Get that next job—how to break out of the postdoc trap

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ABSTRACT In the past, the majority of graduate students and postdoctoral researchers were focused on careers in academia. Times have changed, and many are now considering careers outside of academia and are aware of numerous exciting career opportunities in industry and nonprofit and government organizations. However, although it is easy to find resources about academic careers, the same cannot be said for positions outside the ivory tower. Here, on the basis of my experience as a scientist and as someone who works with graduate students and postdocs to help them enter nonacademic career paths, I provide a perspective on career development and how to find a job.

INTRODUCTION

When I was a graduate student in the United Kingdom and a postdoctoral researcher in Mexico and then at the University of California, Irvine, no one really talked about careers outside the ivory tower. In addition, being on a temporary visa in the United States and Mexico made it almost impossible to think about a career in industry, or so I thought. However, in 2009, I first heard about a new program to introduce PhD scientists to industry careers and train them in business and management skills. I joined the very first class of the Postdoctoral Professional Masters in Bioscience Management program at the Keck Graduate Institute (Claremont, CA). A few years later, I became the director for the program. I've always had a passion for postdoc issues, and after relocating to the Pacific Northwest in summer 2014, I partnered with SciPhD.com, which provides training for scientists who want to transition from academia to nonacademic careers. As Vice President for Marketing and Product Development, I get to work closely with graduate students and postdocs, as well as with institutions to develop content to train people in transferable skills, resume and interview preparation, and different career options.

My experience has given me the opportunity to discuss careers with many graduate students and postdoctoral researchers. These discussions have made it clear that there is a lack of knowledge about careers outside of academia and the critical skills necessary to be competitive. In addition, many graduate students and postdoctoral researchers are unprepared for their next career move and often feel trapped in their current positions without a clear plan to move forward. Some institutions offer career development programs, with events including the introduction of career options outside of academia, skills development training, networking opportunities, and resume and interview preparation. An interesting recent article contains many resources with specific focus on careers in science, technology, engineering, and mathematics (Callier et al., 2015), and it gives me hope to see the list of resources continuously growing. Nonetheless, many graduate students and postdoctoral researchers are unaware of these kinds of resources or do not take advantage of them. I hope this article will be an inspiration for such individuals to take action and make informed decisions for the challenges to come. If you are a graduate student or postdoctoral researcher considering the next step in your career, I urge you to make time to think about your personal and career goals and start preparing for your next career transition.

Even though fewer PhD scientists are getting tenure track employment or staying in academic research, the 2013 Survey of Earned Doctorates (National Science Foundation, National Center for Science and Engineering Statistics, 2013) shows that 65% of U.S. doctoral graduates in the life sciences take postdoctoral positions immediately after graduation. The question, however, is whether additional research training is an advantage or even necessary for careers outside of academia. I think that postdoctoral training serves to develop independent research and leadership skills while taking advantage of academic freedom and the opportunity to publish. These objectives are important for all research positions, in academia and industry alike. So, do nonresearch positions require that...
kind of additional training, or does graduate school simply not pro-
vide sufficient information on job opportunities outside of aca-
demia? In my opinion, the latter is often the case.

**FIND YOUR RIGHT FIT**

Although there certainly is an increased awareness about careers outside of academia, I have found that there is still a lack of under-
standing of the breadth of possibilities for PhD scientists in the life science industry and beyond (Figure 1). Although academia provides some information and resources for career choices in nonprofit and government organizations, many institutions do not have the capacity to provide information about careers in the life science industry. Without knowing the options, however, how can one assess which career path to pursue based on interest, skills, and personality?

Actually, I think that this is the easy part. Scientists are used to finding data and analyzing them. There are books (Robbins-Roth, 2005; Freedman, 2009) and websites (SciPhD.com, www.vitae.ac.uk, versatilephd.com, and cheekyscientist.com, to name just a few) that offer information. The National Postdoctoral Association has a number of career planning resources on their website (www.nationalpostdoc.org). Increasingly, professional organizations such as the American Society for Cell Biology are providing relevant materials and organizing events. Most likely, your institution offers workshops, seminars, panels, and other programs, often for free. In addition to merely providing information, these opportunities help to develop personal contacts through informational interviews and networking, which are invaluable in identifying and getting a job.

