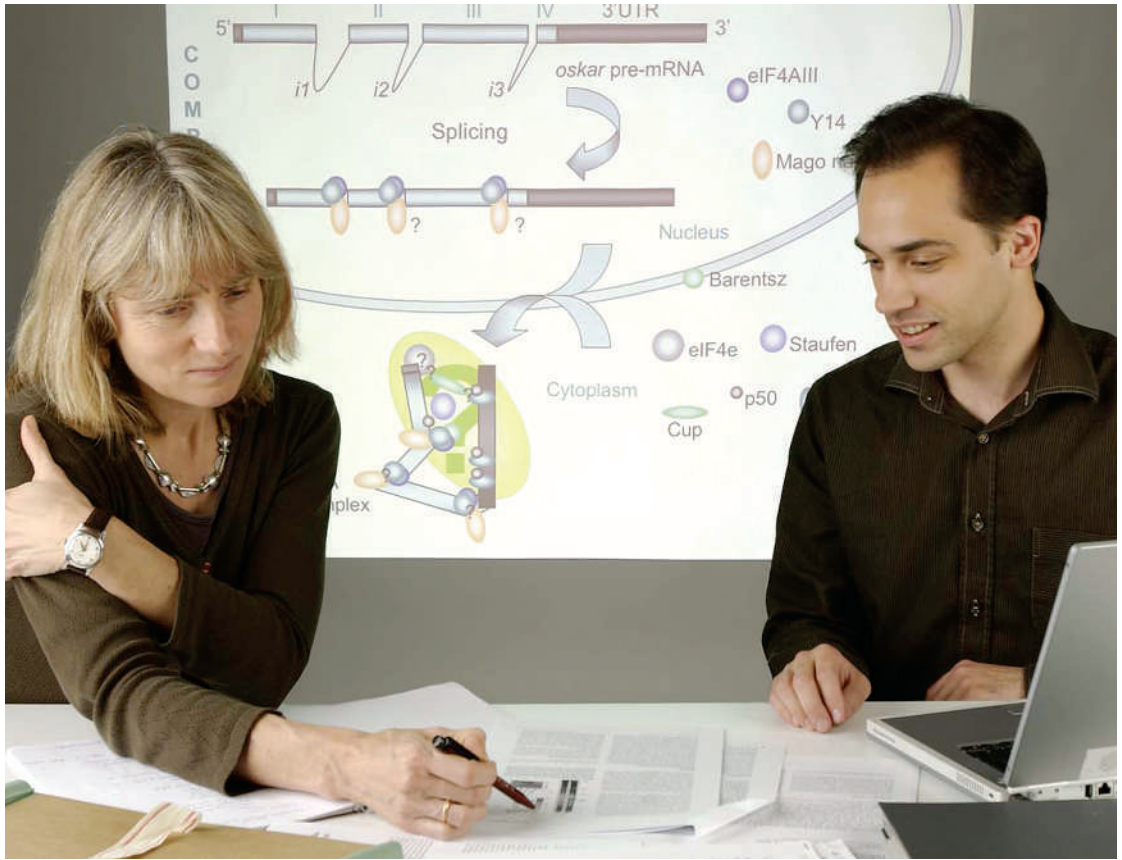


Learning to mentor

Having a good mentor can determine the direction and probability of success for a young researcher. But mentoring takes skill, and institutions are paying attention to their training, says **Virginia Gewin**.



Lucy Godley, an assistant professor of medicine at the University of Chicago, has had mentors all her life. Beginning in high school and through college and graduate study at the Pritzker School of Medicine at the University of Chicago, where she had an appointed mentor, she has been helped by advisers and confidants to navigate the various issues of academic life. But now it is her turn to be a mentor, and she finds the responsibility daunting.

“My first graduate student starts soon and I hope to take the best of what I had and pass it on,” she says, expressing excitement but also trepidation.

Godley is not alone. Making the transition from having a mentor to being one is harder than one might think. Managing people, rather than experiments, is unfamiliar territory for many early-career scientists. Given the number of horror stories — about mentors who are uncommunicative, absent or even competitive — it is clear that not all graduate students have positive experiences to draw from. Institutions, individual departments and even online mentoring services are trying to identify the factors that can make more mentoring experiences positive.

Identifying traits

Understanding a student’s career aspirations is often the first step towards tailoring a mentoring style to an individual student, say these mentors. Identifying a student’s strengths and weaknesses may involve a

“I went in with the naive notion that students would be just like me,” says **Hopi Hoekstra**, left.

difficult conversation, but this will often be one of the most fruitful. To get at a student’s individual needs may require a fairly in-depth exchange.

The Federation of American Societies for Experimental Biology has developed an informal checklist, dubbed the individual development plan (IDP), to offer a guide to mentors and students (see ‘Basic steps for mentors’, left). Such checklists, although new to science programmes, are a staple in the business world.

To promote consistency, some institutions are creating mentoring programmes or putting new emphasis on programmes already in place. Both the Howard Hughes Medical Institute (HHMI)/Burroughs Wellcome Fund and the European Molecular Biology Organization (EMBO) have added mentoring to their programmes for training young investigators in a variety of lab management skills. EMBO’s Young Investigator Programme also provides a mentor for one year, including one paid visit to the protégé’s workplace.

Hopi Hoekstra, now an assistant professor of biology at the University of California, San Diego, says that the HHMI course helped her avoid mistakes from the beginning. Nonetheless, she says, she still had to learn to adapt her mentoring style to meet individual needs.

