

Training Postdocs: Communication Is Key

The most important factors for ensuring a successful postdoctoral experience are honest and open communication with mentors, according to postdoc supervisors who responded to a survey carried out for *Science Careers*. Here, they provide some strategies and tips for effective communication and for teaching graduates how to communicate better.

By Laura Bonetta



The postdoctoral years are typically a stepping-stone to an independent position as the head of an academic or industrial laboratory. To ensure they are on this career trajectory, postdocs rely on regular feedback from their supervisors, who may also give advice and training on various competencies, from writing papers and giving presentations, to seeking funding and landing a job.

It is no surprise then that communication, closely followed by mentoring, ranked as the most important factor contributing to a successful postdoc appointment in a recent survey of supervisors by *Science Careers*. “It is important to show your postdocs that you are there for open and honest discussion. And not that you are the kind of boss where they have to knock on the door and make an appointment. My door is always open,” says **Keith Rose**, a professor at the University of Geneva and founder of the proteomics company GeneProt.

Why Communicate?

Rose was one of the over 800 postdoc supervisors polled in this year’s survey (see “Survey Methodology”). Ninety-four percent of them rated communication as important or very important in contributing to a successful postdoc experience. “Communication is the key that unlocks all the other doors,” says **Alyson Reed**, executive director of the National Postdoctoral Association. “You can be the most brilliant genius at the bench but if you cannot communicate your results they have no impact.”

But the value of communication may not be as immediately obvious to postdocs themselves. In a complementary survey conducted in 2004, which polled postdocs, communication came in ninth on a list that included mentoring, direction and vision, funding, networking, advancement opportunities, work culture, training, and employer situation. “When given a laundry list of things to rank, communication may not pop out, when compared to items like funding or training,” says Reed.

Indeed, sometimes postdocs view weekly or monthly group meetings as an imposition on their time. “At our lab meetings I expect a formal presentation. It takes a lot of time and sometimes postdocs don’t like it,” says **Naglaa Shoukry**, an immunologist at the University of Montreal, Canada. “When I was training I found presentations frustrating. But now when I look back I see it was important.”

Rose agrees. Although most people in his lab are French-speaking, the meetings are carried out in English. “When my Corsican postdoc had to go to a conference on my behalf to give a presentation, he would not have done as well if he had not practiced every week,” says Rose. “It is very important to learn to present clearly.”

What to Communicate?

In addition to weekly group meetings, many supervisors schedule regular one-on-one get-togethers with their postdocs to discuss their experiments and lab issues. During the three years of running her own lab, Shoukry has learned that it is better to deal with problems right away, rather than letting things brew. “Sometimes I can feel that something is wrong in the lab, and I will directly ask my postdocs,” she says. She also encourages her postdocs to tell her about any difficulties in obtaining data. “I let them know I don’t expect that everything will go smoothly,” she explains.

Clearly laying out expectations, providing regular feedback, and ensuring good interaction and discussion within the group are the key communication traits that describe a good supervisor, according to survey participants (96 percent to 97 percent agreed or strongly agreed that **continued** »

“You can be the most brilliant genius at the bench but if you cannot communicate your results they have no impact.”



Robert Martinez

Ana Galero

UPCOMING FEATURES

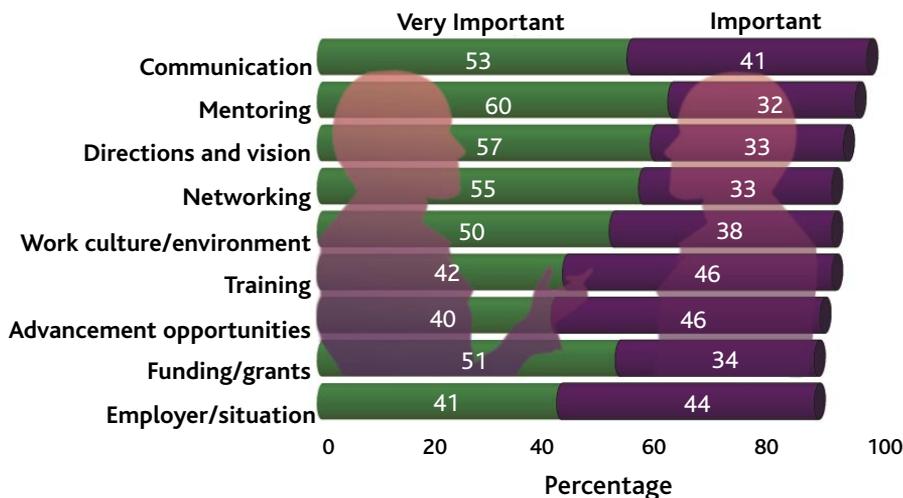
Faculty Positions — September 14

International Careers: Germany — September 21

Careers and Grad. Programs — September 28

CREDIT: TOP: (inside Key) Photos.com

Postdoc Survey



these were important). Shoukry makes sure her postdocs are aware of her expectations even before they join the lab. She goes through a mental checklist at the first meeting with a prospective postdoc to explain that she wants them to work hard, keep a lab notebook, be available during regular work hours, and so on. “You have to be frank right from the start. And you have to put it bluntly, so that there are no misunderstandings,” she says.

