

THE POSTDOC EXPERIENCE

TAKING A LONG TERM VIEW

Faced with a shaky economy and an increasingly competitive job market, postdocs are being forced to take a long-term view of their positions. That means ensuring that it provides not only additional research training and publications, but also the necessary connections and experience that will be needed for a future career. It also means staying flexible and frequently reevaluating career plans. **By Laura Bonetta.**



“You have to be proactive and get the experience you will need for your future career.”

Postdoc supervisors and their postdocs don't always see eye to eye when it comes to the factors that contribute to a successful postdoc experience, according to the annual surveys conducted by *Science Careers*, which alternate each year between asking the opinions of postdoc supervisors and the postdocs themselves.

The 3,500 or so current and former postdocs who responded to this year's survey put having a supervisor with adequate funding and opportunities for networking at the top of their list. On the other hand, the postdoc supervisors who responded to last year's survey ranked these factors as 6th and 7th most important, respectively. Supervisors put mentoring, direction and vision, and communication at the top of their list.

“I believe these differences are in large part due to different perspectives,” says **Cathee Johnson Phillips**, executive director of the National Postdoctoral Association (NPA). Whereas postdoc supervisors may view the postdoc years mainly as an opportunity to obtain further training and improve research skills, “more and more postdocs are thinking long-term in regard to their career positions,” says Phillips.

What does this mean? “You have to be proactive and get the experience you will need for your future career,” says **Sarah Gaffen**, associate professor at the University of Pittsburgh. “If you want to be an academic PI, talk to people who are in search committees who can tell you how you are doing.”

NETWORKING IS KEY...

Establishing a network of colleagues who can provide guidance and support and help open doors is key to a successful postdoc experience, according to 92 percent of this year's survey respondents.

Former postdoc **Jamie DeWitt** says her postdoc adviser at the U.S. Environmental Protection Agency (EPA) made sure she met his network of colleagues at scientific meetings and asked her to co-author review papers and book chapters with **continued »**

Postdocs Rate Factors That Contribute to a Successful Postdoc Experience, Plus Rankings Compared to 2009 PI Survey

Attribute	Very Important	Important	Postdoc Rankings 2010	PI Rankings 2009
Funding/Grants	65%	27%	1 (tie)	6
Networking	61%	31%	1 (tie)	7
Advancement/Career Options	57%	33%	3 (tie)	10
Direction and Vision	56%	34%	3 (tie)	2
Mentoring	55%	35%	3 (tie)	3
Employer/Situation	57%	31%	6 (tie)	8
Communication	45%	43%	6 (tie)	1
Spouses, Partners, Family	60%	26%	8	12
Training	45%	40%	9	4
Compensation and Benefits	34%	39%	10	11

Survey Methodology

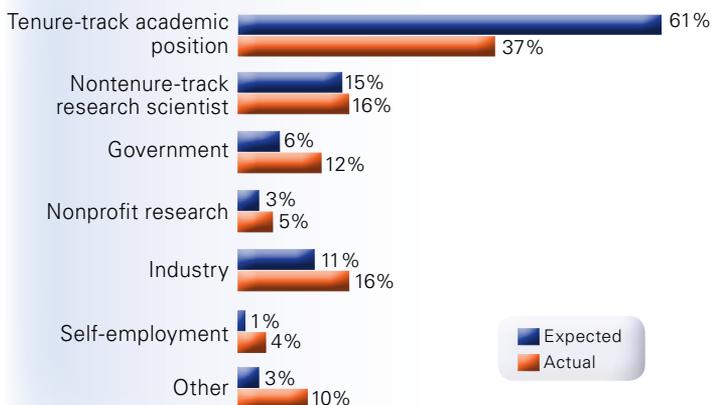
This year's survey was launched on March 16, 2010, with an e-mail invitation to about 60,000 current and former postdocs worldwide. Of the 3,475 qualified surveys that were collected 49 percent came from individuals in North America, 29 percent from individuals in Europe, and 22 percent from individuals in Asia Pacific or the rest of the world. Most (79 percent) postdoc positions were held in academic institutions. Life and medical sciences were the most common disciplines, being cited by 62 percent of respondents. A much smaller group of individuals (10 percent) worked in chemistry, while the remaining 28 percent worked in other non-life science disciplines. Most current postdocs (62 percent) were between 31 and 40 years of age. A smaller group (30 percent) was 30 years old or younger, while fewer still (8 percent) were 41 or older.

UPCOMING FEATURES

- Faculty 2: Small vs. Large Universities—September 10
- Focus on Germany—September 24
- Diversity 2 (online only)—October 1

POSTDOC SURVEY

Type of Position Expected vs. Actually Obtained (Former Postdocs)



him. "All these things helped to introduce me to the broader scientific community," says DeWitt.

