



Career Trends

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Leadership Training for Early Career Researchers

By Julie Clayton | February 2015

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I'm often surprised when working with scientists at our career development events to hear how many don't realize they may already be equipped with skills to make their next career move—whether it's in academia or beyond the bench.

When I transitioned from research into science communication, I found that my scientific training taught me more than simply lab skills. I also discovered leadership opportunities through committee work, developed communication skills from presenting my research, and gained project management abilities as I juggled multiple experiments with my other responsibilities.

Learning that I had gained transferable skills was crucial for my career transition, and I hope these articles will do the same for you!

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A decade ago, the “sink or swim” culture was widespread in research. But academic institutions across the United States and Europe are now investing resources in helping young researchers gain the skills they need for climbing the career ladder. Top on the list are leadership skills, whether for conflict management, handling finances, or negotiating intellectual property rights in an international consortium, these are highly rated assets that can help researchers advance to senior roles. Here's a look at some of the most established leadership programs that hold alumni who are leaping ahead as a result of the training.

It was a daunting prospect for Katie Garman when she joined Duke University's Department of Medicine as a faculty member in 2011 and found herself in charge of a research group for the first time. She took on a technician, a graduate student, and “several clinical fellows and residents” for short-term gastroenterology projects.

With a clinical background focused on diagnosis and treating patients, Garman had little experience of managing budgets or people. Her position was similar to that of a postdoc facing their first tenure-track appointment.

This booklet is available online at: sciencecareers.org/booklets

Editor: Allison Pritchard | **Copy Editor:** Yuse Lajiminmuhip | **Design:** Seil Lee

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I really needed to learn more about how to manage a lab and manage a group and obtain a very different skillset than the one that I had acquired during medical school, residency, and fellowship.

—Katie Garman

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“Although I had some exposure to research it was always with someone else as the principle investigator and without the responsibilities of being the person in charge,” she recalls. “I really needed to learn more about how to manage a lab and manage a group and obtain a very different skillset than the one that I had acquired during medical school, residency, and fellowship.”

Fortunately, the School of Medicine at Duke has a training program to help new faculty members develop leadership skills. Garman was nominated by her departmental chair to undertake the training in 2012, together with around 40 others from different departments.

Over three days, Garman joined seminars, discussion groups, and role-play exercises. These were aimed at understanding different personality types, creating strategies for dealing with challenging situations such as conflict, and forming a support network to help follow up with a personal action plan.

Personality differences

Garman found it especially useful to think about how personalities shape people’s preferred way of communicating. “Even though I had developed a skillset in managing a difficult patient I really hadn’t delved more deeply into that knowledge base of how people can have such different styles of communicating,” she explains. “In order to really be a good listener and be innovative you have to be open to people who communicate in a very different way.”

The role-play sessions are among the most popular at Duke, enabling faculty to practice their coaching skills on volunteer postdocs and students. “It lets them fumble around with their words in a safe environment so that when they’re facing similar scenarios in their real lives they can draw from that memory,” says Jessica Womack, who coordinates the Leader Program.

The lessons can help outside the lab too. “Happily, I have not encountered the role-play situations in real life but dealing with conflict and working through difficult situations is a life skill that comes in handy at work and in one’s personal life,” says Garman.

Duke University is one of many institutions in the United States and other countries that are investing in leadership training for early career researchers, often at the postdoc stage or earlier. The goal is to minimize the time and energy spent dealing with the difficulties of team leadership, and maximize the chance of a productive and successful career.

Many institutions use the classic Myers Briggs Type Indicator (MBTI) for understanding personality type. Individuals gain awareness of their own and others’



personality preferences, for example, whether they tend towards being extrovert or introvert, and how this influences communication.

Duke’s program was the initiative of Ann Brown, vice dean for faculty at Duke University School of Medicine. She adapted the idea from a program at the University of Pittsburgh, which in turn was based on the Making the Right Moves initiative of Howard Hughes Medical Institute. Brown knew that researchers needed to be better prepared for leadership, especially because the increasingly competitive nature of funding meant that there was more pressure to deliver results. “You wanted people to be able to hit the ground running and have a sense that managing people is now a part of their job. You want them to feel comfortable managing conflict, understanding [their] own communication style, understanding how other people receive information, and how to build [their] own team,” says Brown.

Similarly, when Lori Conlan joined the National Institutes of Health’s Office for Intramural Training and Education in 2009, she set up a Leadership and Management program that went beyond just lab man-

agement to consider leadership in other spheres. Statistically, many early career researchers are likely to move away from lab-based research, says Conlan.

So far, the NIH program has trained over 700 graduate students, postdocs, and early PIs. It involves 32 hours of training over one semester, addressing topics such as understanding personality types and conflict management focused specifically on the research environment. A more generic business-style model of training simply does not work for a scientific audience, even if the underlying ideas are common to both communities. “Every time we get a business school to come and do this, they do a great job and the material is didactically the same, but [it doesn’t] resonate with scientists because they don’t understand the culture,” says Conlan.

Participants also learn about the influence of cultural background according to the Hofstede Model. “Science is the most international workforce, and we throw people in from different cultures and we ask them to work together,” exclaims Conlan. The Hofstede model proposes that a person’s perspective can vary depending on their background, such

as how South versus North Americans view time. Likewise, attitudes toward hierarchy may vary—scientists from Asian cultures, where respect for authority is paramount, may wait for guidance rather than taking the initiative expected in the more individualist cultures of the United States or United Kingdom.

The idea that you will suddenly develop these by experience isn't really the case and to be most effective in this fast changing world you have to be ready to lead.

—Alison Mitchell

Leading peers

Besides leading their own team, academics increasingly need leadership skills for handling multidisciplinary collaborations. Richard Trask, a materials scientist at the University of Bristol in the United Kingdom, participated in the university's Preparing for Research Leadership training program while a postdoc in 2009. He knows the difficulties that arise during the coordination of grant proposals, writing papers and assigning intellectual property rights. These require cooperation among academics of equal status, and sometimes with collaborators of higher status than the initiator.

"It can lead to interesting technical and management challenges," says Trask,

whose collaborations involve chemists, physicists, biologists, and medical colleagues. Typically, one discipline might prompt the collaboration, followed by the creation of shared documents, and a flurry of emails without the luxury of face-to-face meetings in order to reach agreement. "It's the academic space we'll find ourselves in more often in future." Adding to the challenge is the need for collaboration with industry, with its own sometimes conflicting timescales and priorities. Trask still harks back to leadership training regarding self-awareness and understanding of personality differences for managing increasingly dynamic and complex situations.

The training also helped Trask develop his individual leadership style, with a fairly flexible approach to supervision of 12 Ph.D. students and one postdoc. He avoids rigid micromanagement, for example, by allowing students to specify how often they want progress meetings to take place. By applying leading skills, Trask finds that the complex task of managing and supervising becomes less of a challenge, and more a collaborative culture.

The self-awareness training is invaluable, according to Alison Leggett, head of academic staff development at the University of Bristol. "That kind of people element is not something you really talk about in research—especially in the sciences. It's all about your technical skills and knowledge rather than these softer skills."

Bristol's program is aimed at those on the cusp of becoming leaders: postdocs and recently appointed lecturers. It involves attending eight training sessions over a period of three months, on topics such as personality awareness, people management, setting up a team,

and structuring meetings. Activities include rehearsing scenarios and small-group peer coaching (also called action learning) over real-life problems. More recently, Leggett has organized similar training for more senior academics who "already had teams but were having to just muddle through."

'No one is good at everything all the time.' If you had three things to work on, what would they be?

—Katie Garman

Beyond the initiative of individual institutions, a U.K.-wide sharing of best practices is being encouraged by Vitae, a membership program which was initially funded by the U.K. Research Councils to promote professional development of doctoral researchers and research staff throughout the United Kingdom's higher education sector. To enhance provision of training across the country, Vitae created a suite of workshops and resources and established regional networks for university support staff to exchange ideas and materials. Over the past five years Vitae's Leadership in Action training program has helped researchers at all levels explore and develop their leadership potential while the more recent Preparing for Leadership program focuses on junior research staff and the transition to independence.

