

Postdoc Academic Chat #8

Tips on How New Professors can Find and Support Top Graduate Students and Postdocs

Readings

May 11, 2012

Questions/Discussion items to consider:

With respect to this topic:

- (1) What specific things can you do now as a postdoc that will help you when you begin as a new professor?
- (2) What things can you do between the time you accept a faculty position and the time you arrive on campus?
- (3) What kinds of mistakes have you observed being made from your experience as a graduate student and postdoc and what are your suggestions for avoiding them going forward?

1. Competing for Graduate Students

2. Advice for Beginning Faculty: How to Find the Best Postdoc

3. How to Mentor Graduate Students: A Guide for Faculty

1. Competing for Graduate Students

Science Careers - from the Journal Science

http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/2310/competing_for_graduate_students/ Career Advice: Competing for Graduate Students By

Chris Woolston April 25, 2003. . © 2003 American Association for the Advancement of Science. All Rights Reserved

"Top-flight students can keep a lab humming, crank out papers, and open new lines of thought. In short, they can ignite their boss's career."

Like entry-level workers everywhere, graduate students often carry their industry on their backs. They are the ideal labor force: bright, eager, and extremely cheap. Of course, their salaries don't come close to describing their true worth. Top-flight students can keep a lab humming, crank out papers, and open new lines of thought. In short, they can ignite their boss's career.

A Hidden Competition

Everyone knows how scientists compete fiercely for grant money and space in top journals. But there's another crucial competition that gets far less attention: the battle for good graduate students.

Graduate students may be greener than postdoctoral researchers or lab technicians, but they are still a hot commodity, says David Meyer, a professor of biological chemistry at the University of California at Los Angeles and the senior associate dean of graduate studies for the School of Medicine. For one thing, graduate students tend to stick around for four or five years, at least twice as long as the typical postdoc. Furthermore, every fresh batch of graduate students gives a researcher a unique opportunity to find someone who will make a perfect fit for the lab. "If you can attract the best one or two, you can literally have the cream of the crop," he says.

Like any other competition, the annual Graduate Student Derby has both winners and losers. Jonathan Foley, an associate professor of atmospheric and oceanic sciences at the University of Wisconsin at Madison, likes to think that he's on a hot streak. "I don't know whether it's by luck or design, but I've been very thrilled with the students that we get," he says. "My peers look at our lab and say, 'Wow, how do you do it?'"

The Mismeasure of a Scientist

The first step to landing a future star is spotting one. Many scientists look for astronomical Graduate Record Exam (GRE) scores or a near-perfect grade-point average, but these accomplishments don't always mean much in the laboratory. "The GRE measures your ability to take a standardized test," Mr.

Meyer says. He sees no correlation between GRE scores and success in graduate school. College transcripts may be a slightly better predictor, but they're far from perfect. According to Mr. Meyer, one of the best grad students in the recent history of UCLA eked out his bachelor's degree with a 2.2 GPA.

Mr. Foley has seen the opposite side of the coin. He once recruited a student with perfect GRE scores and a 4.0 GPA. "She didn't realize what graduate school was all about, and she bombed," he says. "What makes a good undergraduate student is often not what makes a good graduate student." (The student took a job in the computer industry and, as Mr. Foley puts it, "makes more money than I ever will.")

Talking the Talk

When evaluating an application, Mr. Foley skips right past the numbers and heads for more relevant details, namely research experience and letters of recommendation. When he finds the right combination, he "pulls out all the stops," he says. "We bring them to Madison, wine and dine them, and try to convince them that this is the place to be." Some professors try to recruit students through e-mail or phone calls, but Mr. Foley believes face-to-face contact is essential.

For one thing, not every student who looks good on paper (or e-mail) shines in person. Once candidates arrive on campus, Mr. Foley searches for the hidden qualities that can't fit on a résumé. "I look for intellectual maturity," he says. "They have to be willing to take a few risks in order to do something interesting." They also have to have a sense of purpose. "I always ask them why they want to go to graduate school. If they say they couldn't think of anything else to do, I say, 'See you later.'"

