

Lab Is Where The Heart Is?

Trials and Tribulations of Lab Culture



For many grad students, postdocs, and PIs, the lab in which they work represents a type of “home away from home,” replete with similar territorial issues, responsibilities, and associated “family dynamics.” And just as there are many different types of families, there are many different types of lab cultures. The environment may be competitive or it may be more collaborative. There may be ordered systems of sharing supplies and equipment, or perhaps, as in some families, anarchy reigns. Likewise, members of the “lab family” may enjoy each other’s company or spend as much time apart from each other as possible. Regardless of the type of culture, one always exists, so it behooves the PI to try to manage it.

By Emma Hitt

SETTING THE TONE

When setting the tone for a lab, a common approach used by principal investigators (PIs) is to clearly state the expectations to lab members when they first start. “When someone is thinking about joining my group I am very up front with what my expectations are,” says PI **Paul Doetsch**, professor and distinguished chair in cancer research, at Emory University School of Medicine in Atlanta, Georgia, adding that one major expectation he has for his lab members is a strong work ethic.

“I clearly communicate my philosophy regarding how my lab should run,” says PI **Michael Hengartner**, dean of the faculty of science, at the University of Zurich, in Switzerland. “I do not necessarily proselytize, but I do bring it up regularly, particularly when one of my lab members seems to be ignoring my philosophy. I take great pains to make sure that during any recruiting of new lab members, they are informed (or shall I say “warned”) of our lab philosophy. I also make sure that current lab members get an opportunity to meet with prospective new lab members, and I make sure to consider their feedback, since a single ‘dominant negative’ person can kill the good atmosphere of a lab.”

The amount of time a PI spends in the lab is also important for setting the work ethic standard, even if it consists of a regular walk around and interaction with the lab members. **Heather Maughan**, a postdoctoral fellow who is now in a laboratory at the University of Toronto, in Canada, observes that when “PIs spend almost no time in the lab, lab members tend to be sloppier and not perform all of their duties, such as lab cleanup and sharing of reagents,” she says. “By contrast, PIs who spend a lot of time in the lab tend to run tighter ships.”

According to Maughan, when PIs run tighter ships, there is often-times more of a feeling of camaraderie among the lab workers. In addition, the lab is better organized, which makes the work easier and more efficient. “By contrast, when the PI is almost completely absent from lab life, workers tend to get along superficially, but may be

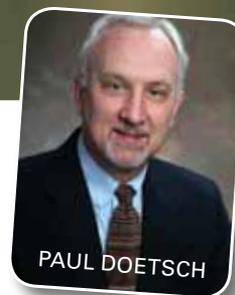
silently wondering who didn’t clean up their mess.”

DISHING IT OUT AND TAKING IT

The issue of critiquing each other’s work and the way it is done also plays an important role in the culture of a lab. “It is very important to me that people openly constructively critique other lab members’ work without the critique being meant or taken personally,” Hengartner explains. “Other lab members should be the toughest reviewers for all our manuscripts.” He adds that his lab works on several different research problems, and “being able to give constructive input is perhaps one of the most useful skills that my lab members develop—a skill that will become increasingly important the further along they are in academia.”

Alan Fersht, a PI at the Medical Research Council Laboratory of Molecular Biology in Cambridge, United Kingdom says he believes in short but frequent contacts rather than lengthier more formal meetings. According to Fersht, wandering around the lab and observing can uncover flaws in techniques and facilitate rapid improvements.

Doetsch says that he tries to maintain a lab culture that provides technicians, students, postdocs, and research faculty a sense of “ownership” of their projects and to give the message everyone is making a significant contribution to the research enterprise, regardless of their specific title or role. “My [continued](#)>



