Easing the Transition

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Resources help postdocs move successfully into faculty positions.

Scott Dixon took on a short-term project the fall after finishing his PhD at the University of Toronto, and that brief postdoctoral fellowship, or "postdoc," reinvigorated his scientific curiosity and led him to seek a larger postdoctoral project, which he began the following year.

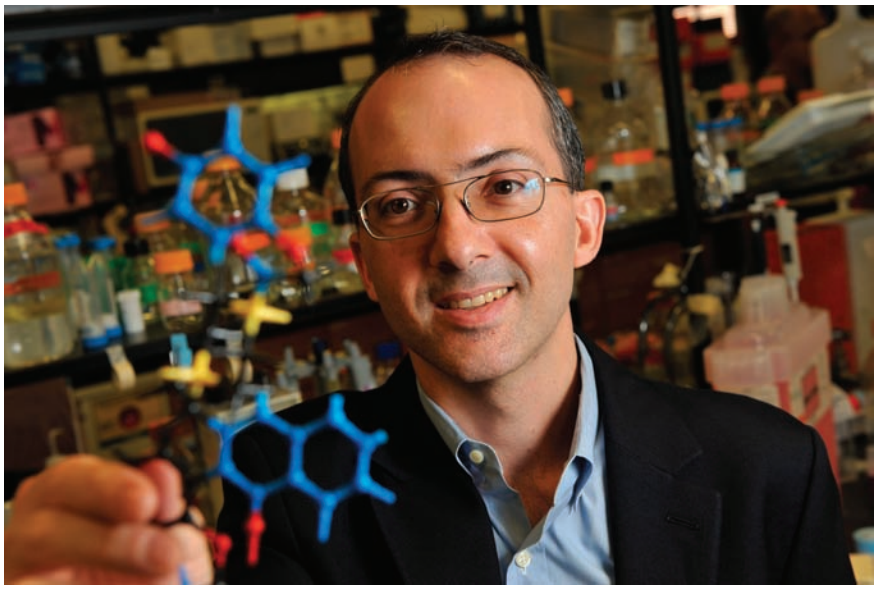
Jason Vogel accepted a postdoc position at the University of Florida because he sought to develop a specific skill set he knew he could learn from his new adviser. But the work was tangential to his doctoral research, and he realized it wasn't making him a strong job candidate, so he found another postdoc that positioned him for a more successful job hunt.

Today, Dixon is in his third year as a postdoctoral researcher in Brent Stockwell's lab at Columbia University, studying mechanisms of cell death using chemical and biological approaches. Vogel is an assistant professor of forest ecosystem science at Texas A&M University in College Station. They now sit on opposite sides of a major professional transition, each an example of how fundamental the postdoc period has become.

At one time, a postdoc fellowship allowed promising young scholars a brief interlude of pure research between graduate school and a professorship. Now, especially in biology and biomedical research, a postdoc is practically a prerequisite for getting a faculty job. Scholars like Vogel and Dixon, with more than one postdoc to their credit, are hardly exceptional. Especially in a tight economy, the temporary and low-paying nature of a postdoc makes these positions easier to come by than tenure-track assistant professor jobs. Historically, however, postdocs have emerged into the job market lacking many of the leadership and managerial skills necessary to be successful faculty members.

Mentoring postdocs

Dixon's situation is different from most. Columbia now has an office of postdoctoral affairs, founded in 2006, which regularly hosts events for postdocs; Dixon says he once went to a well-attended session on writing budgets. More important, he is a member of the first generation of postdocs to be mentored by an adviser who actually received some managerial training before becoming an independent researcher. Stockwell, though clearly still in the minority in that regard, is an alumnus of the first lab leadership training conference cosponsored by the Burroughs Wellcome Fund (BWF) and the Howard Hughes Medical Institute (HHMI) in



A lab leadership and management conference helped Brent Stockwell, pictured in his lab at Columbia University, where he is now an associate professor of biology and chemistry, think about a vision for the type of lab he wanted to run. Photograph: Courtesy of Columbia Technology Ventures.

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2002 for some of the early-career investigators the organizations had funded. In retrospect, Stockwell says, the program filled a gap in his knowledge.

"The goal is to do research, so I was doing that," he recalls of his early days as a Whitehead fellow at the Massachusetts Institute of Technology before he attended the management course. But many other things surfaced that Stockwell didn't immediately know how to prioritize. "I didn't really have any idea what I was supposed to be doing all the time," he says. He had no experience selecting and mentoring students, hiring and supervising staff, managing a large budget, or creating a comfortable group dynamic.