Alison Mitchell, director of development at Vitae, likens the effect to the rising

tide that allows all the boats to float in a harbor. "We raise the tide by making resources available. The universities review the material and embed it within their provision so that it becomes part of the system." Vitae also provides training programs on a national or regional basis directly for researchers.

Most importantly, the training helps researchers to develop leadership skills in advance of that coveted promotion. "The idea that you will suddenly develop these by experience isn't really the case and to be most effective in this fast changing world you have to be ready to lead," says Mitchell.

It's an increasingly shared view that academic institutions need to invest in staff development at the earliest possible opportunity rather than expecting staff to learn on the job. "Researchers who did it their own way maybe could have done better if they'd had more development," says Mitchell. "Putting in leadership training when [they are already] there is too late."

Leadership for women

In Germany, at least two leadership training programs focus specifically on women scientists as part of a broader political agenda of increasing the numbers of female university professors. One is Fast Track, offered by the Robert Bosch Foundation to outstanding female postdocs from within and outside Germany to speed their promotion to senior research roles. The second is ProFiL, a training program set up jointly in 2004 by the three closely linked universities of Berlin—Technical University (TU) Berlin, the Free University of Berlin, and Humboldt University—in a bid to improve gender equality.

One participant is Katja Matthes, now a full professor at the GEOMAR Helmholtz Centre for Ocean Research Kiel, who had come back to Germany after three years in the United States for the one-year return phase of her European Marie Curie fellowship at the Free University of Berlin. She was unsure about her future direction, but an advert for the ProFIL program piqued her interest. After a rigorous selection process, Matthes was picked to become one of 36 participants in the year-long program, including six sets of two- or three-day long seminars and discussion panels.

Matthes credits ProFIL with having motivated and supported her to stay in science. The program offered mentoring and guidance on career planning, and coaching on interviewing skills and leadership, including conflict resolution, negotiation, team building, project and time management, and governance in higher education. “Without ProFIL I would not hold the position I have now,” she says.

Matthes likes to tackle a conflict situation immediately by calling a meeting with those involved, listening to their viewpoint, and discussing possible solutions. “Sometimes [the conflict] is just a miscommunication or misunderstanding. I prefer to talk immediately and not let bad feelings develop.”

She also uses meetings more effectively to promote team building, by acknowledging people’s strengths and encouraging each person to state their intended contribution towards a team goal. “This works well—people like to know what their contribution is.”

ProFIL goes further than many programs in establishing a formal peer-support network, with an annual conference and other events. “Internationally, I was well

connected, but my network in Germany was very weak,” says Matthes. With other ProFIL alumni Matthes has shared valuable experiences and gained advice, for example on developing a publication strategy and judging when to delegate administrative tasks.

While it would be difficult to obtain a truly objective measure of impact, up to mid-January 2015, out of 425 former and current ProFIL participants, 148 have achieved formal eligibility for professorial positions, and 176 have attained professorships, including two vice-chancellors, according to Dorothea Jansen, who established and leads the ProFIL programme and has advised other institutions in Germany and Poland on similar programs.

Admitting when help is needed

It’s a common mistake for researchers to assume that team leadership will come naturally. As the University of Bristol’s Alison Leggett points out, “A lot of researchers have come up to these positions because they’re really good at doing the research; they’re academically very able. But this doesn’t necessarily mean that they’re good at setting up a team and leading people.”

Garman agrees. “We’re not always encouraged to be introspective enough to say these are the skills that are required, these are my strengths, my weaknesses, and these are the strategies that I need in order to account for those weaknesses.” Training programs can provide a more objective way of identifying weaknesses. “You have to pause and give yourself the grace to say, ‘no one is good at everything all the time.’ If you had three things to work on, what would they be?” Garman asks. ■

Faculty: Making Your Research Count

By Chris Tachibana | January 2015



“There’s science behind team building that could make people in your lab happier and more productive.”

— Robin Wright

Managing an academic research group means keeping an eye on the big picture—long-term goals, funding agency priorities, and a publication plan. Faculty members are also charged with training students and postdoctoral fellows. To meet these dual demands, principal investigators must match people to projects in way that gets the group to its goals while encouraging its members to mature as scientists. Faculty members don’t usually get formal training in research program management, but that might be changing.

When Robin Wright was a new professor, her approach to setting up her research group was “kind of organic.” She considered how many postdocs, students, and technicians she needed when writing a grant, but once funded, she says, “I just got the best people I

could and assumed we were all equals and everyone, including me, would do everything, including the dishes.” The strategy worked. Wright is now University of Minnesota associate dean of biological science administration and is starting CourseSource, an online science education journal. But if she launched a new research program again, she says, “I’d be more intentional in thinking about how people would fit into the group, what they’d bring personality-wise and skill-wise. I’d be more proactive about recruiting promising students from my classes.”

Traditional research training doesn’t cover developing an intentional management strategy. Although we have some excellent science career guides, we don’t have extensive formal literature on research planning, says Wright, but we could learn from management studies.

“When I was starting as a professor, I never thought of reading the literature on teamwork,” she says, “but there’s science behind team building that could make people in your lab happier and more productive.”

Producing mature scientists —and publications

Biology professor Malcolm Campbell has given a lot of thought to strategic research planning. He powers his genomic and synthetic biology projects solely with undergraduates at Davidson College in North Carolina, which has about 2,000

students. Ideally, says Campbell, students work as full-time summer researchers after their first year, after going through an application process that includes recommendations and interviews. Undergraduate researchers are much more productive in the summer than during the school year, when they have to plan experiments around classes and academic breaks, says Campbell. After training in his group, he encourages students to get experience working in large research institutions in subsequent summers.

Campbell uses an American football analogy to describe his approach to project planning. “If you imagine a full project as 100 yards, I might give students 10-yard subprojects that are designed so that even if they only get a few yards, they don’t have to punt, they’ve still accomplished something that could be a poster or presentation.” For overall

program planning, Campbell, who has bioinformatics collaborations with Davidson Mathematics Professor Laurie Heyer, uses a computing analogy: parallel processing. “We never have students competing,” he says, “but sometimes they work on something, like cloning a gene, using different methods. Whoever gets it first, we all celebrate together and move on.” At the same time, Campbell lets students design, order reagents for, and troubleshoot their own projects, to give them independence. “Sometimes you nurture and sometimes you let them flounder on their own,” he says, “for a rich learning experience.”

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Having eight students
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—Malcolm Campbell

Campbell says filling the lab with students with diverse backgrounds and experiences creates synergy. The bioinformatics projects spur math students to take biology and biology students to take computer science. Paradoxically, having more students in the lab is easier than having a few. “Having eight students is less work than having three,” he says, “because the students start relying on and training each other.” Having an office within earshot of the lab helps, says Campbell, because he hears students debating questions. As long as they are on the right track, he lets them work out problems on their own.

Of course, funding is the cornerstone of a successful research program that also trains early career scientists. Campbell’s strategy of guiding students from laboratory novice to potential graduate student begins with paying students as



summer researchers. He suggests that faculty apply to government agencies such as the National Science Foundation Research in Undergraduate Institutions, and private sources such as the Beckman Foundation, the Waksman Foundation for Microbiology, and Sigma Xi.

Funding also affects program planning with Ph.D. students. In many U.S. graduate programs, students rotate through several groups before choosing their thesis advisor. For graduate students in other systems, for example at European universities, funding is for a limited time for a specific project, and deadlines are strict.