Mr. Meyer has a similar litmus test. He finds students with research backgrounds and asks them to explain their work. In his opinion, a promising young scientist will sound like one. "If they can't talk the talk and walk the walk, that's the deal breaker," he says.

And then there's the delicate matter of personality. It's impossible to truly understand a person after a short interview, but certain qualities stand out. Foley looks for people who will be enthusiastic, optimistic, and fun to be around.

Young Scholars in the Arena

Finding top graduate students is an especially crucial -- and, at times, frustrating -- enterprise for young faculty members. "This isn't really the case at UCLA, but I've heard that the word on the street at other major universities is that grad students should stay away from young researchers," Mr. Meyer says. The whispers stem from the very real possibility that a newer scientist's grant could dry up before a student has a chance to get established.

But junior faculty members also have much to offer to graduate students. Unlike their senior colleagues, they are likely to stand shoulder-to-shoulder with the workers in their labs. And since their college days are still fresh in their minds, young scientists are often more sympathetic to a graduate student's plight. If they make the commitment to land top students -- if they attend every "meet the faculty" session, shake a lot of hands, and talk enthusiastically about their own research -- junior faculty members can compete for students with anyone, Mr. Meyer says. "I have seen some terrific graduate students in the labs of young faculty members, and the faculty members benefited dramatically," he says.

Graduate students who pass through all of the hoops get a lab to call home for a few years and start on their careers. Their bosses get something more. "Faculty at good research universities are blessed. We have an unbelievable opportunity to work with enthusiastic young scientists," Mr. Foley says. "I've worked with a lot of students that I know are smarter than I am. They've not only helped my career, they've changed it for the better."

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2. Advice for Beginning Faculty: How to Find the Best Postdoc

Science Careers - from the Journal Science

http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2009_02_06/science.opms.r0900065 Career Advice: Advice for Beginning Faculty: How to Find the Best Postdoc, By Laura Bonetta, February 06, 2009. © 2012 American Association for the Advancement of Science. All Rights Reserved.

"It is really hard not to rush in to things."

You made it. You are finally the head of your own laboratory. You have money, space, equipment--all you need now are a few talented postdocs to help you carry out your research agenda. But how do you go about finding the right people for your lab?

When you are starting out you should begin small and stay focused. But almost everyone breaks this rule," says Graham Warren, scientific director of the Max F. Perutz Laboratories at the University of Vienna in Austria. "When everyone is telling you that you need to publish and grow, you feel a lot of pressure to fill the lab."

It is tempting for beginning faculty to rush into recruiting several postdocs right away, but hiring the wrong person can be detrimental to your progress. "Months can go by and you don't get any good applications. It is really hard not to rush into things," says Brent Stockwell, associate professor at Columbia University in New York City. "But from everything I have seen, it is never a good idea to take someone in just to fill a spot, especially at the beginning when you are setting the tone for your lab. Keep the quality high and do not compromise standards, and it will all work out."

The key to avoiding mistakes, experts say, is properly vetting all applicants, from carefully evaluating the initial e-mail contact, to thoroughly checking references, to meeting and interviewing the applicant in person.

The Initial E-mail Contact

It is not unusual for established researchers to receive several unsolicited e-mails per week asking for a spot in their labs. A beginning investigator, on the other hand, will get few if any. He or she will probably have to get the word out about available positions by advertising in science journals, listservs, the lab website, or through personal contacts. When Kornelia Polyak, associate professor of medicine at Harvard Medical School in Boston, first set up her own lab about 10 years ago, she asked former mentors and senior faculty at Harvard to direct promising applicants to her, if they had no space for them in their own labs. "That does not always work because frequently people who apply to a large lab do not want to go to a small one, but sometimes they did," she says.

Polyak acknowledges that it can be difficult to get really great postdocs at the start of your career, but it pays to be patient. "It is better not to hire too many people at the start, but rather to focus on getting publications out, even if you have to do the benchwork yourself," she says. "As soon as you get more established, people will start applying."

