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COUNSELLING

Knowledge is power

A strong network of mentors provides a wealth of experience from which to learn.

BY PAUL SMAGLIK

Principal investigators (PIs) have a major role in advancing the careers of the junior scientists in their labs. They serve as bosses, role models, teachers and technical advisers. But often, those tasks prevent them from filling another essential need: mentor.

“A PI by definition must be an authority figure,” says Kelly Edwards, associate dean for student and postdoctoral affairs at the University of Washington’s graduate school in Seattle. “Someone who will be tough and strict.” But students and postdocs often need other kinds of support, she says: a counsellor, an advocate, a sympathetic ear, or even just “an aunt who will slip you \$5 every once in a while”.

These sorts of relationships can be hard to cultivate, especially for young scientists whose lives revolve around their labs. But making the effort to step away from the bench to socialize and network at conferences, seminars and university events can pay off later in the form of

valuable career advice and guidance. Mentors can help junior researchers to make difficult career decisions, such as whether to pursue a non-academic career path or switch their research emphasis. And having mentors other than a PI is comparable to having an informal board of directors: the junior scientist benefits from the viewpoint and perspective of multiple people at various career stages.

Some institutions have begun to encourage young scientists to build a mentor network by connecting them with alumni or hosting retreats that put them in direct contact with scientists from different professional backgrounds. These initiatives remove the need for junior researchers to build an entire mentor network on their own. The University of Washington’s graduate school, for example, offers regular sessions to help students tap into the university’s alumni group and other resources. It also requires that students’ individual development plans, — which document young scientists’ training and are required by many

grants — include a section on mentor-team development. Part of the university’s scheme involves telling both the PI and the student that mentors outside the department, or even the university, might be useful for goals such as exposure to industry or soft-skill development.

Similarly, Indiana University–Purdue University Indianapolis hosts regular career-planning workshops in which professionals from the area meet with students, postdocs and faculty members. The university also offers training workshops for young faculty members.

Katherine Shives, a microbiology graduate student at the University of Colorado Anschutz Medical Campus in Aurora, can attest to the usefulness of such events. It took her almost a year and four lab rotations to settle on her PI. But she needed just a few minutes at a university social function to find a key mentor. She started chatting with immunologist Kathryn Holmes, a professor emerita at the university, and felt an immediate rapport. “I felt very comfortable talking to her,” says Shives, who ▶

► adds that Holmes has become an important mentor. “I spent a pretty decent amount of time in her office. She’s given me excellent advice.”

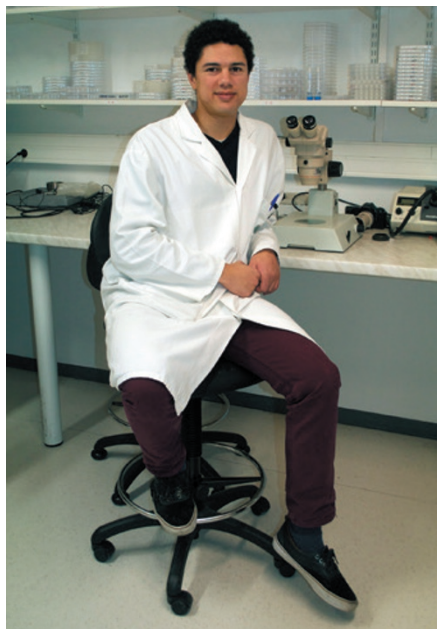
Holmes talked Shives through the stress of her first year in graduate school, and has given her the best advice she has received so far in her programme: “Even good change is stressful.” That phrase became Shives’s mantra and has helped her to maintain her perspective during other difficult periods. Holmes also provided guidance as Shives rotated through labs while trying to choose her PI. When the options were carved down, she helped Shives to choose between an established PI with a large lab and a newly fledged PI with a smaller group.

“She advised that established PIs have a solid track record of funding and mentoring students, and that with established labs you know where the PI is and what they are doing,” says Shives. “With younger PIs, there’s no track record of funding and they may have never mentored a student, but there is also the potential of working with a rising star before they get big, and that being the only student means you can get more individual attention.” Ultimately, Shives chose the smaller lab, where she remains today.

She has also stayed in contact with her undergraduate adviser and her PI from an internship during her final year at secondary school, who have also been valuable members of her team, in part because they are not nearby. “Having someone off-campus and removed from my programme was very valuable in the first year,” Shives says. “It helped me keep in perspective that it was not just me struggling, and that the difficulty was not a sign that I was incapable of the work.”