Professor Laura Machesky, Beatson Institute for Cancer Research in Glasgow, says her students have only a few years of support. Fortunately, they often arrive with undergraduate research experience or possibly a Master’s degree. Her clinical fellows, who come in with an M.D., have three years to earn a Ph.D. “I tell them at

two years and six months, you have to start writing your thesis now,” she says. The funding scheme leaves no time for failure, so Machesky often starts Ph.D. students on several experiments, saying, “Some are safe, so that even if the results are negative, we can probably publish them.” An example is changing a gene’s expression and asking if a phenotype changes. For a challenge, says Machesky, “I also give them something more open-ended.” To develop independence, Machesky likes people in her lab to follow the occasional hunch. “Do an experiment I don’t know about,” she says. “You can tell me later if it works out.”

In distributing projects, Machesky considers the amount of supervision a person will need. Undergraduates or Master’s students might be initially paired with a senior scientist. Postdoctoral and especially clinical fellows are treated as colleagues. “I give them credit for their training and let them guide their projects.

It's a partnership in which the clinicians see how basic research is done and how it applies to their work, and our senior scientists explain to physicians why their research is relevant." For these more experienced scientists, says Machesky, "the project has to let them to be creative: to think about where it's going and how to get there, to take ownership."

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I tell them at two years and six months, you have to start writing your thesis now.

—Melissa Ramirez

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Ownership of projects is what Campbell develops in undergraduates and Machesky promotes in graduate students and senior scientists. It is what Martin Chalfie, professor of biological sciences at Columbia University, looks for in his lab personnel. "Especially postdocs," he says, "should come in as a colleague. They should write their own proposal about what the next experiments should be or what new skill they'll bring to the field. People are more excited about and committed to projects they thought of on their own." Even with graduate students, says Chalfie, "I don't assign projects. I ask people what they are interested in." If he wanted a specific experiment done, he says, he'd probably ask a technician to do it rather than assign it to a student or postdoc.

Chalfie says his strategy for populating the lab, generating projects, and accomplishing research goals is "flexible." People in his lab work to solve major

challenges in the field of nerve cell development rather than ticking off projects listed in a grant proposal. Like Machesky, Chalfie encourages his team to be open to discovery. This is how he came to develop green fluorescent protein as a reporter for gene expression, for which he was coawarded a 2008 Chemistry Nobel Prize. "I never wrote a proposal to do that," he says. "I just got excited about it, and it was in keeping with work we were doing, so I did it. You can't be slavishly tied to a particular plan of work."

Building a strong team

At the University of Minnesota, Robin Wright's colleague Nathan Springer has adopted a more structured method for group management—the Strengthsfinder system. Strengthsfinder identifies personal traits such as adaptability, discipline, and responsibility, and is offered to incoming University of Minnesota students. "If people are willing to share their results," says Springer, a biology professor and director of the Microbial and Plant Genomics Institute, "I use the findings to see which parts of a project they might find easy or difficult. For example, some people are strategists and like to plan. Others are more adaptable and might need help planning their project." Springer doesn't use Strengthsfinder results to assign projects or tasks—everyone should be exposed to all aspects of research, he says. But the information might help his group be more efficient. "Sometimes students get stuck on something," he says, "and this just helps me think about what might help them."

Springer also draws on psychosocial studies that have found that "success begets success." He initially puts new

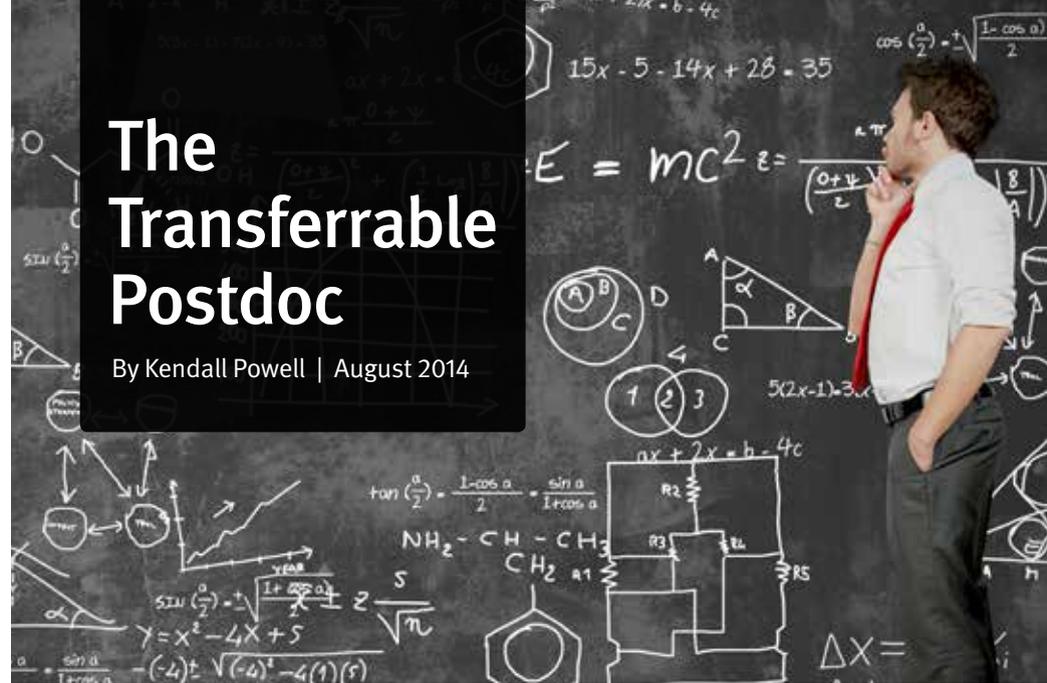


students on a fairly mature project before starting their own independent work. "It lets them see what finishing a project and writing a paper looks like," says Springer. "I think learning the habits of success is better than struggling at something for a long time." And since the projects that get new students are led by senior students or postdocs, says Springer, "the other side is that the senior people get experience leading a team."

Although Springer is not convinced he has the optimal program management strategy, it aligns with current trends. Recently, four leading biomedical scientists called for more thoughtful training in their field, including giving students a broader range of skills to prepare for diverse careers, for example in industry, communications, law, or policy (scim.ag/1x2XzNq). Strategies like Springer's might help faculty members think about

their advisees' natural skills, to guide conversations about job options.

For some scientists, building research teams and designating projects might be a matter of survival. Professor Helen Amanda Fricker, Scripps Institution of Oceanography, does research that includes deep-field sample collection, for example in Antarctica. Fricker says everyone in her group eventually has to sit down at a computer and analyze their data, but they do a bit of self-sorting around the data sources. People who aren't polar explorers at heart can work on projects that use satellite data or computer modeling. When people joining Fricker's team specifically ask to collect glaciology data onsite, she tries to accommodate them. However, she says, "The people who do that work need stamina to endure the tough conditions and the work hours. Because of the long days at the poles in the summer, it's



The Transferrable Postdoc

By Kendall Powell | August 2014

easy to forget what time it is and work past midnight. People have to be able to think on their feet and also be willing to chip in with cooking and cleaning at the campsite.”

“Resilience” is the Strengthsfinder-type term for the characteristic required for field research, says Nicholas Laphorn, head of center at Field Studies Council (FSC) Nettlecombe Court. The FSC is a non-profit organization in the United Kingdom that works with secondary schools and universities to promote environmental understanding through fieldwork. The demands of outdoor data collection, says Laphorn, include “being able to work in rain and the cold, when it’s starting to get dark, and when you’re tired of walking and carrying equipment. You have to be able to solve problems onsite in a complex environment and communicate and cooperate with others.” In this way, a field research team is an intense version of any research group and Laphorn’s recommendations about building an effective team and assigning tasks are universal. Research teams need diversity in skills, says Laphorn: “Not everyone can be a leader. Dividing up roles is critical to success in teams.”

Like Chalfie and Machesky, Laphorn stresses the importance of project ownership, saying that people are most effective when they are personally invested in their project. “When students have a say over what they are investigating,” he says, “they are motivated to collect data and that makes it easier for them to do the analysis later.” To cultivate the qualities of resilience and personal investment in a project, Laphorn says students should be exposed early, before college if possible, to risky, less directed science. This shows them what research

is really like—that data will not always confirm expectations and might lead in unexpected directions.