Once applications start coming in, learning how to sort through them is a valuable skill. A good number of e-mails likely can be discarded as "spam" if they are not addressed personally to the lab head, or if they are written carelessly and sloppily. Most investigators then want to see some evidence that the applicant has thought carefully about why he or she wants to be in that particular lab. "You have to read between the lines to see if the person is searching for any old lab and does not really know what your research focus is," says Joseph Gall, staff member of the Carnegie Institution's Department of Embryology in Baltimore. "I don't pay much attention to those applications."

The next step is to look at the attached curriculum vitae. "I generally want to hire people who have been able to publish because it shows that they can take a project from the beginning all the way to the end. It takes a certain set of skills to do that," says Stockwell. "But I have considered people who did not have a strong publication record. You can find a diamond in the rough, so publications are not a strict filter."

Checking References

Many lab heads say that the most important component of a postdoc application is the letters of recommendation. They also recommend contacting at least some of the references by telephone because people tend to open up more over the phone and say things they might not want to put in writing.

Many questions to ask references have to do with general qualities, such as accuracy, perseverance, creativity, originality, commitment and so on; others will be more specific to how you like to run your lab (for example, "Is the candidate a good team player?") or address specific concerns you might have based on the candidate's CV or something mentioned in one of the letters (for example, "Why does he/she not have any publications?").

"I usually ask open-ended questions, such as 'What are the candidate's strengths?' or 'What are some of the issues that, as a new investigator, I should be on the lookout for?' and then follow up on the specifics," says Margaret Hostetter, Jean McLean Wallace Professor and Chair of Pediatrics at Yale School of Medicine in New Haven. "One question I always like to ask is 'If you had the opportunity to extend this person's stay in your lab, would you do it?' The answer always gives valuable information."

You don't need to call all references, but one person you should definitely contact is the candidate's graduate adviser--that person will often be the one who knows the candidate's strengths and weaknesses better than anyone. If an applicant does not provide a letter from a Ph.D. adviser, that can be a red flag. "Sometimes candidates had problems with their adviser due to personality issues and that is okay, it can happen. But it is good to hear both sides of the story," says Polyak, who typically calls former advisers even if they did not provide a written recommendation.

Meeting and Interviewing the Candidate

Some recommend interviewing potential candidates over the phone before inviting them for an in-person interview as a way of further narrowing the choice. A 30-minute phone interview can help you gauge the person's level of interest in your group and whether the applicant can think well on her or his feet. "I am always amazed if I describe a potential project and ask if that sounds interesting, at least a third of applicants say 'It sounds okay' or 'Maybe I could do that,'" says Stockwell. "I also know what kind of people fit in well in the lab. I want good citizens who will teach students and will fix equipment. You can sometimes sense the lone wolf type and rule out some people that way."

If you decide that, after reading the application and talking with references (and possibly the candidate), the applicant seems like a good fit for your lab, the next step is to invite him/her to spend a day in your laboratory. Typically the day would include a one-on-one interview with you, the candidate giving a seminar based on current research, and then time to interact with lab members and perhaps members of your department or university.

The one-on-one interview is an opportunity to ask the candidates in detail about the work they have accomplished, as well as to describe the projects being conducted in your lab. "I might describe three projects that we are

working on and then ask 'What would you do next in this particular project?' This kind of question can help assess scientific acuity," says Hostetter. "If a person has listed several publications, I will ask them about the first-authored papers and also about the ones where they are a middle author. If they say 'I don't know about those experiments because I just did the Western blots,' that tells me that they do not have an encompassing curiosity."

The interview is also an opportunity to get insights from existing lab members. Oftentimes candidates will say things to lab members that they will not say to the head of the lab. "I can't imagine hiring someone before first meeting them or having them meet the others in the lab," says Carol Greider, professor of molecular biology and genetics at Johns Hopkins University School of Medicine. "A lab is too much like a family."