The challenge, however, is to make use of these resources. I am always surprised to hear complaints about badly attended work-
shops or people signing up for events and then not showing up. Why is that? I remember the times when I stood in the lab, preparing samples, running gels, writing papers, and putting together present-
tations. The last thing I wanted to do was to jeopardize my results by inter-
rupting my workflow. Sometimes the experiment would take longer than expected and I didn’t want to walk in late to a presentation.

Figure 1: Career opportunities for scientists. Numerous opportunities for scientists exist inside and outside of academia. Although most scientists have heard of all of these, traditionally, academia does not provide much information on careers outside their own realm. However, with the limited number of tenure track positions available and the struggles to get grant funding, it is important that graduate students and postdocs have a complete picture of what options they have and how to get there.

Searching for job openings and applying for them is time-
consuming, but there are certain things one can do to improve efficiency:

- **Set aside a specific time to focus on the task.** I suggest dedicating at least half a day each Saturday or Sunday to apply for posi-
tions. Having a set, uninterrupted time helps to focus on resume development, cover letter preparation, and even finding and developing connections concerning those opportunities.
- **Use social networking tools to find and apply for jobs.** A 2014 survey from Careerbuilder.com found that, on average, 43% of employers use social media to research job candidates, and an additional 12% are planning to start soon. LinkedIn (www.linkedin.com) is the main professional networking site, but there are also industry-specific and topic-specific sites that can be used to brand yourself as the perfect job candidate. Some com-
panies allow you to apply with your LinkedIn profile, eliminating the necessity to submit a targeted resume. In addition to show-
casing accomplishments, awards, and recommendations, sites like LinkedIn also allow you to network with other professionals, stay in touch with past colleagues, and publish recommenda-
tions and present ideas and ambitions. All these can help signifi-
cantly in the job search.
- **Be social.** This relates to the preceding point but goes further. In my opinion, the term “networking” is extremely overused and has the sound of a forceful, organized method. I believe that it should be about establishing relationships, not a one-time event, and it must go both ways. When talking to industry professionals, it is surprising how many got their job not by applying through the official channels but by knowing the “right” people and being in the right place at the right time. This is not something one can plan for or set up. It is achieved by communicating with people, hence being social. You never know who sits next to you in a seminar or on the bus or looks at your poster. I’m not sug-
gesting that you talk to every stranger, but use your judgment to evaluate situations and, when suitable, break out of your shell.

**ADJUST YOUR PRIORITIES**

As scientists, we are driven by our curiosity. Results of experiments provide answers, both positive and negative. Those answers lead to more questions waiting to be an-
swered. When I talk to graduate students and postdocs, I often ask whether they have applied for positions. Often I hear that they’re planning on doing so after finishing one more experiment, trying one more method, writing one more paper, or even taking one more course to add skills. It’s in our nature to always seek more information or skills in order to feel confident when pre-
senting our data or our abilities. Many put off even the simple first step of preparing a professional resume. As a result, when the time comes to apply, they are pressed for time, and both the resume and cover letter are incomplete or even inappropriate. This leads to unsuccessful job applications.
Every social interaction is an opportunity to network. If you’re not sure how to “be social,” just search for online resources on how to network virtually or in person.