Paradoxically, the best way to cultivate team flexibility, resilience, and adaptability might be careful, advanced planning by the principal investigator. Thinking ahead about how to deal with potential personnel issues, funding ups and downs, and unexpected events such as departmental changes could help a research group hold its course toward long-term goals. A well-managed research team maintains the capacity to recognize and exploit novel results.

Most science faculty members learn by doing when building and managing a research group. However, tools and resources from the management world such as Strengthsfinder and similar programs are finding their way into academic science. Some professional organizations like the American Society for Cell Biology hold workshops on project planning, grant budgeting, and human resource management. The Burroughs Wellcome Fund and Howard Hughes Medical Institute have free online scientific management training manuals (scim.ag/1zVuVQt).

Fricker says she would appreciate training in research program management such as workshops on budgeting with multiple grants. “They would especially benefit new faculty members,” she says. “Some people have a natural gift for this, but not me. It would be nice to have training in easy, essential skills for managing grants and projects.” ■

“Problem solving, analytical thinking, and understanding how to run proper experiments translate beautifully in today’s companies operating within Internet based commerce.”

— Joe Hardy

Now more than ever, experts say, postdoctoral fellows need to cultivate a broad base of beyond-the-bench skills and capitalize on transferring them to the next stage of their career to be as competitive as possible. In today’s competitive job market, it is vitally important for postdocs to accumulate skill sets on their CVs right alongside their publications—whether their next career move is research-based or not. Postdocs who repurpose their lab leadership and project management skills into star candidate qualities have an advantage when looking to step into their next position.

When an infectious disease fellowship at the Centers for Disease Control and Prevention in Atlanta turned out to be a poor fit for Melissa Ramirez, she moved on to other postdoctoral opportunities where she picked up skills in grant writing, student mentoring, and teaching. Her last stop was as a postdoctoral teaching scholar at North Carolina State University in Raleigh, where she was immersed in teaching and curriculum development for the campus’s undergraduate microbiology students.

At each stage of postdoctoral development, Ramirez gained valuable skills

that have now successfully translated into a new career as a teaching assistant professor at NC State.

It's very hard to find research positions, in general. Postdocs, for the last couple of years, have had particular difficulty because of a soft economy.

—Paula Stephan

Her success was not a given, but came after several years of gathering broad expertise across areas and matching those skills to her interests. Ramirez' approach should make her postdoctoral colleagues sit up and take note—no matter which direction they take next, it's a tough job market out there. Almost every sector of the science and technical labor market has tightened since the Great Recession began in 2008. Paula Stephan urges postdocs to periodically step away from their research to make sure they collect transferrable skills, too.

"It's very hard to find research positions, in general," says Paula Stephan, professor of economics at Georgia State University in Atlanta and a research associate at the National Bureau of Economic Research. "Postdocs, for the last couple of years, have had particular difficulty because of a soft economy."

Universities in both the United States

and Europe are hiring more contract-based faculty or faculty in tenure-track positions that have no salary guarantee and require outside grant funding. Stephan notes that a combination of factors have hit biomedical job candidates especially hard, including the flattening of the U.S. National Institutes of Health budget and the consolidation, downsizing, and off-shoring of jobs among pharmaceutical firms. Some of the largest chemistry labs in the United States, such as DuPont, are also downsizing. "Once we get updated data from the Survey of Earned Doctorates and Survey of Doctorate Recipients, I think we'll see that industry is hiring fewer Ph.D.s for research positions as well."

Compounding the problem is the expectation gap that exists among the roughly 56% of postdocs who believe they will continue on to tenure-track academic positions and the 21% who actually did in 2012 (scim.ag/XWZwhv). In addition, the definition of a successful academic job candidate has also shifted in the last decade. Beyond stellar research and publication records, faculty candidates must also collaborate across disciplines and the globe, and have a sharp talent for fundraising.

Although this might all seem bleak, Doctorate-holding scientists are highly employable in many arenas. While postdocs tend to put their heads down and toil to collect data, Stephan and others urge them to periodically step away from their research to make sure they collect transferrable skills, too.

"Actually many of the skills we need for academic careers are the same for non-academic careers," says David Bogle, chemical engineer and pro-

provost of the Doctoral School at University College London. Strengths in analytical thinking, problem solving, written and oral communication, and collaboration make postdocs universally attractive. "No employer wants somebody that is narrow-minded" or too narrowly focused, says Bogle.

Got skills?

A variety of self-assessment resources can help postdocs track their progress. "Young scientists need to periodically sit back and think, what skills do I have? What skills do I need for my project? And what am I lacking?" says Bogle.

He recommends the Researcher Development Framework created by Vitae (scim.ag/1lVhLtb), a career development organization based in Cambridge, United Kingdom. The framework covers four domains scientists need to be effective: intellectual knowledge, personal effectiveness, professional standards, and working with others.

Similarly, the myIDP website (myIDP.sciencecareers.org) is particularly well-suited to helping biomedical scientists explore careers and set goals for career development. Sibby Anderson Thompkins, director of postdoctoral affairs at University of North Carolina (UNC), Chapel Hill, advises using the National Postdoctoral Association's Core Competencies document and the checklist at the end of it (scim.ag/1pmZp9l) as a concrete way to discuss professional development and specific skills goals with postdoctoral advisors.

A skills frame-shift

The core skills that every postdoc needs to transition to a successful academic

career are well known. Professorships go to those who exhibit clever experimental design and efficient research project management, who can deliver persuasive scientific arguments, and who are able to write clear, concise, and winning publications and grant proposals. But many postdocs may overlook that those same skills—with a slight tweak in frame-of-mind—make them highly marketable for other positions as well.

Anderson Thompkins says postdocs have to shift their own thinking about their acquired skills and how best to present them to potential future employers. "Postdocs are, in fact, mini project managers," she says, and should describe themselves as such. "Think more broadly—can you manage people, manage time, meet deadlines, and organize? All those skills are really useful in any job. Any job."

In this world of the Internet, millions of experiments are happening simultaneously. Experimental design and analysis are big players now.

—Joe Hardy

Bogle points to another skill that is highly valued in the workplace, but often undervalued by scientists: "The communication of complex ideas in a clear, transparent way. It's difficult to deliver complex messages quickly." Joe Hardy adds that problem solving, analytical thinking, and understanding how to

run proper experiments translate beautifully in today's companies operating within Internet-based commerce. "Right now, the way companies think about developing and marketing products is essentially an experimental model," says Hardy, the vice-president for research and development at Lumosity, a cognitive-training software company based in San Francisco.

knowledge and to get connected to experts in those areas. He also attends "business pub" meetings every couple of weeks to chat with others starting companies and "exchange knowledge with a beer in your hands."

Chris Blagden, director of CME development and strategy for HealthmattersCME in New York notices another

"It's the same thing with students—you have a few minutes to capture their attention in a lecture or you've lost them for 50 minutes."

—Melissa Ramirez

Web-based and technology firms often take the approach of an A-B test, he says, with different customers exposed to different experiences. Then, companies measure behaviors like clicking links or purchasing in response. Postdocs understand the importance of random assignment of conditions, good experimental controls, and how to process the data coming back. "In this world of the Internet, millions of experiments are happening simultaneously. Experimental design and analysis are big players now," Hardy notes.

As a senior postdoctoral researcher at Uppsala University in Sweden, Grzegorz Wicher has acquired an impressive list of technical skills from specialized mass spectrometry to micro-dissection and primary cell culture. But when it came to starting up his own cell culture company, PrimeCell, he took advantage of the Uppsala Innovation Centre, which helps researchers commercialize their ideas.