But she also took some initiative networking on her own. "I was involved in the postdoc association at EPA and was a postdoc representative for the Society of Toxicology, so I met a lot of people that way," she says. "I always tell postdocs not to be afraid to walk up to scientists at conferences and say 'I read your paper and wanted to meet you.'"

Being known among her colleagues helped DeWitt obtain her current faculty position at East Carolina University. "I would say that both having published several papers and networking were very important," she says. "The publications helped support what my colleagues were saying about me."

Networking was critical for **Eleni Tzavara** to obtain her current position at the National Institute for Health and Medical Research (INSERM) in Créteil, France. While she was a postdoc at Eli Lilly and Company in Indianapolis, Indiana, Tzavara attended a scientific conference. There, she met a neuroscience department director from INSERM who encouraged her to apply for a faculty position at INSERM. "I still had some time left in my postdoc so I was not looking for a position at that time," recalls Tzavara. "But I decided to apply and had to go through a really tough evaluation process. Once I had an offer it was hard to say no."

...AND SO IS FUNDING

Both DeWitt and Tzavara had productive postdocs in part because the resources were in place at their postdoc labs to hit the ground running. "A postdoc at EPA is very project oriented," she says. "The support system was in place for me to do research in a timely manner so I was able to get papers out quickly." Ninety-two percent of postdocs polled in this year's survey ranked having a supervisor with funding or grants at or near the top of their list for a successful postdoc experience. Tzavara had a similar experience. "The resources in industry are very good and the scientific environment challenging, so I was able to be very productive," she says.

The importance of funding hit home for **Vima Dapic** when she was doing a postdoc at the Moffitt Cancer Center in Tampa, Florida. She saw the impact her PI's struggle to obtain funding had on postdoctoral fellows and graduate students. As a result, she decided that

"academic research was not meant for me," she says. "I didn't want to constantly worry about the money and the ability to maintain a research lab."

PLANNING FOR YOUR CAREER

An increased awareness of the need for long-term planning may explain why having "advancement opportunities and career options" jumped from 6th to 3rd place in the list of factors contributing to a successful postdoc experience in this year's survey compared to the one conducted two years ago, which also polled postdocs.

"My advice to postdocs is to use the position to train yourself for the job you want to do and also find out if it is the right job for you," says Gaffen. "But also be realistic."

At the start of her postdoc Gaffen was unsure an academic PI position would be right for her. But after publishing several papers and gaining recognition from her colleagues, she started to think a faculty position might be within her reach. "But I also realized that if I was going to do that job I would have to get the skills I needed for it," says Gaffen.

One thing Gaffen did was take courses in writing papers and grants. Her postdoc adviser also presented her with networking and grant writing opportunities to help her gain the necessary skills. "Success in obtaining a grant, particularly one that you can take with you to a faculty position, is worth a top journal paper to a search committee," says Gaffen.

PLANNING FOR TWO

Postdocs today are not only putting more emphasis on planning their own careers but also taking into account those of their partners. Over half (56 percent) of the survey group indicated that their career choice was limited by their spouse's or partner's career. Furthermore, accommodations made for spouses, partners, and family jumped from 10th to 8th place in the list of factors that postdocs view as contributing to a successful experience in the 2008 and 2010 surveys, respectively.

"We decided we would stay together and always look for positions in the same geographical areas," says **Maribel Vazquez**, *continued* »

FEATURED PARTICIPANTS

- Eli Lilly and Company**
www.lilly.com
- Moffitt Cancer Center**
www.moffitt.org
- National Cancer Institute**
www.cancer.gov
- National Institute for Health and Medical Research**
www.inserm.fr
- National Postdoctoral Association**
www.nationalpostdoc.org
- San Francisco State University**
www.sfsu.edu
- U.K. Research Staff Association**
www.vitae.ac.uk/researchers/205761/UKRSA.html
- University of Dundee**
www.dundee.ac.uk
- University of Illinois at Urbana-Champaign**
www.illinois.edu
- University of Lausanne**
www.unil.ch/central/page2192_en.html
- University of Pittsburgh**
www.pitt.edu
- U.S. Environmental Protection Agency**
www.epa.gov
- Walden University**
www.waldenu.edu
- Washington University in St. Louis**
www.wustl.edu
- Yale University**
www.yale.edu

POSTDOC SURVEY



"In this job market I am not sure I would advise postdocs to drastically change research topics."

—Julie Belanger

an assistant professor in mathematics at San Francisco State University, where her husband, **Javier Arsuaga**, also holds a faculty position. "This was just a personal decision. It is challenging, but it has always worked out for us." The key, says Arsuaga, "is to both be highly competitive. Then, if an institution really wants one of the two, the chances are higher that they will consider interviewing the other one."