**DEVELOP A GOOD RESUME**

If you’re in the market for a new job, it is absolutely essential that you have an appropriate, targeted resume. I would hope that you know this even if you haven’t actually converted your CV to a resume or updated the one you used the last time. The biggest mistake I see jobseekers make is to spend too little time on developing a good resume template. I specifically say template because every job you apply for needs its own targeted resume. On average, recruiters spend 6 seconds per resume, so information and details from a job description need to be built into the resume if you want to have any chance of getting through the Application Tracking System or catch the attention of a recruiter. As job seekers, we don’t usually know what particular component will grab their attention, so the resume needs to have it all. Your resume needs to be visually attractive, easy to read, well structured, and explain why you’re the best fit for that specific position. It takes time to do this, which is why I believe so strongly that it is essential to dedicate focused time to the process. Once you have developed a good template and understand the process, it will get easier. There seem to be even more online resources about writing a good resume than about networking, some of which can be found on the websites mentioned earlier.

**ANALYZE, DEVELOP, AND MARKET YOUR COMPETENCIES**

In many interactions with industry professionals or when reading articles, I’ve heard complaints from hiring companies about academic scientists not being prepared for jobs outside of academia. This can mean different things—for example, not having the right or complete skill set necessary, not having the right personality, being overconfident or not having enough confidence, not being prepared for a job interview and therefore leaving a poor impression, and many more. I’ve heard them all.

It is essential to understand what you can and what you can’t do and to be honest with yourself. If you’re unsure what skills are needed or desired for different types of jobs, informational interviews can be an invaluable resource. You can gather a tremendous amount of firsthand information and ask specific questions all while establishing relationships (remember: “being social”). I also find it very useful to read and analyze job descriptions carefully. Some companies go to great length to describe job functions and requirements, and it helps to get a clear understanding of exactly how you might fit in. If, after reading and comparing a number of job descriptions and talking to people, you feel like you’re lacking certain skills, it’s important to tackle the problem. There are many options available to gain missing skills. It may be in the form of a specific degree (a number of master’s programs are offered to gain skills in certain areas pertaining to industry careers), project management or regulatory affairs courses and certifications, or financial...

**FIGURE 2: Selection of options to develop skills.** New programs and degrees are constantly being added. Formal and informal opportunities exist to add and practice skills. Professional credentials include the Project Management Professional certification from the Project Management Institute (www.pmi.org), the Regulatory Affairs Certification from the Regulatory Affairs Professionals Society (www.raps.org), and the Six Sigma Certification (various institutions and universities). Internships are a great way to learn skills and in addition build connections in companies. Different master’s degrees offered by a variety of institutions serve pharmaceutical and biotechnology needs; some have specialized focus, whereas others, like the Postdoctoral Professional Masters from Keck Graduate Institute, teach a variety of different industry aspects. Master of Business Administration programs teach managerial skills, and some allow a specialization in certain areas. Many institutions offer certifications. For most of them, there is no accreditation needed and therefore no industry standard of what’s included, making it difficult for employers to assess their value, but they can be useful to gain knowledge. Workshops, seminars, and boot camps are organized by institutions with a breadth of topics and are often free to attend.
courses or even joining a consulting club or taking communication lessons. The list is long, and a selection is shown in Figure 2. It is essential, however, that your resume and cover letter (and online profile) reflect the existence and quality of those added skills. For instance, if you claim to have website design skills, you should have a professional, personal website. If you claim project management skills, you need to have projects listed and provide details on their success (or failure, if you have a good explanation). Don’t claim skills that you can’t back up with an example. This is even more important for interviews.

CONCLUSION
The aforementioned tips are just some I have gathered over the years by working with various groups of postdocs and graduate students, as well as with industry professionals. I purposefully kept them general to acknowledge that different situations apply to each individual, given family situations, visa requirements, or other personal circumstances. However, no matter if you are a soon-to-be PhD or a postdoc, you should consider all options for your future career and take action. If it’s not something that I have discussed, then find the right next step for you.

You should never accept the status quo or give up reaching for higher goals. That would be quite the opposite from the commitment and drive that got you into science in the first place.

REFERENCES
Callier V, Greenbaum S, Vanderford NL (2015). The traditional training of PhDs threatens the technology transfer and entrepreneurship pipeline while innovative programs provide unique recovery opportunities. Technol Transfer Entrepreneurship 2, 51–58.