Through the center, he took the three-month Business Lab program to gain some business, marketing, and legal

skills gap: while postdocs get loads of practice at bringing projects to an endpoint, they get "very little training in the way of doing it cost-effectively and time-effectively." These are key for CME projects—and for many other client- or product-based projects—that must come in on time and under budget. Postdocs who have managed their own research budget or met tight deadlines may have a leg up.

Considerable skills gaps can exist even for postdocs remaining in academia. The leap from postdoc to lab head comes with considerable shifts in focus and responsibilities—teaching, lab management, dealing with interpersonal conflicts, and a penchant for fundraising (scim.ag/1mCSOTf)—which don't necessarily come naturally. Academic career development programs, like the popular Preparing for Academic Practice at Oxford University in the United Kingdom, can pave the way for postdocs moving toward tenure-track posts.

Ramirez' teaching scholars program at North Carolina State University provides

a foundation for transitioning to teaching faculty positions. With other fellows, she helped teach, organize, and administer the courses and answered student questions. Postdocs can also explore teaching careers through programs such as the American Society for Microbiology's Teaching Fellows Program, a five-month online development course.

Ramirez says her past research career greatly influences her teaching. She was already skilled at distilling down her research to a few sentences to grab the attention of scientists outside her field. "It's the same thing with students—you have a few minutes to capture their attention in a lecture or you've lost them for 50 minutes."

Running a successful marketing campaign

Regardless of whether postdocs transfer skills to a permanent professorship or to another field entirely, they must think broadly about how to market themselves when the time comes. Much like a presidential bid, running a successful self-marketing campaign requires starting years ahead.

Anderson Thompkins says that postdocs who come to the UNC office early realize they must have a clear sense of their end goal to maximize their postdoctoral time. The most successful postdocs, she says, consider different options, having multiple "plan Bs" and do not bank on one particular career path.

Bogle suggests that trainees ponder career choices at two special times: research highs and research lows. "Take a break and look around. Go to the pub with friends and talk about it. Explore, get out there and find out what's on

offer. Make all the connections you can and make use of all the external contacts you can."

Young scientists have things backwards if they research intensely for 10–12 hours per day and then only spend 15 minutes on a job search, says Hardy. "You should spend significant amounts of time investigating, networking, and understanding what people like you have gone on to do."

Although self-promotion doesn't always come naturally to scientists, postdocs need to think strategically about how best to position themselves in the research enterprise. In his various postdoc posts, Bibi soaked up cutting-edge techniques, such as evolutionary meta-analysis and genomics, and made valuable personal connections.

"What paid off is that I liked to be a bit of the odd one out, surrounded by people who worked on different things or in different [geologic] time periods." This way, he gained both innovative technical skills and expanded his network well beyond his subfield. As an academic job candidate, he says, "this is something I think I can sell much better than simply saying that I study fossil antelopes."

Bibi has landed on the exact right word: "sell." Job searching in today's market is fundamentally about selling yourself, your ideas, and your skills and convincing a potential employer of your value. Luckily, that's one skill many postdocs have already unwittingly mastered. After all, how many times have you given a seminar and successfully persuaded the crowd to believe you and your data? ■

Leveraging Committee Assignments for Advancement

By Alaina G. Levine | February 2014



Serving on faculty committees can be enriching, exciting experiences that enable you to increase your knowledge of your institution and field, develop new partnerships and expand your network, and sharpen critical skills. Service also shines a spotlight on a professor's abilities, and can open the door to opportunities to pursue administrative jobs, apply for awards, and contribute to interdisciplinary research projects. But with a seemingly dizzying array of committees on which early career faculty can serve, how do you decide which to pursue, and when? Experts agree that the key is to seek opportunities that can add value to your institution and align with your interests and career aspirations.

Stuart Sidle says that committee experiences have enriched his academic career. From serving on faculty searches, the associate provost for strategic initiatives at the University of New Haven in Connecticut learned to improve both his own evaluation of potential employees and his ability to prepare for job interviews. When he sat on a curriculum committee, he learned about the course approval process which helped him lead his department when he was chair. He recommends faculty incorporate committee assignments into their career advancement plans.

And he's not alone in this opinion. "Committee work is crucial to your growth as a faculty member," says Jeanne Hos-

senlopp, vice provost for research and dean of the graduate school at Marquette University in Milwaukee, Wisconsin. Conversely, "committee work is evolutionary biology at Yale University, agrees. "Faculty have to be savvy with our time but also generous of our time" as crucial to the life of a university." Thomas Near, an associate professor of ecology and it relates to participating in committees, he says, because committee work "makes you a better member of the university community and improves the community itself as well."

"Committee work is crucial to your growth as a faculty member."

—Jeanne Hossenlopp

But even if you are not in a leadership role, contributing to a committee is "an effective way of contextualizing what you're doing and broadening your viewpoint," says David Pyle, a professor of earth sciences at the University of Oxford. "It allows you to become more engaged with the institution as a whole."

Indeed, committee assignments give you "an appreciation of how complex the work of a university is," says Hossenlopp. An institution's behind-the-scenes elements, such as hiring, fundraising, funding, and even instrumentation and laboratory support, aren't always apparent from your time in grad school or as a postdoc, explains Jennifer Swann, a professor of biological sciences at Lehigh

Those serving on committees see excellent return on their investment. Michael Palladino, dean of the School of Science at Monmouth University in West

University in Bethlehem, Pennsylvania. Yet they are essential aspects that keep the institution running smoothly that faculty should not only be aware of, but also contribute to in order to chart their own path to success.

Gaining insight and abilities

Depending on the committee, faculty can become familiar with different areas of their university as well as gain the opportunity to hone varied skill sets. Curriculum committees, for example, “help us to better train our students,” says Hossenlopp. Institutional policy and promotion and tenure committees enable you to grasp university politics, says Swann. And graduate recruitment or faculty search committees are an effective way to develop talent in articulating your value to new audiences, she adds.

Not surprisingly, most committee assignments enhance members’ communication skills. Your speaking, writing, and negotiating skills are challenged as you prepare reports and presentations, says Palladino. You learn strategies for conflict resolution. And as a committee chair, you also develop expertise in delivering “bad news” and constructive criticism, says Kristin Douglas, a biologist and associate dean at Augustana College in Rock Island, Illinois. Your improved communication skills enable you to become a more effective advocate, for yourself, your department, and your university, adds Palladino: “You’re able to talk about your institution in a more informed way.”

With improved communication and amplified visibility comes the chance to expand one’s network. The prospect of collaborating across interdisciplinary fields can be realized, as Pyle himself ex-

perienced. And your service can put you in contact with people with whom you might not otherwise have connections, such as trustees of the university and other institutional constituents. By serving on and later chairing his institution’s diversity committee, Prosanta Chakrabarty, an assistant professor of biology at Louisiana State University in Baton Rouge, Louisiana, interacted more directly with his upper administration and contributed to a search for a new dean. His participation on this team directly led to an invitation to address a group of university donors, he says.

Choosing a committee

So how do you decide which assignments to pursue, and at what point in your career? “Picking committees can be tough water to navigate when you’re new” to a university, admits Eric Bubar, an assistant professor of physics who joined Marymount University in Arlington, Virginia in 2011.

Early in your career “you are so focused on teaching and establishing your research that you might not see the value of serving on committees,” says Palladino, “but that’s where skilled faculty mentors and deans comes in handy to provide advice about appropriate committee service.” The department chair can also counsel you about which committees are strategically important for helping you gain tenure, which might take up too much time, and how to say no to invitations, says Hossenlopp.

Many universities have formal mentorship programs for early career faculty to assist them in their service decisions. Douglas, for example, learned that at “different points in my career that

‘serving’ meant different things,” she explains. In her early career, she was encouraged to select committees that focus on education and curriculum development, which helped her become a better teacher. “As I got closer to tenure, my mentors advised me to join highly visible committees,” because it is important for people to see you on “big power” committees, such as governance boards.