When you are starting out you may not have many people in the lab, so you can ask members of another lab to attend the seminar and meet with the candidate. Another option is to ask more senior colleagues in your institution to interview the candidate and share their opinions with you. "I tell all my junior faculty that I am available to do that," says Warren. One advantage of asking more senior colleagues to do the interview is that they have had more practice. "I can get it right about 90 percent of the time. If I know the faculty member and how they work, I can tell them whether a [postdoc] candidate will work well in their lab," says Warren. "Young people sometimes are trying hard to recruit and are willing to overlook potential problems, because they don't see them or don't want to see them. I will point them out."

It may sometimes be cost prohibitive to fly a candidate in for an interview. In such cases, some researchers will ask a prospective candidate to keep them informed of when they will be visiting the country, for a scientific meeting or personal travel, and then schedule an interview at that time. Another option for screening candidates who are far away is to ask close colleagues or collaborators in those countries, who know how your lab functions, to do an in-person interview on your behalf.

"I receive a lot of applications from students in China and India. In those cases, I rely very heavily on recommendations. I have several colleagues in these countries whom I know personally," says Henning Hopf, a professor of organic chemistry at the Technical University of Braunschweig in Germany. "If someone I know well recommends a candidate I will trust their opinion."

In his field of organic chemistry Hopf says many German students go to the United States for their postdoctoral training, so postdocs who apply to his lab are often from abroad. "If a postdoc is from Italy, they can come over and we talk, but if people come from India or China, I never know them in advance," he explains. "But in general I have been very lucky with people."

Describing Your Lab Environment

The in-person meeting provides an opportunity not only for you to get to know the candidate, but also for the candidate to learn how the lab operates and judge whether it will be a good fit. "I tell them, 'Everyone is a good citizen. You will come in and learn from other people and then you will teach others. Do you feel comfortable with that?' Some people say 'That is great. It is exactly what I am looking for!' Others say 'I guess I can function with that,'" says Stockwell.

You should also inform the candidate of everything that is really important to you in terms of how people behave in your lab. Are there certain hours that you want to have people in the lab? Do you expect a certain level of organization? How much time do you expect to spend with people and how much attention will they get?

Another thing some heads of labs think should be discussed at the first meeting has to do with your policies regarding leaving the lab as a postdoc. For example Greider says that in her lab there are three possible scenarios. "The first, the person comes and works smack down in the middle of what our lab does. I let people continue that work after they leave the lab, but if we also plan to pursue that research, I will tell them so openly. In the second, the postdoc has an independent idea and says 'I want to do this in your lab with your support and take the project with me.' If it is an interesting project, that is fine with me. And sometimes a postdoc ends up working on something completely different after leaving the lab," says Greider. "We discuss these different models at the interview."

Another thing you may want to discuss with a postdoc is the policy on authorship. In other words, what criteria do you use to decide who gets to have their name on a paper? Also, in some labs the postdoc who took the lead on a project is always the first author and the head of the lab the senior author. But in other labs that might depend on the project. If the postdoc's work leads to a big paper that ends up in a top journal, the head of the lab

might want to be first author. "It is better to discuss these kinds of things upfront rather than to wait until you are writing the paper," says Hostetter.

Making the Decision

The final selection of a postdoc will take into account scientific capabilities and training, as well as personality. "If they don't know a technique I can teach it to them but I cannot change their personality," says Polyak. "I am less concerned about someone not having enough experience or training than about their having the right personality and attitude to fit in the lab."

Indeed a particular candidate may be a great addition to one lab and thrive there, but not work out in another. "One test for me, after I meet this person, is to ask myself, 'Is this someone I am excited to start working with tomorrow?' If there is any hesitation I will not hire them," says Stockwell. "It is not worth having someone in the lab who you are not excited about. With a postdoc you are making a lifelong commitment to that person, to support them at all levels throughout their career."

Learning to hire the best postdoc for your lab is a matter of trial and error, and most people say you can only get better at it with practice. But by carefully vetting candidates and not rushing through the process, you will have a better chance of getting it right, right from the start.

