Postdoc Academic Chat #3

Managing A Research Program - Insights For Beginners

Tuesday, November 17, 2015

Questions/discussion items to Consider

1. What specific process and procedures have you observed in laboratories at Stanford that you would want to emulate when you start out as a new professor.

2. Are there any processes or procedures that you would want to avoid?

3. What can you do, learn, and acquire now before you leave Stanford that will help you get a head start on managing a research program?

Readings

#1 Management for Beginners - So You're A Principal Investigator - Now What?
#2 Seven Steps to Lab Harmony
#3 Nuts and Bolts ff Managing A Research Lab

#1 Management for Beginners - So You're A Principal Investigator - Now What?

- A survey of research articles in Science found that 43% of first authors are postdocs.
- Between 1988 and 2005, the share of publications with authors from multiple institutions grew from 40% to 61%.
- The average workweek of US scientists employed full-time in academia is 50.7 hours.

In the summer of 2004, evolutionary biologist Aneil Agrawal packed up and moved from his postdoc at the University of British Columbia in Vancouver to start his own lab at the University of Toronto. Arriving to find a big, empty laboratory, he set to work buying equipment and installing incubators for his fruit flies. He didn't consider the other organisms he'd need in his lab: people. Concerned about his limited startup funds, he didn't hire a full-time technician. By October, when the university had its annual grad student recruitment, he was still setting up, so he discouraged potential students from applying to join his lab.

"That was stupid," Agrawal says, as those students wouldn't have started until the following academic year. Agrawal admits that his research suffered as a result. "One of the fallouts was I ended up doing a lot of busy work, trying to set up little experiments, and that wasn't a good use of my time," he says. In the end, he had to wait for the next round of applicants, and he employed his first student a full two years after he came to Toronto. "If I had to do it all over again, I'd definitely invest early, take on students, and use my money to get my lab up and going immediately."

As Agrawal has since learned, managing a research lab requires much more than just a scientific plan. Principal investigators (PIs) need to be leaders as well as managers, but there's a difference between the two, says Joan Lakoski, a neuropharmacologist and associate vice chancellor for academic career development at the University of Pittsburgh. "A leader is someone with a vision, who really gets everyone excited by that vision," she says. "A manager is just as important, but a manager thinks 'what's the job that needs to be done, and how do I get it done effectively.'"

Being both at the same time isn't easy, but there's no reason to reinvent the wheel. The Scientist talked to many PIs to discover the secrets to their managerial successes. Here are three areas important for first-time PIs to master early , and tips and tricks for getting off on the right foot.

Staffing For Success
Find the finest "The most important thing is getting the right people," says Helge Grosshans, a molecular biologist at the Friedrich Miescher Institute in Basel, Switzerland. When Grosshans is unsure about potential new lab members, he asks for a short written project proposal to see if the candidate would fit with his lab's dynamic. Microbiologist Bettina Buttaro of Temple University in Philadelphia avoids staffing problems by involving her lab members. After interviewing potential candidates, "we all talk about them" as a

group, she says.

Make the most of interviews Kathy Barker, a microbiologist who left the lab to write the practical laboratory guides, At the Helm and At the Bench, says that young PIs make a common mistake of wasting interviews by being nice. "People treat it like a first date," she says. The hardest thing, Barker argues, is matching different types of researchers to your personal style. If you're a micromanager, a lab with more students might be better than one full of more independently minded postdocs. Too often, young PIs look for technical expertise at the expense of intellectual talent. Over time, "you get better at knowing what you need," she says.

Moderate clashes In 1997, Richard Rest, a microbiologist at Drexel University, was on sabbatical at Oxford University when he learned that one of his postdocs in Philadelphia was verbally abusing other lab members. Things became so bad that he had to fire the postdoc by e-mail, alert campus security, and warn the rest of his lab not to come in the next day. To preempt similar incidents, Rest says he now talks openly with his lab. "I always feel uncomfortable speaking about personnel issues. No one feels comfortable speaking negatively about another human being," he says, "but I've learned to push aside those uncomfortable feelings, moderate them, and ask more direct questions."