Strive to serve on committees whose interests are united with your own. “It is essential that faculty chosen to serve on particular committees have the background, skills sets, and/or desire to make valuable contributions. Aligning faculty interests with the right committee is key,” says Palladino.

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its business.”

—Jennifer Swann

But don’t be afraid to serve on a committee that is outside your realm of expertise, as it can be invaluable, advises Pyle. When he volunteered for a finance and fundraising committee, he was “exposed to a completely new set of problems,” he says.

Highly visible committees

Since every university has its own culture, it is critical for a faculty member to know which committees to pursue during certain times in their career, especially in advance of receiving tenure. “Avoid Faculty Senate in your early career,” says Michael Blackburn, who serves as co-dean of the University of Texas Graduate School of Biomedical Sciences at Houston. “You become embroiled in untenable issues.”

However, “my gut instinct is that if you can have one of these highly visible positions and navigate it in a way that is sensitive to other people’s opinions and viewpoints while still being able to communicate your viewpoint, that ultimately builds respect for you,” says Douglas. She notes that her participation in her institution’s governance committee ultimately allowed others to see her leadership talents, which helped her land the position of associate dean.

No matter what committee you are on, people are watching you, and generally, “you do a disservice when you don’t speak up,” says Swann. Not only do you not help the committee itself, she adds, but “if you don’t say anything before tenure, no one’s going to listen to you after tenure.... People put you on the committee because they want your voice.”

Know when to say no

“My mentor told me you could say yes to every offer or just yes to the ones you care about,” says Douglas. “I am very careful only to serve on committees that I care deeply about or on which there is a skill I can learn.” Recognize you can (almost) always decline a committee offer. “If the

president asks, you can't say no," she adds with a laugh.

Some professors are courted more than others to serve on committees, which necessitates saying no more often. Case in point: female and underrepresented minority professors, who frequently are asked to serve on more committees than their white, male counterparts. Pyle sees it firsthand at Oxford: "females may end up being pressed to be on far more committees than men," he admits.

Although she herself has not experienced it, Douglas notes that "it does happen on campus, related to multicultural representation, because there aren't as many faculty who represent that viewpoint, so there are certain people who get asked to serve more often."

“

Build your professional network early, especially outside your department.

—Kristin Douglas

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The increase in diverse sources of inspiration can inject new life and creativity into a committee. But for many women and minorities on a campus, they can often feel like they are being exploited.

Swann advises to "beware the token position. To appear fair and balanced, many committees will recruit women and underrepresented minorities. But it may just be for show. Their opinions are not sought or heard, and they are often saddled with more than their share of the work. Talk to your chair or diversity officer if you are in this position."

Committees outside your institution

"One aspect of service that I always emphasize to new faculty is service to the profession," says Palladino. "Serving as a panelist at a workshop or on a professional society committee (even if this starts at a regional chapter or organization) are all good opportunities." Service to journals and granting agencies as a reviewer are also essential to advancement, he adds.

Participating in your professional association's newsletter committee is a good way to launch external engagement, as Hossenlopp discovered. Early in her career, she served as the newsletter editor for the Division of Laser Science of the American Physical Society. It automatically positioned her to interact with prominent members of her field and opened her to networking channels she might not have had access to for years. "Build your professional network early, especially outside your department," she advises.

As you craft your professional advancement plan, get to know the service culture of your university and department and how (and if) committee work influences promotion decisions. This will aid you in deciding when to participate in committees that are associated with professional societies. In the Department of Biological Sciences at Louisiana State University, "they don't ask new assistant professors to serve on committees," says Chakrabarty; internal committee invitations are offered only after a faculty member has been on staff for at least three years. But even then, internal service is not as important as your external service. "I was advised not to do much university committee work because it doesn't count much toward

tenure," he notes. But he did volunteer to edit a journal and run workshops at conferences, which increased his knowledge of his field, augmented his network, and magnified his reputation in the minds of other leaders in the discipline.

At Yale University, some committees have charters that necessitate untenured faculty to participate in them, says Near. But in general, the institution specifically does not consider internal service when making tenure decisions. "It's more about your reputation in the international field," he says, which means that early career faculty are encouraged to pursue assignments with professional societies that bolster their investigations and elevate their research profile. His involvement in the Society for the Study of Evolution and American Society of Ichthyologists and Herpetologists, in which he organized symposia at national meetings, helped him immensely. "It has provided tangible benefits to my research program and has kept me knowledgeable about advances in the field," he concludes. "It helps the discipline and it helps you serving as a professional in the discipline."

If your university allows it and better yet, favors it, consider participating in external committees sooner rather than later. "You are seen as a leader," says Swann. "Not enough pre-tenure faculty do this, and it can only help you."

Advancing your profession, institution, and career

For early career professors eager to serve your institution and profession through committee participation, don't make the mistake of pursuing too much too soon. "It's good to step back and realize you don't have to achieve all of your goals

in 2–3 years," says Pyle. There are other people who can be tapped for assignments if you are overtaxed yourself, and there is always time after tenure to pursue stimulating committee projects that you don't have time for presently.



In fact, post-tenure committee contributions should be woven into your career strategy. "Once you get through tenure, you're supposed to broaden your horizons and be more invested in the way the university is conducting its business," says Swann. Moreover, this is the time when you can become even more engaged in your professional society and seek vital leadership roles.

"Working on a committee can be very rewarding and you can do a lot of good things for the university, which can really help your reputation," says Malcolm McCallum, a visiting assistant professor in the department of environmental studies at the University of Illinois at Springfield. "Just make your moves judiciously and carefully to minimize the negatives and maximize the positives." ■

Postdoc Advancement: Marketing Your Value

By Alaina G. Levine | August 2014



The postdoctoral appointment is not only a time of exploration and hard work, but also a time to learn and hone critical skills that will enable you to move into a position of independent research. Skills such as leadership and management, teambuilding, communication, fundraising, and even marketing are required to advance, and one must be adept in all of these areas to succeed

in this highly competitive economic landscape. There are multiple opportunities for postdocs to not only gain these necessary abilities, but also demonstrate them to current and future employers. The key is keeping a watchful eye out for chances to learn and sharpen your talents and to articulate your value to decision-makers.

Zoe Cournia is a Greek chemist who received advanced training abroad and desired to return to her home nation for permanent employment as a researcher. After graduating with her Bachelor's degree in chemistry from the University of Athens, she pursued her Ph.D. at Heidelberg University, Germany and post-doctoral training at Yale University in New Haven, Connecticut. To stay connected to her country's academic community while away, she corresponded with her undergraduate mentors and asked for introductions to other scientists. Whenever she came home on holiday, she volunteered to give research talks at her alma mater and elsewhere. Pretty soon, she was receiving invitations from universities across the nation to give seminars. "I may have

left the country physically, but I never left the Greek academic system," she says. After five years of notable research which included publishing, presenting, and mentoring combined with connecting with colleagues and lecturing activities in Greece, Cournia landed a job as an investigator (lecturer) in pharmacology and pharmacotechnology at the Biomedical Research Foundation Academy of Athens, Greece.

"You need to be focused on the science, but you also have to have a career perspective in mind," she says. "You need to know where you want to go." A career plan is an important element of any scientist's path, but there must be other aspects associated with it, in addition to

significant scientific outputs, especially during these troubled economic times. In Cournia's case, while continuing her research, she also gained skills in project and grant management, networking, marketing, and independent leadership that ultimately helped her obtain the position at the academy.

For every postdoc pining for a professorship, a good rule to follow is to use your current appointment to find and leverage opportunities that will make you extremely attractive to potential employers. Specifically, you have to learn and hone certain skills that hiring committees look for when recruiting talent. It may not always be easy to chip away time in your day to become a better communicator or to solidify your fundraising expertise, but it is necessary to gain a competitive advantage.

