

By Alona Fyshe

How to start a research lab

As September approaches, a new cohort of junior faculty members are taking up their first positions as research group leaders. I was there 3 years ago, making career-shaping decisions—sometimes without much mentoring or support. I learned a lot in my first years—how to write a grant, manage rejection, and supervise students, to name just a few—and it was all trial by fire. Though I made it through and had some successes along the way, I certainly could have used advice about how to set up and run my lab. I've learned that my experience is the norm, which inspired me and a group of other early-career principal investigators to interview leaders in our fields about how they built successful research groups. Here are some of the lessons they shared.

FIND YOUR NICHE. Before you even begin to interview for a faculty job, you need to decide what your lab's focus will be. You must be a pioneer, “carving out a niche for yourself that is unique, and where you'll be at the top of the heap,” says Margaret McFall-Ngai, a professor at the University of Hawaii at Manoa who was among the first to study squid-bacteria interactions. Identify how your skills intersect with the science that excites you, in the most promising uncharted territory. Plan big while identifying key publication checkpoints along the way. Your tenure case depends on it.

FIND YOUR PEOPLE. Good science is done by talented people. “If you have an excellent person who wants to work with you, try to hire them at all costs, even if you have to spend the last of your money,” says Gregor Weihs, a professor of photonics at the University of Innsbruck in Austria. On the flip side, hiring the wrong people can be a real drain on the group. “Never hire just because you can,” Weihs says. Get to know prospective lab members by teaching graduate classes and taking on undergraduates for smaller projects, and use your network to find promising graduate students at other institutions.

IT PAYS TO WORK TOGETHER. To secure major funding, “it's better to try and see if you can chase it together rather than all competing for the same buck,” says Melvyn Goodale, a professor of neuroscience at Western University in London, Canada, who helped form an 11-institution research consortium, the Canadian Action and Perception Network. If your goals are aligned with those of other labs, then it makes sense to work together on a joint application rather than



“I certainly could have used advice about how to set up and run my lab.”

against each other. Writing grant applications as a group can help spark new ideas, and many minds working together can increase your chance of success. Even if you don't get funded, writing a group grant can deepen your collaborative relationships for years to come.

BUILD A NETWORK. To make connections when you're just starting out, you need to be your own marketing department. “It's not just doing the research; it's making it known,” says Yoshua Bengio, a professor at the University of Montreal in Canada who works on artificial intelligence. These days, a lot of networking is done online. Get on Twitter and follow your 10 favorite research labs. Look at who they follow to find more connections.

Tweet about the work you publish and interesting papers you read to help people identify your niche and get to know your research brand.

Finally, don't be afraid to reach out to senior faculty members to seek out mentoring, share your work, and ask for input on grant applications. Their feedback will be invaluable, and some day you will pay it forward to a new cohort of junior faculty members. There is knowledge and experience all around. You may be surprised at people's willingness to share it. ■

Alona Fyshe is an assistant professor in the Department of Computing Science and Department of Psychology at the University of Alberta in Edmonton, Canada, and a Canadian Institute for Advanced Research (CIFAR) Azrieli Global Scholar. She thanks CIFAR Azrieli Global Scholars Gerhard Kirchmair, Graham Taylor, and Katherine Amato, and the senior faculty members who were interviewed. Full interview transcripts are available at www.cifar.ca/labs.

Science

How to start a research lab

Alona Fyshe

Science **361** (6402), 618.

DOI: 10.1126/science.361.6402.618

ARTICLE TOOLS

<http://science.sciencemag.org/content/361/6402/618>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.