The Power of Evaluations

Some postdoc supervisors also rely on formal evaluations for giving feedback. “Each employee at the Lawrence Berkeley National Laboratory (LBNL) goes through an annual process of evaluation,” says physicist **Natalie Roe**. “It forces everyone, at least once a year, to check in.”

The evaluations consist of a set of questions regarding goals and achievements to be completed by the postdocs before meeting with their supervisor, who then writes up the final document. “I usually take what they accomplished word for word but may add some details,” says Roe. “Often people underplay what they have accomplished. They will think something they have done is routine, but instead it may be something that will be looked on favorably when they are looking for a job.”

When she meets with her postdocs to discuss the responses, Roe takes the opportunity to review their career trajectory. “At LBNL a postdoc is generally considered to be a three-year position,” she explains. “So you need to be on the road to getting a job at the appropriate time.”

Industry Versus Academia

Being “on track” is critical for those training in industry, according to **Matthew Silver**, a postdoc at Wyeth Research in Cambridge, Massachusetts. Silver chose an industrial postdoc position because he ultimately wants to pursue a career in industry. “The main focus for

my position is research, but I also get exposed to industrial culture,” he says. But unlike postdoctoral positions in academia, his is only a two-year appointment (albeit with the possibility of two six-month extensions). “You don’t want to go down the wrong path for too long,” he says. “It is critical to talk about your career with your supervisor when you are only doing a postdoc for a short period of time.”

Robert Martinez was hired at a staff scientist at Wyeth in 2001 after completing a four-year postdoc at the Dana-Farber Cancer Institute in Boston. He agrees that postdocs in industry cannot afford to flounder—and not only for the sake of their own careers. “Obtaining a postdoctoral fellow to work in your lab is a competitive process

at Wyeth. A supervisor has to apply for the position. So it is important that his or her postdoc be successful,” says Martinez. “It is important to maintain a very solid record.”

To motivate his postdocs to be productive, Martinez holds monthly seminars where lab members give 20-minute presentations of their research. “I make sure I always attend those meetings,” says Martinez. “And I tell them, ‘If you have talked about something before, I don’t want to hear it again.’”

How to Motivate

Most supervisors, like Martinez, would like their postdocs to work hard and be passionate about their projects. Although you cannot force someone to care about what they are doing, there are ways—such as giving postdocs as much choice as possible over what projects to pursue and ownership over the work—to encourage productivity. “Sometimes postdocs lose motivation if they feel that the project

is not theirs,” says **Ana Gamero**, principal investigator at the National Cancer Institute in Frederick, Maryland. “After a postdoc has spent three years in a lab, there are usually so many projects in place that the supervisor cannot continue with every project. I let them know I am always willing to give something up.”

Another motivator is rewarding achievements. “To excite them about the work they are doing I may encourage a postdoc to submit an abstract and attend a conference or to talk to a guest speaker and go out for dinner,” says Gamero. “I want them to see something beyond being a postdoc.”

Attending conferences and meeting other scientists provide a chance for postdocs to establish useful connections. Postdoc supervisors who participated in this year’s survey ranked networking as the fourth most important factor (tied with training) contributing to a successful postdoc experience. But, whereas 51 percent of supervisors strongly agreed that providing opportu- **continued »**

Baylor College of Medicine
www.bcm.edu

Lawrence Berkeley National Laboratory
www.lbl.gov

National Cancer Institute
www.cancer.gov

National Postdoctoral Association
www.nationalpostdoc.org

University of Colorado School of Medicine
www.uchsc.edu/som

University of Geneva
www.unige.ch/en

University of Montreal Hospital Research Centre
www.recherche.umontreal.ca

Wyeth
www.wyeth.com

Postdoc Survey

“Thirty percent of my day is devoted to things other than my own research.”

—Todd Castoe



...nities to attend scientific meetings describes a good supervisor, only 38 percent felt that way about providing opportunities to meet other influential researchers.