Leadership and management

Becoming a thoughtful, results-oriented leader doesn't happen overnight. "Managing human capital is very difficult," says Aydin Farajidavar, assistant professor of electrical and computer engineering at New York Institute of Technology (NYIT). As a postdoc at Georgia Institute of Technology, he was thrust into a position where he had to supervise students in their research group. "The first time I complained to my PI, he said 'welcome to the club!'" But Farajidavar realized the opportunity was precious because

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—Zoe Cournia

it gave him his first chance to really lead the team, something which he knows has helped him succeed in academia.

“As a postdoc, you are seen as a senior member of the group and may be called upon to make a decision or speak up,” says Natalie Lundsteen, assistant director, Graduate Student Career Services at the Massachusetts Institute of Technology (MIT) Global Education & Career Development. You can leverage this opportunity to strengthen your leadership talents. “Ask your lab advisor if you can take over a project or oversee students,” she suggests.

This is exactly what Yvonne Klaue did during her postdoc at the University of California, Irvine. When her PI announced he was taking a sabbatical for a year, she offered to run the lab in his absence. Klaue organized regular meetings of the research group, supervised the junior members to ensure they were meeting the lab’s mission and goals, handled group communications with other faculty, and even oversaw inventory and budgeting. “No one ever told me how to manage a lab,” she says. “I was thrown into it.”

As you look for opportunities to reinforce your management experience, recognize that leadership is not limited to managing people and projects. A great leader is one who has vision and the ability to implement that vision with success. Coumia was able to gain and demonstrate this kind of leadership drive by creating a funding source for postdocs to travel to conferences while at Yale. At the time, there was no institutional financial support for non-U.S. citizen postdocs to present at scientific meetings. On her own accord, Coumia approached the Office for Postdoctoral

Affairs and helped launch a committee to write a grant proposal to the provost to support the endeavor. The committee ended up raising \$20,000 that year and the travel fund became a permanent part of the Yale budget. “There are ways you can demonstrate your leadership potential, your potential to be a doer, and that you are really committed to your career,” she urges. “This was essential to my career so I could travel to conferences, so I did it. As an independent researcher, you need to show you can be tough and decisive and that you can take the next step to go forward and be proactive.”

There are other opportunities to be found on your campus that can aid you in your career, says Leslie Beckman, senior coordinator of special programs in the Office of Postdoctoral Affairs at the University of Texas Health Science Center at Houston (UTHealth). Consider serving on high-profile committees, like the postdoctoral association, or taking on interdisciplinary or even interinstitutional projects that allow you to be seen as a leader. Furthermore, teaching and informal mentoring can also provide you with critical leadership skills.

Teambuilding

As a postdoc, your research group may seem like a functioning team environment. But more often than not, “work is partitioned off into silos but the staff doesn’t have to deeply collaborate or rely on team members for success,” says Steven Casper, Henry E. Riggs Professor of Management and associate dean for faculty development of the Keck Graduate Institute of Applied Life Sciences (KGI). But to transition into a research career where you are the leader, you must



have abilities that show you know how to effectively collaborate on and build a winning team. Casper recommends pursuing an internship or a short-term volunteer project in your university “where you have to rely on a division of labor to reach goals,” he says. You might consider joining a team through the institution’s entrepreneurship program, where students work on business plans and appreciate a postdoc’s technical expertise. “Go outside the ‘all science zone’ and work with highly intelligent people who are in other disciplines than your own,” he advises.

Networking plays an important role in building a unit that can accomplish a goal. Michelle Fennessy, a postdoctoral fellow in nursing at the University of California, Davis, works at the crossroads of data management, administration, and safety in hospital environments. She realized that to accomplish her research and acquire funding, she would need a multidisciplinary lineup with major credentials behind her. So she actively recruited thought leaders in the field.

It took her six months of networking through conferences and leveraging contacts to assemble her dream team, but it was worth it on so many levels, she says. “As a junior investigator, it is important to surround yourself with experts in the field to help mentor you through the process,” she notes.

Communication

“Everything we do as faculty requires communication skills,” stresses Wendi Heinzelman, dean of graduate studies for arts, sciences, & engineering and professor of electrical and computer engineering at the University of Rochester. “You can have the greatest idea but if you don’t know how to explain it, it will fall flat on its face.”

The ability to convince others of the importance of your work and why they should engage you, either as an employer, research partner, funder, or mentor, is paramount. You should seek as many opportunities as possible to practice these skills. Start small where

the stakes are low, says Lundsteen. Begin by giving a talk in your research group, then move on to a journal group, the department, your postdoc association, and then to a conference. Volunteer to speak in another department besides your own, says Michael Hadjiargyrou, chair of life sciences at NYIT. “It forces you to put together a presentation that’s targeted for a specific audience,” which is vital given that when you interview for an academic job, you may have to give a talk for scientists outside your realm of research or in another department altogether. Hadjiargyrou also recommends seeking out opportunities to address lay people.

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Go outside the ‘all science zone’ and work with highly intelligent people who are in other disciplines than your own.

—Steven Casper

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Funding

A demonstrated record of finding and acquiring funding is crucial to landing a job in academia, where “you don’t just get handed a sack of money,” jokes Lundsteen. Working on a grant project signals to the prospective employer that “you are cognizant of the funding and where it comes from,” she adds.

So naturally, as a postdoc you should consider applying for grants. Courmia wrote 20 applications and received funding from three. Her hard work and success

established to her perspective employer that she knew how to manage grants, write reports, and oversee budgets.

Yet “even if you don’t get the grant, it is a very useful experience,” says Hadjiargyrou. “Grant writing is an art and it takes a long time to hone this skill.” Farajidavar secured priceless advice about grant funding practices from his PI, who had served on review panels for several national agencies. “He knew the criteria for scoring,” he says, “and he shared his experiences and read my proposals and helped edit them.” Farajidavar also asked his advisor if he could accompany him to an NSF workshop to learn the ins and outs of grant writing and meet the program officers. As a postdoc, he applied for five proposals in one year and, although none were funded, he learned another valuable lesson—you can call the program officer and inquire why your application was not selected. The information they provided was an essential factor for his next proposal getting funded.

Approach your advisor about writing a grant and if they don’t support it, find another mentor who will, advises Hadjiargyrou. And you don’t just have to apply for large-scale grants—consider pursuing small pockets of money that may exist in your department or through the postdoc affairs division of your institution.

Furthermore, as the economics of funding changes, it’s in a faculty member’s best interest to become savvy in other areas of financial support besides grant writing. As part of its communications training, UTHealth offers postdocs insight into fundraising and philanthropy, and lessons about communicating scientific results to a community of po-

tential donors. “You will be interacting with these people in your careers,” says Beckman, so it is important to know why people and private foundations donate money to science and how to partner with them to advance your own research mission.

Marketing your value

One of the best marketing tactics you can employ is adopting a niche and incorporating it into your career strategy. As Courmia contemplated returning to her home nation, she researched how her subfield of computer-aided drug design would fit in with the strategic initiatives of Greek institutions. And since there were very few Greek scientists with this expertise, she believed she could add value to the growing academic efforts in the pharmaceutical sector in the country. “A new field was starting in Greece—drug design—and there were not a lot of scientists who had been abroad and had been doing the specialized job that I was doing,” she says. “You need to have a long-term plan and know where you want to be and what you want to be in the next 10 years, and create your niche accordingly.”

Finding that niche in which to best market your value is absolutely essential. Serina Diniega, a mathematician who works for NASA’s Jet Propulsion Laboratory (JPL), recognized this and put the concept into action. In the universe of planetary science, most researchers have geophysics or astronomy degrees. But with a strong desire to work in this field, Diniega realized that she could use her applied mathematics background as a competitive advantage. “I sold myself as an applied mathematician who could solve any problem,” she says. Her postdoc

centered around lava flow modeling, and even though she had “absolutely no experience with lava,” she got the job because she pitched herself as an expert in modeling, which could be applied to multiple systems.

“

You need to have a long-term plan and know where you want to be and what you want to be in the next 10 years, and create your niche accordingly.