Stockwell points to two aspects of the workshop that have stuck with him. A time-management session taught him to classify tasks using an "urgent/nonurgent" and "important/not important" rubric. Then he heard suggestions for how to keep steadily working on the "nonurgent, important," work rather than constantly struggling with a long list of "urgent, important" responsibilities.

"After that, I really made a concerted effort to be careful about my time and manage it in that way," Stockwell says. It was also during the workshop that he first stopped to consider a vision for his lab: What does it look like? What kind of people are there? How do I interact with them? That session prompted him to consider not just the research he hoped to accomplish but also the style of lab he wanted to run.

Stockwell now shares what he's learned with Dixon and other postdocs who come to work with him. He was invited back to the BWF/HHMI workshop in 2005 to offer insights from his experiences. That second program differed from the first because in addition to researchers on the cusp of independence, attendees included those in positions to bring such programming to their own campuses.

Widening the audience

Maryrose Franko, a senior program officer at HHMI, says the second iteration of the workshop focused on dissemination beyond the BWF- and HHMI-funded researchers because those agencies fund a small, select group. "We realized that BW[F] and HHMI awardees are probably not those who need this [information] the most," she said. The awardees are already among the elite cadre of those at their professional level, and they have access to resources from the philanthropies that are not available to others. Franko and her colleagues felt that this type of professional development should be moved into the programming of professional societies and universities, so they selected representatives from interested institutions and brought them to the session with the understanding that they would create something of their own.

One participant was Joan Lakoski, an administrator at the University of Pittsburgh who already had become interested in improving the postdoc experience. She founded that school's Office of Academic Career Development. "We still have a model, and it's around the world, that we're very well trained at the bench but we're not necessarily well trained in the broad skills that will make us successful in the managing of individuals," she says. Lakoski, who holds many administrative positions at Pitt, including associate vice chancellor for the Office of Academic Career Development for the six health sciences schools, says two reports put the issue of postdoc career development on the table: The first, from the Association of American Universities, came out in 1998 and focused on postdoctoral education; then, in 2000, the National Academy of Sciences published *Enhancing the Postdoctoral Experience for Scientists and Engineers: A Guide for Postdoctoral Scholars, Advisers, Institutions, Funding Organizations, and Disciplinary Societies.*

Lakoski says these publications got senior scientists thinking about how to better prepare postdocs for careers as scientific leaders. Enriqueta Bond, president emeritus of BWF, was among the proponents of the lab leadership workshops whose tenets eventually were consolidated into a book, *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty,* which is still available in print and online editions at no cost. "Research has become much more complex, and it's a global enterprise now," Bond says. "Basically, each one of these investigators is running a little business."

Lakoski turned what she learned into an annual scientific management and leadership course for early-stage faculty that's now in its fifth year. The American Society of Plant Biologists (ASPB) will host its second workshop for late postdocs and new faculty in August 2011 in Minneapolis. ASPB Executive Director Crispin Taylor, who attended the 2005 meeting with Lakoski, says the ASPB held its first program in Chicago in 2007. It resulted in a payback to the society beyond a simple investment in the future generation of plant biologists: He says engaging the cohort of young scientists helped establish their interest in ASPB. "They've reiterated how much they appreciate that the workshop was done, and they've stayed as members of the society."

Senior faculty also appreciate offering additional training to postdocs. Taylor says when he approached top-level players in the ASPB about participating in the session, all were happy to do so. Taylor is hopeful the 2011 workshop will attract a sizable number of participants, in part because the National Science Foundation (NSF) now has a requirement that principal investigators who have postdocs on their grants provide professional development for those postdocs.

Growing institutional support

Firm figures on the number of postdocs in the country are hard to find. The NSF's *Science and Engineering Indicators: 2010* report uses 2005 data; it shows self-reporting postdocs at academic institutions that

Fieldwork near Healy, Alaska, made up a large part of Jason Vogel's first postdoc. Photograph: Amy Mayer.

year totaled about 43,400. Additional postdocs may work at government agencies, for-profit businesses, nonprofits, or in nontraditional educational settings. The report suggests an accounting of those possibilities could bring the total count of postdocs in the United States (citizens, permanent residents, and temporary visa holders) to 89,300. Titles, benefits, salaries, and responsibilities of postdocs vary widely. In 2003, the National Postdoctoral Association was founded to help advocate for postdocs, whose role in the scientific enterprise many consider critical.