Get a second opinion A professor in the biology department of a major research institution (who asked to remain anonymous) told The Scientist that "outbursts of rage and blame" by a few postdocs in her lab forced her to call in a university ombudsman and to eventually let the postdocs go. As a result, her lab shrunk from 10 people to four. Afterwards, she ran into a former supervisor of one of the problematic students; he had written a glowing recommendation, but he "rolled his eyes" at the mention of the postdoc's name. Now, instead of relying on written recommendations, she always picks up the phone and asks referees explicit questions to bring out the truth. "I don't just make one phone call; I make at least two," she says.

Capitalizing on Collaborations
Talk about the real issues Ed O'Neil, director of the Center for the Health Professions at the University of California, San Francisco, has run scientific leadership programs since 2002. At one meeting he met a junior scientist who told O'Neil that he had a conflict with a senior colleague over authorship. The true source of the conflict, however, was something else altogether. "It was about someone feeling mistreated; it was about passive-aggressiveness," says

O'Neil. Once the two colleagues sat down together and talked about what was bothering them, the dispute was easily settled and both scientists' names appeared as corresponding authors. "Your success as a scientist is not just based on your sheer brilliance," O'Neil says. "Your ability to play well with others is equally important."

Choose wisely Another assistant professor at a prominent US research institute who preferred anonymity told The Scientist that she had carved a niche for herself as the go-to lab if someone needed to crystallize proteins of a certain highly studied virus. "The word got out that I was working on the structure, and my phone started ringing off the hook," she says. The assistant professor says she had to dance a fine line to maintain confidentiality between different labs that were working on the same structure. She was upfront about her commitment to the first lab, she says, which meant turning down many potential collaborations until the structure was published. Now the original collaborator knows he can trust her, and other labs see her as dependable. (See the Opinion piece in the May issue for a perspective on competing collaborations.)

Learn to let go Many collaborations fall through when they are established by postdocs or students instead of PIs, says Barker. One reason is that younger scientists can be taken advantage of, with the senior collaborator running the project and the junior partner footing the bill. "Unfortunately, someone often gets screwed," she says. In researching her books, Barker has seen the repercussions of young PIs who dwell on feeling wronged. For peace of mind, her best advice in some of these cases is simply to turn the other cheek and learn from the experience. "Sometimes, you just have to shrug," rather than blame yourself or others for your decision, she says.

Know the criteria for collaboration When evolutionary geneticist Kelly Dyer joined the University of Georgia in November 2007, her tenure committee told her that it was important to establish herself as an independent researcher. This meant largely cutting ties with her past supervisors, she was told. "That's a tricky thing for me, because I enjoy collaborating with my PhD supervisor," she says. "So, it's hard to know what level of collaboration to maintain that will be looked upon favorably." For now, she's working on establishing new collaborations, but plans on keeping in touch with former supervisors for future projects.

A Matter of Time Management
Rank your tasks When developmental biologist Cassandra Extavour joined

Harvard University last year, she was surprised by how little administrative support she received. So, she started making lists to keep track of all her managerial tasks. As her lists shifted from digital to physical, she turned to piles. "I try and keep my desk organized in piles of most important to least important," she says. This allows her to match her activities to her mood: When feeling productive, she reaches for the top of the pile; when she's "brain-dead," she goes for the bottom. Extavour always keeps a list of outstanding chores. That way, "before I leave for the day, I have an idea of what I need to get done the next day," she says.