A series of professional interactions through different stages of his education and career helped Tshaka Cunningham to construct his mentoring team. Now a scientific-programme manager at the US Department of Veterans Affairs in Washington DC, he had won a scholarship to attend Princeton University in New Jersey as an undergraduate. Donald Graham, then chairman of *The Washington Post*, was a member of the scholarship committee, and became part of Cunningham’s mentor team after the student requested a personal meeting with him. Molecular biologist Arnold Levine advised Cunningham during his undergraduate programme. After Cunningham graduated, the two stayed in contact; Levine helped him with job interviews, and continued his mentoring role with Cunningham when the younger scientist joined Rockefeller University in New York and Levine became its president. And later, while Cunningham was working as an industry researcher in drug discovery, he connected with a company executive who remains one of his mentors.

Cunningham says that he especially values the support and guidance he received from his mentors when he was conflicted about whether to accept his current job. His quandary was that he loved basic research, but wanted a



Paul Sauer recommends taking courses with students from other disciplines.

more-even work–life balance. His mentors counselled him to evaluate what he most wanted, and the advice proved sound — eight years later, he remains pleased with his decision to choose the work–life balance.

He warns, however, that although it is important for junior scientists to feel comfortable with their mentors, they should also look for people who will challenge them. “You want people always in your corner — but who can be brutally honest,” he says. “I seek someone who knows me well, and who has a good enough relationship with me that they don’t worry about hurting my feelings.” His team helped him to weigh up the effort and sacrifice involved in an academic career, he says, and to understand that he could have professional success outside that — even though academia had been his dream.

MAINTENANCE WORK

Once a junior scientist has built a network of mentors, the work is not over — he or she must continue to nurture the relationships. Cunningham stays in regular contact with his mentors, but is careful not to smother them. He sends short e-mails a couple of times a year asking how they are doing and what they are working on. Shives meets her mentors regularly for coffee or lunch, and makes a point of catching up with those who are based outside her area whenever they are in town. She makes sure to thank them all for whatever help and support they offer.

Cunningham points out that it is important to remember that a mentor is not a therapist who can devote endless amounts of time to a junior scientist’s challenges. He asks for help only when he has a specific problem. That process helped him to remember both the power

and limitations of mentors. “At the end of the day, a mentor can give you only a framework,” he says.

Mentors outside the lab can help to relieve pressure on the PIs, because the relationships can meet needs that the PI might overlook or be unable to address. This is especially important when a student wants to explore skills or careers away from the bench or outside academia, says Edwards. “That can be a vulnerable point for the faculty member — ‘This trainee doesn’t want to be like me,’” she says. Often, she adds, a senior faculty member simply does not have enough information about non-academic or non-research career pathways to properly guide a junior scientist into or through them.

Mentors need not always be senior researchers: peers can successfully mentor one another.

The European Molecular Biology Laboratory (EMBL) has fostered an initiative in which new students take courses together and learn from each other’s skills. Such a structure can form a strong section of a professional network, says Regis Lengrand, head of administration at EMBL in Grenoble, France.

Paul Sauer, a third-year PhD student studying cellular signalling at EMBL, has gleaned several benefits from the initiative. Taking the courses is an effective and easy way to build peer-mentor relationships — and to set the stage for later collaborations, he says. “Once your own project develops and you are looking for collaborators, or some advice from another field, you can turn to those peers,” he says.

More-senior graduate students and postdocs at EMBL are tasked with teaching workshops, which puts them in touch with scientists at other sites. EMBL also hosts seminars given by external postdocs, companies and visiting faculty members, which provide opportunities for graduate students and postdocs to network and develop external mentor relationships. It also makes its alumni network available to students and postdocs.

The US National Institutes of Health has created a similar model in its Broadening Experience in Scientific Training programme, which sponsors ‘boot camps’ for new graduate students that encourage them to form both peer and faculty mentor networks (see *Nature* 525, 147–148; 2015).

A strong mentor group can give a junior scientist lifelong help with career progression — not just through graduate school and postdocs. “Having a diverse group of mentors, both inside and outside science, was really helpful for me as I discovered my own truth for the career path I wanted to pursue,” says Cunningham.

Shives appreciates the continuing presence in her life of one of her off-campus mentors from early in her education. She still turns to him for emotional support. “You need someone to help you keep your feet on the ground,” she says. ■

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