

CAREERS

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situations where people are having problems with their supervisors,” says Sarah Blackford, head of education and public affairs for the Society of Experimental Biology, headquartered in London. “People get very emotional, and things can escalate.” Blackford, who is based at Lancaster University, UK, and advises junior researchers throughout Europe, says that postdocs and graduate students in broken labs must work out the crucial next step. Are they going to endure a bad situation? Are they going to find a way to mend the relationship? Or are they going to jump ship?

Whatever the decision — endure, repair or escape — the conflict will probably become a career turning point. Junior researchers who run afoul of their PIs may feel stuck, and they could end up with one fewer letter of recommendation than they had originally counted on, but that does not mean that their science days are over. With a positive attitude, a knowledge of institutional policies and some objective, well-placed allies, it is possible to move on — to academia or beyond.

A CHANGE IN TACK

Hankel quickly realized that long hours and dedication were not going to be enough to break the impasse with his PI. “Working extra hard is exactly what my PI wanted,” he says. “I was getting more data for him. But if they aren’t going to give you a target to hit, you can’t keep spinning your wheels.” Instead of working harder, Hankel used some of his paid time off, giving himself time to make a plan. He started attending conferences, which he paid for out of pocket. That sort of networking, he says, can be especially important in times of conflict. He kept daily records of his interactions with his PI, and he saved all of the relevant e-mails.

Most importantly, he set up meetings with his department head and several deans, and discussed with them his need for a clear path to graduation. He also consulted the school’s official graduate-school manual, which gave him a major source of leverage. Among other pronouncements noted in the manual, students were expected to graduate within five years, and advisers were supposed to actively support their students’ progress. Prompted by the meetings, his adviser finally told him the exact steps that he needed to take to finish his dissertation. With an exit plan in place, Hankel was able to get his degree about a year after all of the trouble started.

Conflicts with senior scientists can be especially bewildering for PhD students, says ▶

WORK ENVIRONMENT

When labs go bad

A toxic relationship between junior scientist and adviser can quickly turn career prospects sour.

BY CHRIS WOOLSTON

There is no crying in baseball, according to a famous quote from the 1992 film *A League of Their Own*. But there is most certainly crying in science, says Isaiah Hankel, a former cell biologist turned author and career coach. He admits shedding a couple of tears in a bathroom cubicle after his graduate adviser screamed at him in front of the entire lab — all while another principal investigator (PI) looked on. “It was the craziest thing,” he says.

But it did not come entirely out of the blue. During his fifth year of study, Hankel had been promised an industry job — under the condition that he get his PhD first. Unfortunately, his PI was not on board with the plan. “He totally withdrew his support,” he says. “I wanted to map out exactly what I needed to do for graduation, but he would never nail it down.”

Like Hankel, many junior researchers come to realize that their relationship with their PI — the one person who is most in control of their careers — is not working out. “I’ve seen a lot of

THE BEST DEFENCE

Look before you leap

Many junior researchers who find themselves at odds with their advisers could have avoided trouble with a little preliminary research. For PhD students, it is helpful to find someone who has a history of turning trainees into scientists, says career adviser Karen Kelsky in Eugene, Oregon.

“Be a good detective. Check with other graduate students and postdocs, and look at the track record,” she says. The statistics will tell the story — many ‘bad’ advisers have never guided a doctoral student through the point at which he or she actually earned a degree. Of course, some principal investigators are too new to have much history. In those cases, Kelsky says, students should check with prospective advisers to make sure that they are committed to helping students to earn their degrees.

Postdocs too often take a scattershot approach to finding a lab, says Sofie Kleppner, an assistant dean in the office of

postdoctoral affairs at Stanford University in California. “Some of them will spam the entire university looking for a position,” she says. “They spam me, and it’s been a long time since I’ve had a lab.”

Instead, they should conduct a much more focused search for a lab that is compatible with their personality, rather than just their scientific interests. She recommends that postdocs give a talk to the principal investigator and members of a prospective lab, creating an important opportunity for both sides to look for a good fit. In addition, they should set up an in-person chat with the adviser — and have lunch or dinner with other people in the lab.