Ensure respect for your time When an assistant professor (who asked to remain anonymous) joined the multilab imaging center of a large university, several senior scientists overloaded her with tasks. She swallowed her pride, worked on weekends, finished the jobs, but didn't receive appropriate recognition. "If you're going to stand on your head, at least get credit for it," she says. Recently, when a colleague approached her with a task he urgently needed that required one of her students to work overtime, she thought twice about it. She made sure the student was willing to take the job, and made it clear that this wasn't the usual routine. The extra work paid off. The colleague "now provides a collaborative contact I wouldn't have had access to [otherwise]," she says. Follow your students' lead. In 1997, cell biologist Sandra Schmid of the Scripps Research Institute noticed a drop in motivation in one of her PhD students, who started leaving the lab early and didn't repeat failed experiments. Schmid confronted the student, who explained she wasn't interested in staying at the bench. Over the next two years, Schmid tailored the student's thesis to her main interest: science policy. The student completed her research in partnership with a postdoc and then wrote a more scholarly thesis. Instead of going to cell biology meetings, the student attended AAAS policy forums. Schmid saved time and effort by helping the student change focus and reapportioning her experiments. Now, says Schmid, this former student is a scientific policy advisor for a US senator. "I'm asking for excellence, but I'm asking for it in areas relevant for [her] to succeed," Schmid says. "We've got to get away from students as a labor force and back to the fact that we're training people."

Recognize special needs Graduate stipends have improved over the years, but some graduate students need to make extra money. It's an issue that needs to be addressed if you want to get the most out of your students, says Rest. He recalls one student who arrived late, groggy and bleary-eyed, because he was working nightshifts at an express courier company. "He didn't think it was my responsibility that he needed money," Rest says. When Rest learned that the student was working all day in the lab and all night in the warehouse, he found

a job for him as a dishwasher in another lab. The arrangement helped the student make ends meet while concentrating on his research.

#2 Seven Steps to Lab Harmony
http://www.the-scientist.com/article/print/43584/

By Kerry Grens

1. Be aware "I think the single most important thing a lab director can do is be cognizant of these issues," says Carl Cohen, president of Science Management Associates. Ignoring conflict in the lab can allow situations to spiral out of control. Stay in tune with the interpersonal dynamics and recognize when you are needed to step in.

2. Confront conflict When it's time to step in, be direct and honest. "If you've got something constructively critical to tell somebody, tell them directly, clearly: This is not acceptable. Tell them you're happy to work with them to change, and here are suggestions for change," says Ed O'Neil at the University of California, San Francisco. Do not embarrass or humiliate anyone by reprimanding his or her behavior in front of others.

3. Find your mission Clearly state the objectives of the lab, both scientific and professional. "The vision is the goal of your research and culture of your lab and what values you want to instill," says MaryRose Franko at the Howard Hughes Medical Institute. Include guidelines for behavior, bench ethics regarding shared resources, and methods for conflict resolution.

4. Clarify expectations When new members are considering joining your lab, present them with the lab philosophy and discuss each other's expectations for accomplishing experiments and collaborating with and mentoring others. Write down goals and deadlines and visit them periodically. "If you find their ability or motivation doesn't match their goals, you have to tell them," says Professor W. And if those expectations are continually unmet, discuss opportunities for readjusting goals or finding a place outside the lab that would be more suited to their skills and interests.

5. Recruit deliberately Once you have established your goals and expectations, avoid taking on people who will not meet them. "We've turned down many people who were technically perfect, but didn't fit," says Mary Yaroshevsky-Glanville, vice president for human capital at Anadys Pharmaceuticals. Yaroshevsky- Glanville says it's important to ask questions about a person's

history of conflict at other jobs to know what he or she will bring to your lab.

6. Allow others freedom to lead. When conflicts occur among lab members over the best way to run the lab or do an experiment, divide the authority. Give members ownership over different parts of the lab, and have them demonstrate why their management decisions are effective. Even before conflicts begin, says John Galland, director of the Lab Management Institute at UC-Davis, ask yourself: "What are you going to do to give others in your lab [some] opportunities to lead?"