Why Mentor Well

According to the survey, most supervisors (61 percent) spend 20 percent or less of their professional time supervising their postdocs; the remainder (39 percent) spend more than 20 percent of their time doing so. A large majority (78%) feel that they have this balance just right, while 14% would prefer to spend more time supervising, and only 6% believe this responsibility to be taking too much of their attention. “My philosophy is I could focus on publishing 20 really good papers or also make sure that I train 20 really good scientists who then each publish 20 really good papers,” says professor **Graeme Mardon** at Baylor College of Medicine. “In the end mentoring makes a greater contribution. For me it is more satisfying to see someone develop than the nuts and bolts of running a lab.”

So in which areas do postdocs most need mentoring? The top three general responsibilities for supervising postdocs identified by survey participants were discussing research project and direction (96 percent), reviewing data analysis and interpretation of results (91 percent), and assisting with writing manuscripts and seminar preparation (84 percent). Fewer supervisors cited providing guidance for career planning (75 percent) and helping to write grants and assist with funding efforts (64 percent).

“I never write my postdocs’ papers,” says Mardon. In his lab, postdocs write the first draft and then go through several revisions before the paper is submitted. “One of the arguments against doing it this way is that if you work in a very competitive field, you have to get papers out quickly,” says Mardon. “But I have never gotten scooped because of the writing. If we got scooped, it was because we took longer to finish the work than another group.”

Another important skill for postdocs to master is how to write grants. “I let the best grad students and postdocs in my lab see the entire R01 grant and write portions of it,” says Mardon. Although Mardon’s first R01 was funded, even though he had never before seen a grant application, he says the funding situation has become much more challenging. “It is also absolutely valuable to sit in study sections and see grants being torn apart. You learn what works and what does not work,” he laughs. “I try to pass all this information along to my postdocs.”

Managing the Work of Others

The majority of survey participants agreed that conducting high quality research (79 percent), learning to work independently (66 percent), and publishing work (66 percent) contributed to a successful postdoc experience. Learning to manage and supervise others ranked relatively low on the list (15 percent). Yet, most postdoc su-

SURVEY METHODOLOGY

This year’s survey aimed to determine what factors contribute to a successful postdoctoral experience from the supervisors’ point of view. Starting in March 2007, 801 postdoc supervisors in the United States, Europe, and Asia responded online to a series of questions asking them to select the most important attributes for a successful postdoc experience and to rate the importance of various factors contributing to it. All survey participants were either currently supervising postdocs (78 percent) or had supervised postdocs in the past (22 percent). Half had six years or more of supervisory experience. The majority of survey participants were located in the United States and Canada (76 percent), while another 9 percent were in Europe and the United Kingdom, and 10 percent in Asia and the Pacific Rim.

pervisors say that managing people is one of the toughest skills for scientists to learn.

Kyle Dawson, a postdoctoral fellow at the LBNL, has been given the chance to supervise undergraduate students in his lab, choosing projects for them and writing their evaluations. Being involved in a large collaborative project with several labs, he also had to recruit graduate students to join the project. “I did not know how to do that so I got advice from one of my advisers,” said Dawson, who has two advisers from two different labs, including Roe, the physicist.

Dawson has also been involved in writing proposals, organizing communications among collaborators from 10 different universities, networking with other scientists, and coordinating their activities. “It has been a real learning experience,” he says. “I had to put myself in the fire and just do it.”

Well-Rounded Training

Like Dawson, **Todd Castoe**, a postdoc at the University of Colorado Medical School, received training in a variety of skills, beyond conducting experiments. “My adviser is giving me a lot of firsthand experience with the practicalities of running a lab. We talk about why we should finish specific projects and how that relates to current and future grants. We look at a pile of new data and decide what direction is most profitable to follow up,” he says. “I get to see the larger picture.”

Castoe has been involved in writing grants, reviewing papers and then discussing them with his adviser, establishing collaborations, and working on grants for large projects. “Thirty percent of my day is devoted to things other than my own research,” he says. Although he sometimes worries that all the added exposure will not be reflected on his CV when he starts to look for a job, he realizes that the training is preparing him to run his own lab. “I would call this one of the best-case scenarios for training. It is very holistic.”

Communication has always been key to the scientific process. But as science becomes increasingly competitive and dependent on interdisciplinary, collaborative projects, communication skills—from interacting with others to presenting data at seminars to writing papers and grants to networking—will be even more critical to a scientist’s success. Whether postdocs realize it or not, frequent and open communication with their supervisors and learning how to effectively communicate with their colleagues, will help ensure a successful transition from postdoc to independent researcher.

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