

CAREERS

TURNING POINT Award provides crucial funding for glaciochemist **p.787**

SALARIES More men than women negotiate when pay is defined, says study **p.786**

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Throughout her very active career, my graduate adviser, Mary Dallman, has insisted on having a table in the laboratory. I remember how Dallman, a neuroscientist at the University of California, San Francisco, would gather her graduate students and postdocs at that table to discuss data, design experiments and challenge the dominant paradigms of the time.

She had an office, of course, but the day-to-day business was done at that table, in the middle of the laboratory. She made sure never to have more than three graduate students and two postdocs at a time, and everyone participated. We critiqued each other, but were supportive if experiments didn't go as expected, or produced unexpected results. We knew that apparent failures might indicate even more exciting lines of enquiry.

Dallman taught me most of what I learned about how to run a lab. I don't have a central table (animal research means that some members of my group must work in a separate facility), but I keep my lab small, and I encourage students to foster discussions, question my ideas and update me on their progress, good and bad.

I have studied and observed how other labs are run worldwide, and have learned that good mentorship is not only a means of fostering capable, independent principal investigators, but also the best protection against misconduct. Just as there are great models of mentorship, there are also what I call toxic models, which can both discourage trainees and encourage misconduct. The 'executive' model involves a micromanaging principal investigator with a heavy hand; the 'competition' model endorses cut-throat and counter-productive rivalry among lab members (see 'Toxic teams'). I advise any student to avoid training in or collaborating with such labs.

SUCCESS AT ALL COSTS

In the executive model of lab management, the principal investigator demands that trainees meet his or her expectations, often with a specific goal in mind. In its most toxic form, that goal can include specific experimental outcomes — so a trainee is told to do this experiment and get this particular result. There is no room for disagreement, or for the trainee to overturn the investigator's paradigm.

I learned about the dangers of this model from one misconduct case in which a large, successful group partnered with other labs and set a very powerful, clear goal, but the principal investigator rarely spoke to students ▶

COLUMN

When lab leaders take too much control

Two 'toxic' management models treat trainees poorly and leave labs at risk of misconduct, says **Charles Wood**.

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SALARIES

Pay negotiations studied

Women are slightly more likely than men to bargain for higher pay when a job advert indicates that salary is negotiable, a study finds. But men tend more than women to ask for more money when it is not made explicit that wages can be adjusted, says *Do Women Avoid Salary Negotiations? Evidence from a Large Scale Natural Field Experiment*, a working paper published on 15 November by the US National Bureau of Economic Research. Researchers placed job adverts for real administrative positions in nine US cities between November 2011 and February 2012, drawing almost 2,500 respondents. They found that 11% of men and 8% of women initiated salary negotiations when the salary was fixed, whereas 24% of women and 22% of men started discussions when it was negotiable. Study co-author John List, an economist at the University of Chicago in Illinois, suspects that the pattern is probably the same for scientific research positions. “Even if a job advert says the salary is not negotiable, women should negotiate — unless they want to stay a step behind,” he says.

FACULTY HIRING

Adjuncts lack support

Three-quarters of US academic institutions polled in a survey reported increasing their numbers of full-time non-tenure-track — or adjunct — faculty members in the past decade. More than one-third have “significantly increased” hiring of part-time adjuncts in the same period, finds *Values, Practices and Faculty Hiring Decisions of Academic Leaders*, a study that will be published in early 2013 in the journal *Liberal Education*. However, the paper reports that just 58% of the 157 responding institutions offer structured mentoring to full-time adjunct faculty members, and only 42% provide professional-development opportunities such as workshops on writing grant applications and managing grant budgets. Adrianna Kezar, co-author of the study and an associate professor of higher education at the University of Southern California in Los Angeles, says that early-career researchers interviewing for adjunct positions should negotiate for professional-development support and mentoring, which help to make candidates indispensable at universities and may confer an advantage on those who attempt to make the jump to a tenure-track post.

► or collaborators and never observed primary data being produced. Not surprisingly, a junior faculty member in a collaborating group eventually manipulated data to meet the goal, and no one realized for years. Of course, some scientists are more tempted to cheat than others whatever the management style, but cheating can be prevented by an involved principal investigator who is open to whatever data are produced. It can be disastrous to pressurize lab members — subtly or obviously — to produce only data that support the principal investigator’s hypothesis, particularly when fellow trainees lose their jobs for producing data that don’t meet the requirements (a penalty that, for foreign students, can mean deportation). What’s more, in such a high-pressure, isolated environment, principal investigators and other collaborators often fail to teach students important lessons, such as how their portions of the project fit in with the larger goal. The lessons that do get learned are negative: competition over collaboration and conformity over creativity. Once they leave the lab, students either drop out of science or go on to run their own labs on the same model.

HEAD TO HEAD

In the second toxic style of mentorship, the competition model, principal investigators give two or more trainees the same goal. The implication is that the one who completes the task first — or, more dangerously, the one who generates the data that conform best to the preconceived outcome — is the winner.

Often, the competition is not as obvious

as giving trainees the same project, but it still means that they compete against each other, perhaps for first-authorship of a paper or credit for collaborative work. If a trainee does not win the prize, he or she will face much poorer career prospects. This creates the perfect motivation to cross the line and fabricate data, and makes everyone in the lab unhappy and suspicious of one another. Students are treated purely as labour, with no regard to their education. If they do win, they often go on to become bad mentors themselves.

THE ANTIDOTE

I have seen many labs run on these toxic models, although not always in such extreme forms. Principal investigators often opt for shades of one or both. To avoid making the same mistakes myself, I am constantly examining my own relationships with my trainees, being sure to limit the number I take on. At the moment, my lab consists of only four graduate students, and no postdocs. Certainly there are mentors who can successfully advise many students: a large group does not by itself lead to a toxic model of mentorship. And different scientific disciplines need different amounts and types of mentorship. But increasing the number of trainees can dilute the mentoring experience. The balance of time and commitment will certainly be different for each faculty mentor.

I often tell my students that ‘academic scientist’ is the best possible job. The joy that comes from individual mentorship, from discovery, from intellectual and practical challenges, is unique to this environment. Trainees should experience the fun of science, teaching and learning, not the toxic environment of a dictatorial enterprise. And they should be able to question approaches and orthodoxy. I always encourage dissent and enable trainees to question a working hypothesis.

All successful models of mentorship have a common thread: the mentors commit to their trainees. Losing focus on the student or postdoc violates the most basic premise of mentorship — that trainees are there to be trained. Viewing trainees as merely cheap labour leads to toxic mentorship.

My advice to students and postdocs is to choose your adviser well. Pick an open mentor who has a good track record with students. If your principal investigator starts to exhibit toxic behaviour, address this with him or her. If you find yourself in a truly toxic environment, seek guidance from a graduate coordinator, assistant dean or other authority figure who oversees the pre- or postdoctoral training programmes — and ask for help in finding another mentor. No fledgling scientist has time to waste on a toxic situation. ■

Charles Wood is chair of the department of physiology and functional genomics at the University of Florida in Gainesville.

WARNING SIGNS

Toxic teams

The ‘executive’ and ‘competitive’ lab-leadership models can create poor work environments with undue pressure to perform, says Charles Wood. Here are some signs to look for:

Executive

- Lab members spend little time with the principal investigator.
- The lab is busy, and focuses only on high-impact papers and large grants.
- Research goals are clearly established.
- Penalties for unmet goals are strong.
- There is little cross-talk with collaborators.

Competitive

- One goal is assigned to several people.
- The lab is large, with many trainees.
- Lab members are unhappy and hyper-competitive.
- Socializing is rare.