The quest for an ecological postdoc



Kristine Hopfensperger[1*], Candan Soykan[2], and Todd Lookingbill[3]
[1]Colgate University, Hamilton, NY 13346
[*](khopfensperger@mail.colgate.edu)
[2]Biology Department, San Diego State University, San Diego, CA 92182
[3]University of Mayrland Center for Environmental Science, Appalachian Laboratory, Frostburg, MD 21532

Advertisements for faculty positions increasingly require, or imply a strong preference for, candidates who have held one or more postdoctoral positions (Russo 2004). Unfortunately, the number of available postdoctoral fellowships is not keeping up with the yearly increase in the number of graduating PhD students (COSEPUP 2000). As a result, more and more postdoc positions in ecology are creatively defined, soft-money positions, often requiring some level of self-funding. The lack of standard application methods, guidelines, or support can be worrying for students trying to squeeze a job search in between writing dissertation chapters. Here, we describe the experiences of three recent PhD graduates in preparing for, applying to, and obtaining postdoctoral positions. We emphasize the preparation and persistence needed to reach this increasingly important rung on the ecological career ladder.

When do I begin the search process? Our own experiences, and those of our peers, suggest that PhD students who began thinking about their future goals well before their final year in graduate school were the most successful in obtaining quality postdocs. They shared their goals with their dissertation committees, as a way of cross-checking expectations and developing a realistic timeline for degree completion. Stories of students who graduated with no job waiting for them are all too common. Less common, but perhaps equally frightening, are the tales of students who started jobs before completing their degrees and ended up with terminal AbDs (All but Dissertation). An early inventory of career and personal goals leads to success in graduate school, which provides the foundation for a successful postdoc search (Bourne and Freidberg 2006).

What types of opportunities are out there? Ecological postdoctoral positions can range from teaching at a small liberal arts school, to conducting research at a large university, to working for a government institution. The process of applying for each of these varies greatly (WebTable 1). In general, we have found that the complexity of the application process is positively correlated with the degree of autonomy a postdoc will experience on the job. With advertised positions, principal investigators expect their postdocs to work on the project funding the position, whereas fellowship and institutional positions that require a proposal as part of the application process offer the postdoc greater independence. Due to the burgeoning pool of applicants and the dearth of available positions, many students find they must create a position for themselves, which can offer even greater flexibility, but demands considerable forethought and planning.

How does one create a postdoc position? One of us (KH) began the process of creating a postdoc position 14 months prior to her expected graduation date. She began by researching the past and current work of potential postdoc mentors with whom she was interested in working, including the work of their current students and postdocs. Initially, she sent each potential mentor a personalized email with new research ideas and explained how she thought her ideas would fit into their lab's research mission. She also inquired about funding opportunities and offered to investigate opportunities to write proposals with them for new funds. She maintained continuous communication with potential mentors throughout the final year of her PhD, to nurture these budding relationships, and was rewarded for her efforts when one grew into a successful postdoc collaboration. The process itself was also extremely valuable, as it allowed KH to meet and discuss her research with several prominent ecologists.

How do I make the most of professional relationships? As with any job search, it is often not what you know, but who you know that really matters. The importance of personal relationships cannot be overemphasized. In this regard, the dissertation committee can be a student's greatest asset. Two of us found postdoc positions directly through a committee member, and all of us relied on committee members for letters of reference. Interacting with committee members outside of official meetings, as well as taking a class or seminar with each member, are great ways to strengthen these relationships, which will, in turn, improve committee member reference letters. Then, when applying for jobs, references should be carefully matched to the position announcement.

Social branches that extend beyond the committee are another effective means of fostering future postdoc opportunities. Employers frequently interview candidates recommended by someone they trust, and are more likely to hire someone they already know and respect. Active participation at professional meetings can lead to greater name recognition. Meeting participation also offers an opportunity to assess the general level of interest in your

research, while providing exposure to new and exciting lines of inquiry. We have obtained several job leads and two offers through contacts made at annual meetings.