References

"Staffing Your Laboratory" chapter from Making the Right Moves: a practical guide to scientific management for postdocs and new faculty (<http://www.hhmi.org/resources/labmanagement/moves.html>), Howard Hughes Medical Institute and Burroughs Wellcome Fund

Staffing the Lab: Perspectives from both sides of the bench (<http://www.scribd.com/doc/2544488/Staffing-the-Lab-Perspectives-from-Both-Sides-of-the-Bench>), Burroughs Wellcome Fund

Featured Participants

Carnegie Institution's Department of Embryology - <http://www.ciwemb.edu>
Columbia University - <http://www.columbia.edu>

Harvard Medical School - <http://hms.harvard.edu>
Johns Hopkins University School of Medicine -
<http://www.hopkinsmedicine.org>
Technical University of Braunschweig - <http://www.tu-braunschweig.de>
Yale School of Medicine - <http://medicine.yale.edu>
University of Vienna - <http://www.univie.ac.at/?L=2>

3. How to Mentor Graduate Students: A Guide for Faculty

<http://www.rackham.umich.edu/downloads/publications/Fmentoring.pdf>

Rackham Graduate School

University of Michigan

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Chapter 3: What Does the Mentor Do?

The mentor's responsibilities extend well beyond helping students learn what's entailed in the research and writing components of graduate school. First and foremost, mentors socialize students into the culture of the discipline, clarifying and reinforcing – principally by example – what's expected of a professional scholar.

Let's start with the basic responsibilities mentors have to those graduate students who seek their guidance.

Model professional responsibility. It is crucial that the mentor consciously act with integrity in every aspect of his or her work as teacher, researcher and author. Students must see that their mentors recognize and avoid conflicts of interest, collect and use data responsibly, fairly award authorship credit, cite source materials appropriately, use research funds ethically, and treat animal or human research subjects properly. This list is not meant to be exhaustive: never compromising the standards that bestow validity on the discipline is not a suggested guideline but essential to the profession.

Demystify graduate school. Many aspects of graduate education are unwritten or vague, and the ability of new students to understand them is

hampered by the fact that they frequently do not know what questions to ask or what certain terminology means. You can help by adjusting your conversations accordingly and clarifying your program's expectations for lab work, coursework, comprehensive exams, research topics, and teaching. For each stage of the student's program, discuss the prevailing norms and criteria used to define quality performance.

Encourage the effective use of time. Work with the student on developing schedules and meeting benchmarks. Share techniques and practices that have been useful for others but don't insist there is only one way. Rather, help them blaze their own trail and devise a plan that keeps them on it. For many students, the shift from the highly structured nature of undergraduate education to the self-direction that is expected in graduate school presents a significant challenge.

Oversee professional development. Activities that have become second nature to you need to be made explicit to students, such as faculty governance and service, directing a lab, procuring grants, managing budgets, and being able to explain your research to anyone outside your discipline. Mentors help their students become full-fledged members of a profession and not just researchers.

Assist with finding other mentors. One size doesn't fit all, and one mentor can't provide all the guidance and support that every student needs. Introduce students to faculty, emeriti, alumni, staff and other graduate students who have complementary interests. Effective mentoring is a community effort.

Student Perspective

I value my mentor's dedication and enthusiasm about science; also, his openness to discuss and aid in the development of my projects. He was able to establish clear project goals, in the beginning of my Ph.D., that reflected my preferences and listened to my ideas.

Reassurance... it's great to know that other people had to go through many experiences very similar to mine.

Chapter 4: General Guidelines for Mentors

The fundamental rubric for mentors is to be partial to the student but impartial about the student's work.

Clarity is the foundation upon which such a relationship is built. Be transparent about your expectations concerning the form and function of the relationship, and about what's reasonable to expect of you and what isn't. Pay particular attention to boundaries, both personal and professional, and respect theirs just as you expect them to respect yours.