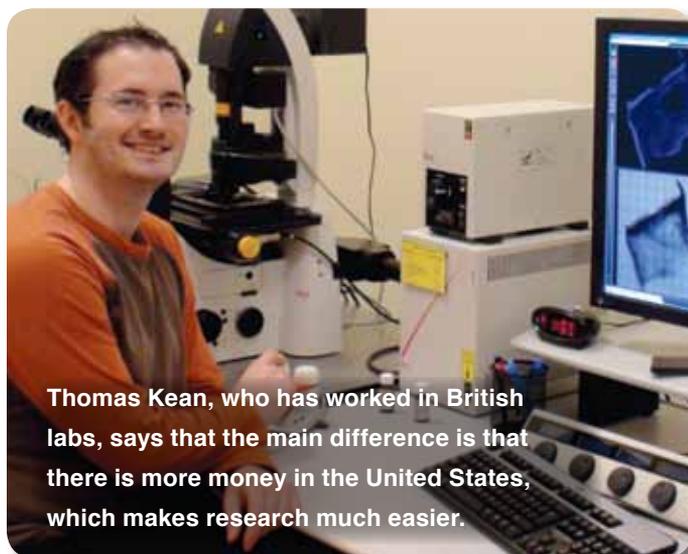
UPCOMING FEATURES

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Faculty



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position includes heavy administrative duties that preclude me working in the lab," he explains, "but I make it a point to walk around my lab several times a day to chat with my group and hold individual weekly research meetings with each member to get an update of their progress and provide them with direct, constructive feedback on their activities. I always strongly encourage everyone to discuss their results and other issues affecting their project with their lab colleagues and to not hesitate to disagree with me when necessary."

According to Doetsch, the research in his lab is discussed in the context of a weekly meeting shared with several other lab groups with common interests from other local institutions to get another level of feedback. "This multi-pronged approach has worked well for minimizing research bottlenecks and promoting collegial interactions within my group and amongst local colleagues with similar research interests."

Doug Dluzen, currently a graduate student in the Department of Pharmacology at Penn State University, says that he works in a fairly large lab where there are outlets to discuss research problems, and strategies, and "generally there is someone who has stumbled upon a problem before—being able to discuss my issues can be very helpful when troubleshooting an assay or transfection in the early stages of the experiments."

Dluzen says that he has heard of other more competitive labs—in some cases two students or postdocs working on the same project in the same lab—and it is a race to the finish between the two. "I cannot imagine that system of working—having to hide your results and troubles from those around you," he says. "I think an open-atmosphere philosophy fosters more creative and collaborative work that brings scientists together and harbors a larger degree of communication and productivity."

PLAYING WELL TOGETHER

Members of any lab are faced with having to share equipment and supplies, and in most labs, signup sheets for equipment and a common ordering system for supplies can help smooth out any wrinkles that can occur with conducting multiple experiments. Dluzen explains that his lab is fairly big and as a result, there is a lab manager who orders reagents and gets final approval from the PI. "We have an online folder and database with a list we update for needed reagents, and they are ordered generally once a week unless something is

5 WAYS PIs CAN SET THE TONE IN THEIR LAB

1. As Gandhi said, "Be the change you want to see in the world"

While some students and postdocs will be highly motivated regardless of how you act, most will tend to follow your lead. So, if you want the members of your lab to spend extensive time in lab, you should put in as much time as possible there yourself. Even if you feel that you have "done your time in the lab," you can still help promote a strong work ethic by working in your office with the door open and perhaps even conducting a few of your own experiments. A walk around in your lab a couple of times a week, including on weekends and evenings, will help your lab members know that you know they are working.

2. Write and espouse a well-defined mission statement for the lab

As with any business, a lab should have a mission statement that should be made known to the lab members and referred to regularly by the PI. A short, simple statement is often best. An example would be "the mission of this lab is to [insert overarching research goal], and in the process promote the conduct of rigorous science and the development of scientific expertise."

3. Develop a consistent schedule for interacting with lab members

While PIs tend to be extremely busy, a 30-minute to 1-hour meeting per week with each member of the lab may in fact save time since a scheduled opportunity for asking questions can decrease random interruptions during the week. Lab members will appreciate knowing they can have at least a weekly meeting with the PI and this will enhance productivity by providing a hard deadline for them to get their thoughts and work in order.

4. Promote collaboration and critique among lab members

Polite but constructive criticism of lab members' work should be encouraged. A weekly lab meeting where lab members present their work provides an opportunity for this type of discourse.

5. Establish a clear system for ordering supplies and using equipment

Systems for ordering and equipment use will cut down on conflicts among lab members. Every member of the lab should know how to get the supplies they need, whether by ordering them themselves or through a single person. It helps if the person who does the ordering is competent, organized, and approachable and can communicate directly with you when needed. Sign-up sheets should be made available for all major equipment and lab members should be encouraged to clean up after themselves.

needed faster," he says. Equipment such as centrifuges, incubators, and rotating trays are shared routinely by multiple labs, not just the members of an individual lab.