What about the CV? The curriculum vitae (CV) is the one element common to all postdoc applications, but it should be tailored for each application by highlighting activities that are especially relevant to the position. Publications are critically important; having at least one first-authored publication demonstrates the ability to successfully complete the scientific process. While there may be a natural inclination to augment the publication record with a laundry list of works "in prep", we have learned that this strategy has the potential to backfire. Unfinished manuscripts can work against an applicant because they are not usually counted as publications, and represent a detailed account of incomplete work (ie obligations that will interfere with one's postdoctoral research). Numerous resources exist to help craft an effective CV, both online and through university career development programs (WebTable 1).

Finally, our search for postdoc positions has taught us the importance of humility, persistence, and flexibility. Many more doors were shut on us than were opened and we have found the pursuit of the "ideal" postdoc to be unpredictable, with many twists and turns. Through it all, we attempted to remain prepared and open to new experiences, as one opportunity has led to another. We hope we have provided useful guidance for others embarking on what should be an exciting quest.

Faculty response

Amber E Budden
National Postdoctoral Association, Washington, DC 20005
(aebudden@nceas.ucsb.edu)

As highlighted by Hopfensperger *et al.*, postdoctoral positions are becoming increasingly competitive. In 2004, the National Science Foundation recorded the number of ecology postdoctoral appointees as 170 (0.9% of all biology postdocs), while the number of graduate students was 2185 (3.3% of biology students; NSF 2006). Given such competition for few opportunities, the benefits of early searching, developing a quality CV, and increased networking, as suggested above, will certainly include increased access to opportunities. However, the concept of "creatively defined, soft-money positions" requiring "some level of self-funding" is worrisome; graduate students ought not to feel compelled to take a less-than-ideal position.

Equally important to recognizing your individual goals and needs as a junior scientist is to understand how these needs might be met by the postdoctoral opportunities you are evaluating. Selecting a research program that excites you, a lab in which you are comfortable, and one that increases your skill set are certainly valuable, and are probably the most important factors to consider when choosing your host institution (Bourne and Friedberg 2006). However, there are many different types of postdoctoral positions available, and thus a clear understanding of the differences between positions and institutions will foster a more positive postdoctoral experience.

A recent survey of postdoctoral scholars found that the degree of similarity between an individual's expectations and outcomes contributes to the overall level of satisfaction (Davis 2005). Structural oversight and availability of formal training opportunities (such as seminars on proposal writing, project management, and teaching) accounted for much of the reported variation in satisfaction. Contented postdocs were also those who published more, highlighting the potential impact of the greater institutional environment on one's research career. Yet determining what type of oversight and training is available at a host institution can be more difficult.

An increasing number of US institutions, serious about their research enterprises, maintain either an office dedicated to postdoctoral affairs (Postdoctoral Office, PDO) or a postdoctoral scholars association (PDA). These agencies provide specific information on practices within their host institution. A comprehensive database of institutional policies is also provided by the National Postdoctoral Association (NPA; www.nationalpostdoc.org). NPA graduate materials, such as *Finding the perfect postdoc for you*, *Going in with your eyes open*, and *Considerations for selecting a postdoc*, are valuable resources for prospective postdocs. While this additional research may seem a burden, it has been suggested that the best postdoctoral experience is one in which "the rules of the game are well defined and spelled out in advance" (Davis 2005). By determining up front the degree or nature of oversight at an institution, the magnitude of differences between expectations and outcomes can be minimized, promoting a positive and productive postdoctoral experience.

References

Bourne PE and Friedberg I. 2006. Ten simple rules for selecting a postdoctoral position. *PLoS Comput Biol* **2**: e121. http://dx.doi.org/10.1371/journal.pcbi.0020121. Viewed 21 Jan 2007.

COSEPUP (Committee on Science, Engineering, and Public Policy). 2000. Washington, DC: National Academy Press.

Davis G. 2005. Doctors without orders. *Am Sci* **93**. http://postdoc.sigmaxi.org/results/. Viewed 21 Jan 2007.

NSF (National Science Foundation). 2006. Graduate students and postdoctorates in science and engineering: fall 2004. Arlington, VA: National Science Foundation. Division of Science Resources Statistics, NSF 06-325.

Russo E. 2004. Fast track: charting the course of your postdoc. *Nature* **431**: 1126–27.