to science policy in unique and personal ways and at very different points in their careers. Some have science backgrounds, others don’t;” she says. “I can’t identify a single best way to get here.”

Create Your Own Opportunities

Although a few training programs offer students exposure to different careers—such as science policy and science writing—some people have had to create their own paths.

When Chris Gunter was doing her postdoc in the lab of geneticist Huntington Willard, then executive editor of the journal Human Molecular Genetics, she approached him with the idea of a fellowship to help him with editorial tasks at the journal. She agreed and she ended up working half time on her postdoctoral research and half time on the journal. And when it came time to apply for a job she decided to pursue a career as a journal editor. “You have to be honest with yourself. Not everyone is going to be an academic PI,” says Gunter. “And I was really interested in editing. When I read a paper I would ask myself ‘Why is this paper in that journal?’”

At first her postdoc adviser was surprised by her choice. “He cautioned me that, if I were to step off the research track, that would be an irreversible decision,” she recalls. “But once he realized that is what I wanted to do, he was very supportive.”

Gunter eventually took a post at the journal Nature where she spent seven years as the editor responsible for manuscripts in the field of genetics. Those experiences and the wide network of contacts she established then led to a job offer as director of research affairs at the HudsonAlpha Institute for Biotechnology in Huntsville, Alabama. “My job is to make things happen,” says Gunter, who is responsible for everything from helping to write grants, to recruiting scientists and students, to writing and editing papers, to publicizing institute discoveries, to organizing seminars and conferences, and fund raising. “You have to be able to multitask because many things have to move forward each day,” she says. “And you have to be able to communicate to many different audiences.”

Mark Toone went to a similar position straight from the bench. After completing a two-year post as associate scientist at the Paterson Institute for Cancer Research in Manchester, UK, Toone started looking for a permanent position in either academic research or research administration. At that time, Tony Pawson had taken over as director of research at the prestigious Samuel Lunenfeld Research Institute in Toronto, Canada, and was looking for someone to help run the institute. Having completed his graduate studies in Toronto, Toone jumped at the chance.

He was hired by Pawson and then obtained a Master’s of Health Administration at the University of Toronto while working full time. That led to his current appointment as director of research operations, where his role is to “oversee laboratory operations, safety, and a range of institutional services, as well as new laboratory design and construction.”

Toone first got turned on to the value of research administration during his postdoc at the Imperial Cancer Research Fund (ICRF; currently Cancer Research UK) in London, UK. “At the time ICRF had split its administrative duties between two highly respected scientific leaders, Dr. Paul Nurse, who looked after the scientific side of things, and Dr. John Tooze, who looked after the operations side,” says Toone. “After talking with John Tooze, I began to consider a change in career plans.”

Toone says that graduate school programs should put more emphasis on preparing students for different careers. “My advice for a grad student or postdoc would be to enhance your research qualifications either through work experience or formal management, project management, computing, intellectual property—whatever interests you—so that you can more easily step into stimulating roles outside of research,” he says. “My position allows me to participate in great science without having to pipette anything.”

Marrying Different Fields

Many careers paths marry science with a different field. Mikhail G. Shapiro’s background was originally in business. After he co-founded Cyberkinetics Neurotechnology Systems, he became fascinated by scientific research. “It seemed so cool to actually come up with the innovation,” he says. As a result, he completed a Ph.D. in biological engineering at the Massachusetts Institute of Technology. He then joined Third Rock Ventures, a venture capital firm based in Boston, where he works at the intersection of business and science. “We look for innovation in science or medicine and bring that innovation to patients by providing the capital and expertise of building a company,” says Shapiro, who is a senior associate at Third Rock. “It is extremely rewarding.”

He spends a lot of time talking with thought leaders in different fields, either at conferences or while visiting research institutes and biotech firms. “At our firm we don’t just sit at the computer looking at business plans of companies,” he explains. “We are more proactive. We will explore a scientific area and talk to experts in that area to understand what is possible. And then we might start up a company.” His advice for people who would like to explore this path is to “spend some time in a startup company, even if you are just working at a bench,” he says. “At the end of the day, if you are interested in making an impact on society and patients, this is a great way to do it.” continued »
Another career that marries science with the business side of science is patent law. James Dilmore went from bench to patent law straight after obtaining his Ph.D. in 2000 from the University of Pittsburgh. “The wife of one of my Ph.D. committee members was working at a law firm as a scientific adviser and was about to leave the position, so she introduced me to her boss,” he recalls.

But leaving the bench was not an easy decision. “I was very well versed in several areas of cellular neuroscience. I had spent a lot of time and effort developing those skills and knowledge. I recognized that I would not be using the experimental techniques directly and that I might not be working on my specific areas of expertise,” he recalls. “It was a bit unnerving, honestly.”

Nonetheless, he took the plunge. He first joined the Pittsburgh-based international law firm Reed Smith as scientific adviser. After passing the patent bar exam in April 2002, Dilmore became a patent agent at the firm. His responsibilities include drafting and filing patent applications on behalf of several clients, as well as continuing to assist attorneys involved in litigation cases.

He cannot, however, do things like file appeals from the US Patent and Trademark Office (USPTO) to courts, negotiate licenses to use patented technology, or sue those who breach contracts or infringe patents—tasks that require a law degree. So, Dilmore decided to take the plunge once again and last year started attending law school while working full time. “My kids got to the ages, 12 and 15, where I had somewhat more free time. It also made sense in terms of career progression for me to obtain a law degree,” says Dilmore.

Taking a Risk

Dilmore did not have any experience in law before joining his firm, but his career choice turned out to be a good fit. His advice for science Ph.D.s considering a law career is to look at some patent applications that are freely downloadable from USPTO website. Also, most universities offer courses in intellectual property that any student can take. Some universities also have intellectual property or technology transfer offices, where students may volunteer or intern.

Like Dilmore, Teresa Calzonetti had not done anything other than research before becoming an instructor at Frederick Community College—a two-year college in Maryland where she teaches an introductory biology course to about 40 students. “I always thought that I would like teaching, but I had no teaching experience,” she says.

She called the head of the biology department at the college and applied for a part-time teaching position, which she obtained three weeks before classes started. “I did not sleep for those three weeks,” she says. Having taught the class for two years now, Calzonetti has gotten over that initial anxiety and is getting ready to increase her teaching load. “I would like to teach more sessions and new classes,” she says. “In addition to enjoying teaching science, the best thing about the job is that I am getting to learn all the stuff again. Its like I am taking a course and every semester I am interested in it all over again.”

Making a transition from research can be a scary proposition and one that many students and postdocs will have to make without any support and guidance from their research mentors. “My advice to graduate students and postdocs is to network and know a lot of different people,” says Gunter. “And do what appeals to you. Don’t just listen to what people say you should do, especially if they think you will be a failure unless you stay in research.”

Regardless of the chosen path, says HHMI’s Franko, the most important thing is “to make sure you are running to a job you really think you will enjoy and be good at—and not running away from a job that you are not enjoying or at which you are not currently successful. You should do as much research as possible through informational interviews, volunteering, and internships, to make sure that you do not need to be doing bench research to be challenged and satisfied in your job.”

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