7. Bone up Learn how to communicate with your lab members. First, understand your own personality and communication style, then get to know how others operate. "We have our course participants do a Myers-Briggs personality assessment, and I find those measurements are helpful because they help you understand your temperament and the temperament of those around you," says Joan Lakoski, assistant vice chancellor for academic career development at the University of Pittsburgh. To advance from there, find out if your institution offers workshops on lab management, or pick up a book on leadership.

#3 Nuts and Bolts of Managing A Research Lab
http://www.engr.washington.edu/advance/mentoring/LabMgmt.pdf

UW ADVANCE University of Washington Center for Institutional Change Adapted from • *At the Helm: A Laboratory Navigator* by Kathy Barker. Cold Spring Harbor Laboratory Press. Cold Spring Harbor, NY, 2002. • *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* by the Burroughs Wellcome Fund and the Howard Hughes Medical Institute. 2004.

All those years of training just do not seem to be preparation enough for suddenly managing people, and funds and politics, in addition to managing research. *--- At the Helm (pg. vii)*

Top Mistakes of a New PI
• Hired early, without much thought, and often with much regret (made hiring decision too quickly and eventually regretted the decision)
• Too friendly with people in the lab
• Didn't organize the lab right away; later it's too messy and too late to change
• Eventually learn to accept cannot control everything or people and have to work with differences, not eliminate them.

• Leaving the "bench" prematurely. You are your own best investment.
• Not staying on top of what everyone in the lab is doing
• Delaying dealing with lab disputes until they become a major problem

Lab Renovation Tips
• Renovations should be done before you arrive
• Visit other labs to get ideas and request advice Be present (in some way) to
  monitor progress – get updates from someone you trust if you are unable to
  view the renovation yourself
• Balance work and storage space. Think about future expansion possibilities.

Qualifications from your Ph.D./Postdoc experience that you DO HAVE for running a lab
• Ability to gather and analyze data (applies to people too)
• Organizational ability
• Confidence to act on intuition • Resilience
• Honesty and integrity • Communication skills
• Scientific know how • Ability to work productively with difficulty people
• Ability to work in a high-stress environment
• Persistence
• Circumventing the rules
• Ability and courage to start something even without knowing how

Finding good people
• Of all the choices you must make, the most important are the people who will
work for you.
• Don't hire just to hire.
• Know your bottom line for what is unacceptable before your first interview.
• Important to hire not just on skill set but also people are capable of learning
new techniques because your research projects might change
• Never stop looking for good people, people who will fit in with your lab, and
add to your
lab.
• Find out what, other than money, would make a job compelling for an
applicant (e.g. paper authorship, ability to work independently, etc.)
• What do you have to offer when recruiting people?
    * Promote your vision o Communicate your lab culture
    * Convey your commitment to mentoring – convey interest in helping their
      careers
    * Offer flexibility when you can
    * Provide a realistic level of reassurance regarding funding stability.

Rationale for training the already trained
• Salaries are the most expensive part of running a lab protect your investment by training new employees
• Hands-off training method is ineffectual
• Training is the best and fastest way to make lab workers competent

Tips for Negotiation
• Negotiating is not just about convincing someone of your point of view, it also involves listening to the other person's point of view.
• Have as much information on hand as possible
• Know what you want
• Negotiate problems, not demands
• Know what you are prepared to give up to get it [what you want] ... in negotiation, you do have to give up something.
• Emotion is perhaps the most important component of negotiations, even when the discussion is conducted in cool intellectual language
• Try to see past the action of individuals to their motivations as this will explain why they are doing what they are doing and saying what they are saying
• See the emotions behind actions, and reinterpret those actions --- try to understand YOUR OWN emotional responses at the same time.
• Ask questions (nonjudgementally)
• Listen and empathize
• Offer another solution

Responsibilities of the Lab Leader – 5 Key Leadership Roles
• Setting general scientific direction for the lab
• Keeping each person motivated
• Resolving conflict
• Setting and communicating expectations
• Mentoring and training the next generation of scientists and engineers