This is the chance to ask a question that could prevent a lot of future trouble: what is the worst thing about working in this lab? If the complaints run far beyond the normal scientific grumblings, it is better to keep looking. **C.W.**

► Karen Kelsky, a science job coach in Eugene, Oregon, and author of *The Professor is In: The Essential Guide to Turning your PhD into a Job* (Three Rivers Press, 2015). PhD students do not always have the interpersonal experience to handle rocky relationships, she says, and they are often unprepared for the rigid hierarchy of academia (see ‘Look before you leap’). “There are some aggressive advisers who like the power and just want to see a person get destroyed,” she says. Instead of letting a student defend a thesis and receive a PhD, they ask for one more rewrite or one more experiment, not because the work is crucial, but to remind the student who is really in command, she says. “That’s probably the most common story I hear,” she says.

In many cases, students can get their freedom by putting their head down and meeting every request, even if it seems wrong or unhelpful. “That’s what ended up happening to me,” says Kelsky, who has a PhD in cultural anthropology. “I revised my dissertation by taking out everything my adviser hated and putting in everything she liked.” As they approach the finish line, she says, students should think less about their literary legacy and more about making their PI happy. “A lot of graduate students are obsessed with their dissertations, but the fact is that nobody is going to read them. They shouldn’t get so worked up.”

SEARCH FOR ALLIES

One cognitive scientist, who asked not to be named, received her PhD from a prestigious university on the US West Coast. She says that her relationship with her PI fell apart in the fourth year of a five-year programme, a

particularly vulnerable time in her education. A combination of misdeeds, misunderstandings and hurt feelings left her wondering whether she should abandon the programme and start again. Among other questionable behaviours, her adviser seethed when she did some work with a rival lab during her adviser’s sabbatical. When her adviser gave one of her projects to another student, she felt the relationship was irretrievably damaged. But instead of quitting her PhD programme, she had coffee with a faculty member who helped her to look at the big picture. “She said

I shouldn’t throw away four years of work.” The same faculty member stepped up to become the co-chair of the student’s committee, a position from which she could ensure that the degree process would be fair and unbiased. “She made sure I wasn’t retaliated against,” says the cognitive scientist, who is now a tenure-track assistant professor at a US university.

For postdoctoral researchers, conflicts with PIs can cause a lot of soul-searching and career angst, says Sofie Kleppner, an assistant dean in the postdoctoral-affairs office at Stanford University in California. “It’s a huge issue if you’re in a lab and you feel like it’s the wrong lab for you,” she says. In her experience, postdocs often feel as if they and their advisers are not on the same page. “One of the biggest problems is mismatched expectations,” she says. “A postdoc might want to be independent, but a PI might be the type who likes to check in. That can cause a lot of frustration.”

In some cases, simple misunderstandings can cause a lot of tension. “A postdoc might tell me that they don’t want to go into academia, but they’re afraid to tell their PI,” Kleppner says. “And then the PI will say that he’s worried because the postdoc doesn’t seem cut out for academia.” The upside of simple misunderstandings, she says, is that they often have an equally simple solution: talking about it.

THE ART OF CONVERSATION

As professional scientists, postdocs need to take a business-like approach to conflicts with their PIs, Blackford says. That means communication — and a lot of it. “You have to talk about the situation without getting personal,” she says. “Set up a meeting with a proper agenda.” Blackford adds that not all PIs are especially approachable or easy to talk to. If one-on-one conversations do not completely solve the problem, she recommends finding an



Science-career coach Karen Kelsky helps PhD students to navigate the job world.

KAREN KELSKY

impartial faculty member who is willing to offer confidential advice.

In some cases, Blackford says, discussing the situation with an objective ally can help disgruntled junior researchers to understand the true source of their discontent. “Some people can’t even put a finger on what’s gone wrong,” she says. “They just don’t feel respected, and then they have a crisis of confidence. It’s helpful to talk with someone who can tease out what you’re saying.”

Postdocs should develop on-campus allies who can serve as sounding boards and counselors. “I tell people to identify their peer support and mentors early,” Kleppner says. “You need someone who can advocate for you if something isn’t working out.” Adding another person to the conversation can be a quick way to find compromise and clarity, she says. “It’s basic ‘Conflict Resolution 101.’”