—Zoe Courmia

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Getting hired

Ultimately, when someone hires you, they need to know you will contribute value in all ways to the research group, department, and organization. “You have to demonstrate that you are a good playing card for the institution,” stresses Rodrigo Morales, assistant professor of neurology at UTHealth, which includes having a positive attitude, and experience in leadership, fundraising, and communications. But, experts agree, having all of these abilities means absolutely nothing to potential employers if you don’t have the solid scientific foundation on which to build upon them in the first place. “All of these other skills are important to get hired, but the most important thing is always to do good science,” affirms Courmia. ■



A Networking Encounter

By David G. Jensen | March 2015

Something was troubling Nathan Wenzel as he picked his way through dinner: His job search wasn't going well. Jim, his roommate, was oblivious—he was caught up in a programming exercise on his laptop. Anyway, Jim wouldn't relate; he'd had a few offers already, so it looked like he'd have no problem moving out of school and into a good job. Things are easier in Jim's field.

For Nathan—a cell biologist with a Ph.D., currently doing a postdoc—it was tougher. So far, his job search had consisted of reviewing industry and tenure-track job announcements. He couldn't let his adviser know this, but his heart wasn't really in the tenure-track search. He saw how hard his boss worked to fund the lab and how little time she had for science. Nathan wanted a job in industry.

He was not making much progress. He had received a few automated e-mails. Also,

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I didn't realize it at the time, but my contact from the cell biology meeting earned a \$1500 bonus for introducing me to her boss, so it worked out well for everyone.

—Dean Harris

“
weeks before, someone in a company's human resources office had called to ask him a few questions, promising to follow up if the hiring manager had any interest. The follow-up didn't happen. That was the closest he'd gotten to an interview.

Someone—apparently it wasn't Albert Einstein or Benjamin Franklin—once said

that insanity is doing the same thing over and over again and expecting a different result. Just today he had been told, for the umpteenth time, that networking is important to success in a job search. It was time to give it a try. He started the next day.

Nathan's to-do list

Nathan thought that he was networking already because he had completed his LinkedIn profile and had 80-plus connections. But when he spoke to his friend Rajesh the next day, he realized how far behind he was. Rajesh was from the same lab, just a year further along, and while he had decided on the tenure track, industry employers had expressed some interest, too.

“I'm talking about establishing personal contact, building relationships—not just expanding your social-media world. Yes, LinkedIn is important, but that's just a place to store your contacts and keep them updated.

“LinkedIn doesn't drive your process,” Rajesh had warned. “If you rely on your computer, you're really limiting yourself. Let me help you work up a list of things to do so that you can be more effective as a networker—in person.”

A week later, Nathan was busy implementing the first items on his networking to-do list, including these:

- Research upcoming meetings I can attend.
- Make a list of people I'm connected to, at all companies I'm interested in, who might attend those meetings.
- Contact the more obvious prospects, by e-mail or a call. Ask if they'll be

attending. If so, ask if I can have a few minutes of their time.

- Develop a schedule that allows me to run into as many of those attendees as possible.
- Get some business cards.

Preparation

Nathan's research had turned up a large number of upcoming meetings, but fewer that industry people would be likely to attend. One of these meetings, the Biotechnology Industry Organization (BIO) International Convention, was being held near his home. Unfortunately, for a postdoc, the cost was astronomical.

Poking around on the meeting website, Nathan found some unadvertised benefits. First, he could get into the meeting free on Career Day by submitting his CV. Even better, if he volunteered to work the meeting, he could get a 2-day pass that allowed him to attend many of the meeting's most important events, without spending a penny. Within an hour, he had gone from spending \$200 for an “exhibits only” pass to helping important scientists with their PowerPoint presentations.

Three weeks before the meeting, Nathan started trying to set up meet-ups. Mostly he got “sorry, I won't be attending” replies. He found, though, that even people who weren't attending seemed impressed that he was. A couple of them even offered to talk with him by phone.

Nathan managed to schedule four meet-ups at BIO—not bad, but not great. To make it worth the time, effort, and expense, he needed to work hard to make these meetings pay off.

At the event

His first contact at the BIO meeting was Dean Harris, a group leader in the assay development laboratory for a large pharmaceutical company. Dean was 3 years out of a postdoc, and they shared an alma mater. Dean had offered Nathan 20 minutes after his talk and suggested they get coffee. Starbucks was full of networkers that day.

After a couple of minutes of introductory chat, Nathan said, “Dean, I really appreciate you giving me a few minutes. Can I ask you how you made the transition to industry—particularly how you landed at Merck? I’m going through that same academia-to-industry move right now, and I’d love to hear about your process.”

When Dean held back a moment, Nathan felt a stab of concern. Maybe the question was too personal. But Dean was just collecting his thoughts. After a short hesitation, he opened up. “Nathan, I did exactly what you are doing right now. I was replying to ads in *Science*, keeping an eye on the Internet, and in general doing all that my adviser had taught me to do and more. It just happened, though, that I met someone at a poster session at the cell biology meeting, and she offered to introduce me to her boss. That job didn’t last long, but it was a great launching pad, and I took what I learned there and applied it at my next job.”

Leaning back, he reflected on his earlier career choices. “I didn’t realize it at the time, but my contact from the cell biology meeting earned a \$1500 bonus for introducing me to her boss, so it worked out well for everyone. Still, I don’t think she would have introduced me if it hadn’t been a good fit.”

Their talk over coffee went long, but neither noticed. Dean’s career progression excited Nathan because it was nothing like the careers of his Ph.D. adviser or current boss. It was refreshing to hear that people with similar backgrounds and experiences to his, and just a few years older, had already traveled the path that he was on. His enthusiasm was renewed. And Dean was going to see if he could stir up some interest in Nathan’s CV at his company.

The volunteer

Nathan’s deal with the meeting organizers was simple: In exchange for the access he needed, he committed to helping out. He was assigned to one of the smaller meeting rooms. He felt a bit like a hall monitor in high school as he made sure everyone entering the room had a badge. When one of the speakers ran into trouble with her slide deck, he went up to help her out. It was something he’d experienced a dozen times before, and he got her back on track in less than a minute.

As the room emptied and the speaker packed up, she called Nathan up to the front of the room and thanked him for his help. They exchanged business cards. It was the perfect opportunity for an impromptu conversation, and Nathan took advantage. He was proud he didn’t choke when he looked at her card: She was CEO of one of the larger San Francisco Bay Area biotech companies. “Nathan, tell me a little about yourself,” she said.

It was the perfect lead-in question to a great networking response. Nathan was convinced then that his tactical shift had been a good idea. It was already paying off. ■

Books

“So What Are You Going to Do with That?": Finding Careers Outside Academia
Susan Basalla and Maggie Debelius

The Chicago Guide to Your Career in Science: A Toolkit for Students and Postdocs
Victor A. Bloomfield and Esam E. El-Fakahany

What Color is Your Parachute? A Practical Manual for Job-Hunters and Career-Changers
Richard Nelson Bolles

Put Your Science to Work: The Take-Charge Career Guide for Scientists
Peter Fiske

Finding Your North: Self-Help Strategies for Science-Related Careers
Frederick L. Moore and Michael L. Penn

Further Resources from *Science/AAAS*

Science Careers Forum
scforum.sciencecareers.org

myIDP (individual development plan)
myidp.sciencecareers.org

Other Career-Related Booklets
sciencecareers.org/booklets

Career-Related Webinars
sciencecareers.org/webinars

Communicating Science
communicatingscience.aaas.org

Science & Technology Policy Fellowships
fellowships.aaas.org

Science News Writing Internships
aaas.org/careercenter/internships/science.shtml

AAAS Mass Media Science & Engineering Fellows Program
aaas.org/programs/education/MassMedia

ENTRY POINT! Internships for Students with Disabilities
ehrweb.aaas.org/entrypoint



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