Within mutually agreeable limits, mentors have an open door. Because your time is so valuable, it is often the most precious thing you can give. What lies behind that door, literally and figuratively, should be a haven of sorts. Give students your full attention when they are talking with you, and the time and encouragement to open up. Try to minimize interruptions. Consider scheduling an occasional meeting away from the office or department to help create more personalized time.

Use concrete language to critique students' work. What the mentor communicates with the students must be timely, clear and, above all, constructive. Critical feedback is essential, but it's more likely to be effective if tempered with praise when deserved. Remind students that you are holding them to high standards in order to help them improve.

Mentors keep track of their students' progress and achievements, setting milestones and acknowledging accomplishments. Let your students know from the start that you want them to succeed, and create opportunities for them to demonstrate their competencies. When you feel a student is prepared, suggest or nominate him or her for fellowships, projects, and teaching opportunities.

Encourage students to try new techniques, expand their skills, and discuss their ideas, even those they fear might seem naive or unworkable. Let students know that mistakes are productive because we learn from our failures. These practices nurture self-sufficiency. As tempting as it can be to dictate paths, the person in front of you has different strengths and aspirations.

Promising Practices: Linguistics

Students are reviewed annually by the faculty. Prior to the meeting students prepare a progress report with the assistance of their advisors. Following the review the student receives feedback on progress in a letter explicitly intended to serve as a mentoring document.

Chemical Engineering

Mentor matching: During and after admission, faculty are encouraged to make contact with students who are interested in their areas, although no formal match is made at this time. The match is done in the first two months of the fall semester. During the first few weeks of our orientation course students hear twenty- minute presentations by all the faculty, including faculty from other departments who have some appointment in Chemical Engineering also. Students also have other opportunities to meet with the faculty, such as a picnic held in the first few weeks. The students then must make appointments with and talk to at least five faculty. Some faculty might ask the students to read a paper, attend group meetings, meet with the graduate students of the group, etc. In early October, the students submit a list of preferences for advisors.

We then match students with advisors, trying to give most students one of their top choices. When this is not possible, we discuss other possible options with the students and also faculty and work to make an acceptable arrangement for all involved.

Provide support in times of discouragement as well as success, and be mindful of signs of emotional and physical distress. Don't assume that the only students who need help are those who ask for it. If a student is falling behind in his or her work, resist concluding that this shows a lack of commitment. Perhaps the student is exhausted, or unclear about what to do next, or is uncomfortable with some aspect of the project or research team. Although it is ultimately the responsibility of students to initiate contact with you, it may make a difference if you get in touch with those students who are becoming remote. Let them know they are welcome to talk with you during your office hours, and that the conversation can include nonacademic as well as academic issues.

Being open and approachable is particularly important when a student is shy or comes from a different cultural background. Many new students suffer

from the impostor syndrome – anxiety about whether they belong in graduate school – so it's important to reassure them of their skills and abilities to succeed. The enthusiasm and optimism you show can be inspirational. Make sure that students understand not only the personal consequences of their commitment to their work, but also its value to the professional community and to the general public.

Share what you've learned as both a scholar and a member of a profession. You might think things are obvious to students that aren't. At the same time, tell your students what you learn from them. This will make them realize they are potential colleagues. Identify professional workshops and networking opportunities for students. Involve students in editing, journal activities, conference presentations, and grant writing.

Of course, it isn't necessary to embody all of these attributes in order to be a successful mentor. Individuals have relative strengths in their capacity for mentoring, and mentors should be clear about what they can and cannot offer. Part of effective mentoring is knowing when to refer someone to another resource that might be more helpful.

Most important, and more than any particular piece of advice or supportive act, your students will remember how they were treated. The example you set as a person will have a profound effect on how they conduct themselves as professionals.

In meetings, I show results and indicate where I would like to take experiments. She serves as a sounding board to improve and refine the ideas along with making additional suggestions. It allows me to take ownership of my project and not just be a technician.

What I like about my thesis advisor is how he balances both roles of listening to my ideas and giving them reasonable consideration, and guiding the direction of study from his own research experience. I don't think this is an easy task.