CALLING ALL MENTORS

To plan their careers many postdocs rely on advice from one or several more experienced scientists who are their mentors. More than half (61 percent) of the survey group knew someone they would describe as a mentor.

In most cases (75 percent) the mentor was either the individual's supervisor (52 percent) or Ph.D. (23 percent) adviser. But sometimes the relationship with the supervisor is strained, as it happened to be for **John Antonakis**, currently a professor of organizational behavior at the University of Lausanne in Switzerland.

Having obtained a Ph.D. in leadership management at Walden University in Minnesota, Antonakis did a postdoc at Yale University in Connecticut. "I wanted to supplement my doctoral training," says Antonakis. "The Yale name opens doors." He says he greatly benefited from the environment at Yale and the reputation of the university, but his adviser "did not provide the support and training I needed as a postdoc."

As a result Antonakis collaborated with mentors at other institutions. "They worked with me on publications and helped me get my first faculty position," says Antonakis.

WHEN THINGS DON'T GO AS INITIALLY PLANNED

Even with the best planning, the unpredictability of scientific research and the job market makes it difficult to ensure success. When a postdoc appointment does not lead to an academic position, many people choose to seek additional postdoc positions—a practice that is becoming increasingly common ("The Evolving Postdoctoral Experience," *Science*, 2009, doi:10.1126/science.opms.r0900076).

Three-fifths (60 percent) of the former postdocs polled in this year's survey held only a single postdoc position, while 29 percent held two such positions. Relatively few (11 percent) former postdocs held three or more positions. Forty percent of the survey respondents who held multiple postdocs said they did so due to poor job prospects; this percentage is similar to those reported in postdoc surveys conducted in 2006 and 2008, but 13 percent higher than that in the 2004 study.

Christian Beaulé's initial goal, when he started his postdoc in 2003 at the University of Illinois at Urbana-Champaign, was to stay for a few years and then return to his native country of Canada to a faculty position. But after a second postdoc at Washington University in Saint Louis, Missouri and fewer publications than he had

hoped, Beaulé will be returning to Canada for another postdoc. "I will start a third postdoc to get more publications, but also for family and immigration reasons," he says.

And while he continues to seek academic positions, he will be keeping all his options open. "I am looking for academic positions in research but I am also looking at teaching, government, and industry positions," he says.

Although Beaulé had to adjust his expectations, he says, in retrospect, he would not do things differently. "In terms of papers I was not as productive as I had hoped but I am happy with what I did. In terms of science, learning, and professional development, this was a very productive postdoc experience," he says. "My advice to postdocs is to try to have fun but also have an end-goal in mind and try to make sure that the postdoc experience helps you reach that goal. Also, be realistic about your situation and be ready to revise your end-goal if you need to."

HAVING A PLAN B

Beaulé's situation is not unusual. Today more than ever postdocs are seeking career opportunities outside of bench research ("The evolving postdoctoral experience," *Science*, 2009, doi:10.1126/science.opms.r0900076). Sixty-one percent of former postdocs and 57 percent of current ones hoped to get tenure-track academic positions after completing their postdoctoral studies, but only 37 percent of the former postdocs who wanted to work in a tenure-track academic position ended up doing so. (see graph, p. 1094)

Julie Belanger switched research areas when she began her postdoc at the National Cancer Institute at Frederick, Maryland, from polymer chemistry to chemical biology. "In this job market I am not sure I would advise postdocs to drastically change research topics," she says. "I am very diverse and learned a lot about many aspects of chemistry, from nanomaterials to virology, but I feel I am a harder sell. My passion for an academic career comes across in person, but getting an interview has not been easy." On the flip-side, Belanger's diverse skill set and broader experience could serve her well now that she is also looking for government positions at the Food and Drug Administration and Centers for Disease Control and Prevention that are not research related.

Postdoc **David Proctor** has instead turned his sights to a career in science policy. "When I realized that my postdoc research wasn't turning out as I had hoped, I began to get more involved in my local postdoc association," recalls Proctor, who is from the United States, but is doing his postdoc at the University of Dundee, Scotland. "This later led to my involvement in the creation of the U.K. Research Staff Association, the British counterpart of the NPA. Overall this has reinforced my interest in science policy."

There are many considerations that go into choosing a postdoc position, which often need to be weighed against one another. Most postdocs' advice is to visit the prospective lab and spend time speaking with the head of the lab and its members to see if it will be a good fit.

In the end whether a postdoc is successful depends on someone's interests, needs, and aspirations. The key is to make sure that the experience provides the necessary skills, connections, and training for moving on to the next position—whatever that might be.

Laura Bonetta is scientist turned freelance writer based in the Washington D.C. area.

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