“I went in with the naive notion that students would be just like me, and that’s absolutely not the case,” says

BASIC STEPS FOR MENTORS

- Become familiar with available opportunities
- Discuss opportunities with the postdoc
- Review individual development plan (IDP)
- Establish regular review of progress
- Help revise the IDP as needed

MINORITY MENTORING

Sometimes, female or minority students may have issues beyond those that come up with students in general. There are mentoring organizations that address these specific groups. For example, the Women in Natural Sciences Developing Opportunities in Mentoring programme at the University of Texas assembles both one-to-one mentoring pairs and small groups to help undergraduate, graduate and postdoc students find or become mentors.

Some initiatives, such as MentorSET — a UK-based mentoring programme (sponsored by the Association for Women in Science and Engineering and the Women's Engineering Society) — are designed to help retain women in science, engineering and technology. MentorSET offers free mentoring workshops to attract mentors. The American Biomedical Research Conference for Minority Students holds conferences to encourage minority students to pursue biomedical careers.

Creating an affinity group where scientists are helping students culturally, as well as professionally, is important, says Alberto Roca, a biochemist at the University of California, Irvine, and founder of the Minority Postdoc Summit forum. **V.G.**



Taught to teach: postdocs are increasingly getting training on how to mentor.

Hoekstra. “You can’t just have one mentoring style.” And that’s where more personalized attention can become helpful (see ‘Minority mentoring’, above).

This may have particular resonance in Europe, where graduate students tend to arrive with different levels of education, experience and cultural expectations, says Anne Ephrussi, associate dean of graduate study at the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany. EMBL’s approach involves a mandatory two-month intensive course to explain basic research and the framework of laboratory research, and to establish a tight network where students meet all group leaders.

“EMBL is the most non-hierarchical a place could be and still remain highly functional,” says Ephrussi, explaining the decision to bring more structure into the mentoring process.

Like many other institutions, the Research Institute of Molecular Pathology (IMP) in Vienna, Austria, uses senior faculty members as mentors for junior colleagues. This is not a formal process — junior faculty members typically take the initiative to find a natural match with a senior colleague. But, says Jan Michael Peters, a cellular biologist at the IMP, the physical design of the institution may encourage the relationship as well as more informal networking and advising. Unlike other European laboratories, where groups tend to be more separated, he suggests

that the IMP’s layout forces people to bump into each other. The central cafeteria next to the lecture hall provides numerous opportunities to meet people for a coffee and a chat following mandatory attendance at student talks, he says.

Reaching out for more ideas

Communicating and networking, outside the mentoring relationship and beyond a particular academic programme, have been identified as crucial to successful career-building. Sandra Schmid, chair of the department of cell biology at the Scripps Research Institute in La Jolla, California, suggests that mentors should encourage students to talk to other people about their work, and form collaborations to generate more work — all in an effort to establish their value to the scientific community.

Indeed, encouraging students to have several mentors, ideally outside their immediate project, helps build their networking skills. An outside perspective can be invaluable, particularly if one isn’t set on a traditional career route. What if a student decides to go into industry and the mentor has only had experience in academia? Pointing students towards industry mentoring resources can help, says biochemist Sonja Lorenz, a PhD student at the University of Oxford, UK, who took part in a Novartis-sponsored mentoring programme to expand her circle of mentors and offer industry career options.

To serve an increasing demand for external mentors in mathematics, science and engineering, the online not-for-profit free service MentorNet, based at San José State University in California, has matched thousands of people with mentors since 1998. It even offers online training tutorials to those willing to serve as a mentor. In addition to case studies, mentors receive regular coaching suggestions. It started out as an industry resource, but a pilot academic programme was set up to meet demand from graduate students and postdocs. The biggest challenge is finding enough tenured faculty members, says Carol Muller, MentorNet’s chief executive.

Practical advice may only be part of a mentor’s role. Success may mean helping a protégé to find or create an environment that is comfortable to work in.

“I want a place where people want to come to work,” says Ashutosh Chilkoti, associate director of the Center for Biologically Inspired Materials and Material Systems at Duke University in Durham, North Carolina. Rather than monitor postdoc hours in the lab, Chilkoti rewards hard work. Although he offers practical career and technical advice — such as how to get a lab running faster and more cheaply, or how to write grant proposals — he believes this advice pales in comparison to what he calls his most important job: conveying a passion for the work. His students seem to agree. Chilkoti was recently voted a top postdoc mentor in a survey by *Science*.

Lucy Godley can attest to the sustaining effect of a mentor’s enthusiasm. Confidence born from the encouragement of past mentors helped her through the rough patches of starting her own lab, she says. Becoming an assistant professor turned out to be harder than she expected. “It took all that encouragement for all those years to keep me doing it,” she says. ■

Virginia Gewin is a freelance science writer based in Portland, Oregon.

WEB LINKS

- FASEB guide to mentoring
www.faseb.org/opa/ppp/educ/idp.html
- The Howard Hughes Medical Institute Lab Management
www.hhmi.org/grants/office/graduate/labmanagement.html
- European Molecular Biology Organization Young Investigator Programme
www.embo.org/projects/yip
- Women in (Natural) Sciences Developing Opportunities in Mentoring programme at the University of Texas
www.utexas.edu/cons/wins/wisdom
- MentorSET
www.mentorset.org.uk
- Minority Postdoc Summit
www.minoritypostdoc.org