In her lab, says **Amy Dear**, most recently a postdoc in the Department of Biochemistry, at the University of Colorado at Boulder, everyone is responsible for ordering any reagents that **continued**

Faculty

are needed and for the rest of the lab if they used the last item. “This was an area of conflict in one of the labs I worked in because people often forgot to order supplies when they had used them up,” she says. She also recalled being next to a lab with which they shared equipment and supplies and that seemed to take advantage of the setup. “We ended up making them sign off on anything they borrowed, so we knew what they had returned or replaced. They were also very messy and left our equipment dirty, and it was annoying because we had to develop strategies to deal with it.”

Maughan points out that it is very much up to the PI to set down some ground rules about ordering supplies and fair use of equipment. “If the PIs don’t set rules, workers are usually good about coming to an agreement so that everyone is happy, but sometimes a lab member will think their work is much more important than anyone else’s, and that they deserve to use the equipment/reagents first,” she says.

Doetsch explains that as a PI, he addresses the ordering problem by employing a technician-level lab manager with “good diplomatic skills who monitors supply usage, is the point person for ordering, and serves as the gatekeeper for staying within budget.” He adds that equipment use is self-policed and any issues are discussed openly in a weekly, brief lab business meeting held 15 minutes prior to the weekly shared research meeting. “This is the forum where problems are brought to everyone’s attention and primarily dealt with by the lab members themselves. In these meetings we may focus on a logistical or behavioral problem and its solution although no individual is ever publicly criticized for their actions; we focus on



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—Shobhana Natarajan

the solution instead, and this has worked very well,” he says.

GLOBAL DIFFERENCES

Lab cultures can also be influenced by their geographic location. Labs in the United States are generally different in two major ways to labs elsewhere in the world. The first is that they tend to have more plentiful resources and supplies compared with labs in other countries. This difference may result from differences in

funding and also geographic proximity or isolation. In New Zealand, for example, the PIs tend to maintain relationships more actively with overseas labs and develop collaborative projects, according to Dear. “We are more concerned with saving money in New Zealand as well,” she says. “We wash and reuse most supplies, whereas my lab in the United States orders disposable supplies,” she explains, with the U.S. PI reasoning that he would rather do that than pay his lab members to wash dishes.

The second major difference is that, generally speaking, U.S. labs are much more competitive than labs elsewhere in the world. Hengartner, whose lab is in Zurich, Switzerland, notes that Swiss labs are generally less stressful than U.S. labs—“they are, however, often less dynamic,” he says. “I try to bring the best of both cultures together in my lab: ‘optimism, blue sky opportunity philosophy, no fear of failure’ from the U.S., and ‘relaxed atmosphere, willingness to find an appropriate balance between work and family life, joie de vivre’ from Europe.”

Shobhana Natarajan, who has worked in labs in India and was most recently a postdoc at the Department of Cell Biology, University of Texas, Southwestern Medical Center, in Dallas notes that in general, resources are more limited in India compared with the United States. “On the positive side, this makes us devise new ways to strategize, reuse, recycle, and minimize wastage,” she says. “On the negative side, we end up spending more time waiting for resources and planning experiments.”

Likewise, **Thomas Kean**, now a senior postdoc at the Benaroya Research Institute at Virginia Mason Hospitals, Seattle, Washington, who has worked in British labs, says that the main difference is that there is more money in the United States, which makes research much easier. There is also better equipment, which is well maintained, and less worry about ordering reagents. However, Ferstht points out that in the United Kingdom they seem to have a very enlightened approach. “We are less formal than our other European counterparts, and we put far less pressure on our juniors than they do in the United States,” he says. “Many Europeans, especially Germans and Spanish, come to the U.K. and don’t want to leave.”

Regardless of location, funds, resources, personality, and all the other variables that go into making up a lab culture, however, “In science, if you don’t work hard, it is unlikely you are going to be successful,” Doetsch says. “Putting in the hours and the ability to overcome setbacks and failures is a great equalizer in research. I tell my students that if they excel in hard work and can ‘roll with the punches’ they will be successful not only in science but in many other situations in life.”

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DOI: 10.1126/science.opms.r1200114

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