Not all conflicts can be resolved — some postdocs eventually decide to leave a lab for good. “These are high-powered people who don’t want to admit failure,” Kleppner says. “But it’s OK to admit it.” When it is time to leave, professionalism is more important than ever. She recommends explaining the decision to a PI in clear, dispassionate terms — the same tone that is needed when talking to other PIs about a possible job. Naturally, they will want to know why the last job did not work out, but they don’t want to be dragged into the drama. A postdoc who can clearly communicate why the last lab was not an ideal fit — without making any personal attacks on his or her former PI — will have a good chance of moving on. “You’re not going to ruin your reputation as long as you don’t ruin anyone else’s,” says Kleppner.

Hankel managed to leave academia with his reputation — and his degree — intact. As a career consultant, he now encourages other scientists to stand up for themselves even when the hierarchy is tipped against them. He notes that some scientists end up spending so many years doing their PhD and multiple postdocs that they barely have time to establish their careers before retirement. “Advisers hold the keys to people’s lives,” he says — which means that it is important to resolve disputes as quickly as possible and avoid spending too much time in a lab that will not promote a junior researcher’s progress. When a PI is not being supportive, Hankel says, early-career researchers have to prioritize their professional interests — even if that means hurt feelings, bruised egos and a change of venue. “It’s always appropriate to have self-respect,” he says. ■

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A forced lab move can be a hassle. Find out how to handle it seamlessly in an upcoming issue of *Nature Careers*.

TURNING POINT

Martin Jinek

Structural biologist Martin Jinek helped to launch the genome-modification craze that is upending biological research. Now running his own laboratory at the University of Zurich in Switzerland, Jinek describes how research is changing as CRISPR — a gene-editing tool with the potential to cheaply alter plants, animals and even human embryos — takes hold.

Did you set out to work on CRISPR after completing graduate school?

No. When I started as a postdoc in Jennifer Doudna’s group at the University of California, Berkeley, in 2007, we knew practically nothing about CRISPR, which stands for ‘clustered regularly interspersed palindromic repeats.’ The first paper describing it as an adaptive immune system in bacteria came out early that year (R. Barrangou *et al. Science* **315**, 1709–1712; 2007). Although Doudna was one of the first to explore CRISPR, my original project was on the molecular mechanisms of microRNA. But the CRISPR field became more interesting, so I collaborated with some group members and finally began my own project working on Cas9, an enzyme that cuts DNA.

When did it become clear that CRISPR was a game changer?

We were interested at first because it looked similar to RNA interference, in which RNA molecules inhibit the expression of genes. But the molecular machinery was intriguingly different. The wider implications — and its potential utility in genome research — came only after we learned that it cuts double-stranded DNA and is programmable, which made it even more interesting to work on.

What is most surprising about this technology?

How quickly it has developed. Within six months of publishing a paper showing that CRISPR can be programmed (M. Jinek *et al. Science* **337**, 816–821; 2012), three labs — including ours — were using it as a genome-editing tool. Within 12 months, researchers were applying it to many cell types and organisms.

How is CRISPR shaping your research agenda?

My goal is to understand how the system actually works. My resources are not unlimited, so I focus on what I do well — structural biology. Five of the ten people in my lab, which began in 2013, are aiming to gain a better structural understanding of the DNA-cutting mechanisms in CRISPR systems so that we can engineer the system to be more efficient and versatile. The CRISPR technology is finding



applications in basic-research labs, as well as in biotechnology and molecular-medicine labs, to potentially cure genetic disease or engineer organisms to make biofuels. I’m already using it to address other research questions.

What did you take from your experience as a graduate student in a new lab?

I was the third PhD student in Elena Conti’s first laboratory, at the European Molecular Biology Laboratory in Heidelberg, Germany. She was a fantastic mentor, and being in her lab at an early phase of her career has shaped my own lab. She was a tough boss, but she taught me how to approach a scientific problem to find the right questions, and how to do good science to answer those questions.

Has the public reaction to CRISPR had an impact on your work?

On some level, we anticipated it would be big. We just didn’t know how big. The wider societal and potential ethical issues associated with the use of CRISPR, especially those that relate to human-genome modification, have generated a lot of attention. The negative side of working in the CRISPR field is that it is so competitive, it leaves little time for anything else. ■

INTERVIEW BY VIRGINIA GEWIN

This interview has been edited for length and clarity.

CORRECTION

The Careers feature ‘Mind Wide Open’ (*Nature* **525**, 147–148; 2015) stated that BEST had offered career training to about 10,000 graduate students and 600 postdocs since its launch. In fact, at least 4,000 postdocs have benefited.