Last fall, the University of California system became the largest statewide institution with unionized postdocs. A contract ratified in August establishes a pay scale and delineates postdoc benefits. It also specifically mentions a postdoc's option to create an individual development plan. That's something Victoria McGovern, a senior program officer at BWF, says can play a key role in a postdoc's transition. She says postdocs should have a structured conversation with their advisers early on and put down on paper their career development goals. The Federation of American Societies for Experimental Biology led the field in offering a template for such a plan in 2002.

Like Pitt and Columbia, other universities now have offices dedicated to the postdoc experience. Dixon says the postdoc office and Stockwell's leadership have enhanced his postdoc, though he still relies primarily on his own intuitive sense of what he needs to learn and work on. "In Brent's lab here I've been involved in reviewing papers, for example, which is something I'd never done before." But although he plans to attend additional sessions offered by the postdoc office, he's not convinced it's possible to learn everything you need to know for your first faculty job. "Most of these things," he says, "you're not going to learn until you do it."

For more information visit these sites:

http://nationalpostdoc.org/

www.hhmi.org/resources/labmanagement/

http://my.aspb.org/?page= Meetings_Annual

www.faseb.org/portals/0/pdfs/opa/idp.pdf

Vogel agrees. He worked proactively as a postdoc to accumulate the types of experiences that were outside of the research he was being paid to do. For example, though he initially felt some reluctance from his adviser when he spent time writing grants, he looked at the bigger picture and knew that having grant funding would make him a more attractive job candidate. "Seeing the people who were successful in applying for jobs, they usually had some funding of their own," he says.

Now he understands the perspective of a faculty member who has hired a postdoc and expects that postdoc to work full time and exclusively on the project that's paying the salary. Yet postdocs are at a career stage when they are still being mentored, and part of a faculty member's responsibility is to support the postdoc on the path to being an independent investigator. Ultimately, two grants Vogel wrote were funded, and he believes they helped him land his job.

Funding for research

Michelle Mack also had a seminal postdoc experience. She is of Stockwell's generation; she had neither a postdoctoral affairs office nor a lab leadership course. During her postdoc, she did have the unique experience of helping her adviser set up a brand new lab, something she regards now as "the most important thing I ever did." When writing grant budgets, she specifically asked more senior colleagues to share their successful grants and she tried to emulate them. She also sought and found administrative help. "At the University of Alaska there was someone in the director's office at the Institute of Arctic Biology who helped me with it."

In her first year on the faculty job market, Mack landed two interviews. She believes the $800,000 in grant funding she raised made her a stronger candidate the next year. "Every place I applied interviewed me," she says, and the grant funding was the only significant difference in her applications.

Now an associate professor of ecosystem ecology at the University of

University of Florida associate professor of ecosystem ecology Michelle Mack watches as postdoc Heather Alexander twists a tree corer into a dead larch tree in a burned forest near Cherskiy, Republic of Sakha, Russia. Photograph: Sergei Davydov, courtesy of Heather Alexander.

Florida, Mack says job candidates today impress her with multiple postdocs, and as many as 10 publications, and they even apply from tenure-track positions. "Most of the candidates that we've looked at recently, I look at them and I think, oh my god, how did I ever get a job?" she says. "I think the bar is much higher."

That, too, helps inspire postdocs to seek out workshops or other career development programs that may set them apart. The tight economy has made it more difficult to find jobs, leading to longer stints as postdocs and even stiffer competition than a few years ago. And after all that, they don't want to stumble into a miserable new faculty situation, Franko says. Whether they're looking for postdocs or new faculty positions, job candidates increasingly want to know which schools "take care of their own."

The happy beginning for Vogel is that Texas A&M puts "a lot of effort into trying to make new faculty feel at home and comfortable with the system." The transition to faculty, he says, is "an incredibly fun but stressful time."

McGovern returns to two points she feels both postdocs and faculty ought to remember: (1) It's in the best interest of the scientific community for postdocs and junior faculty to succeed; and (2) at least in biomedical fields, "a scientist is more likely to get funded as a postdoc than at any other time in his or her career." It's a last chance to apply for designated pots of money before becoming one of the huge cadre of people applying for the same funds. "The funding pool for postdocs is a kinder and gentler place than the RO1 pool," she says, referring to the Research Project Grant Program at the National Institutes of Health.

Through it all, the essential role of a postdoc position—to give a scholar dedicated time for research without other academic responsibilities—remains a unique step on the career path. "From a research perspective, it's a great time," Vogel says. "It's the last time in your life that you're going to be able to really focus on science."

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