

TRANSFERRING SKILLS INTO CAREER OPTIONS

Tertiary academic institutions provide a setting where would-be scientists can hone cutting-edge technical skills and push theoretical boundaries. But scientists who take the initiative to explore and master a range of skills will find themselves competitive well beyond the hallowed halls of a university. **By Virginia Gewin**

As Crystal Icenhour was finishing her first postdoc at Mayo Clinic, she began her search for a tenure-track assistant professorship in medicine. Her first academic job offer fell through, so she took a second postdoc at Duke University and started exploring other professional opportunities that might suit her better. She tapped into the communication and policy skills she gained while serving as a member of the National Postdoctoral Association (NPA) Board of Directors as she applied for a diverse number of jobs: a patent clerk, a science review administrator at the US National Institutes of Health (NIH), and an industry researcher.

Icenhour is now president and director of research at Phthisis Diagnostics, a start-up biotech company located in Charlottesville, Virginia. Icenhour says the biggest mistake postdocs can make is to treat a postdoc as a job, rather than a period of training. “Postdocs have to be empowered to take care of the other skill sets that will create future job opportunities,” she says.

Every postdoc should realize they may not secure a plum tenure-track position. The wise postdoc will explore other options—including positions in government, industry, nonprofit or nongovernmental organizations—to determine what will best fit their blend of interests and capabilities.

NPA considers it a priority to increase postdoc awareness of the variety of career paths open to them. To gauge the career aspirations of her constituency, **Cathee Johnson-Phillips**, executive director of the NPA, conducted an informal survey of members in November 2008. Of the 674 respondents, she found that 27.3 percent were interested or very interested in starting a company, while 37 percent were interested or very interested in working at a small startup company. Over 45 percent were interested in a career at a nonprofit organization. Students are clearly interested in “alternative” careers, but may not fully appreciate which additional skills are required for a successful leap.

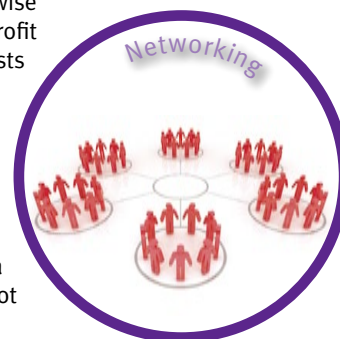
Unfortunately, those so-called transferable skills—including communication, leadership, and management—often fall through the academic cracks. However, a growing number of universities, professional societies, and governmental science offices have put together forums, workshops, and online resources for students and postdocs to make themselves more competitive for nonacademic jobs. The bottom line, though, is that few of these skills can be cultured in the lab.

Sector-Specific Skills for Success

In academia, scientific acumen trumps all other skills. But industry, nonprofit, and government leaders agree: candidates coming straight from academia must combine scientific prowess with well-honed, sector-specific skills to be competitive. Broadly defined, communication skills top the list. But these needs are nuanced.

In the government or nonprofit worlds of science policy, clarity and context are crucial. Justification for a policy stance must be clearly articulated in order to gain traction. “The quality that is hardest to find in the science policy world is the ability to write clearly and quickly,” says **John Marburger**, Washington, D.C.-based science adviser to President George W. Bush. “Communicating technical material in technical journals does not give you the skills to communicate to nontechnical audiences,” he says.

Acres of journal publications may foretell applicants’ expertise, but it sheds no light on their public-speaking ability—which is necessary to effectively advise policy makers how to adopt sound science. “A person’s science background is a huge asset, but to succeed in advocacy—the ability to communicate a passionate belief in the value of sound science—requires a creative communicator,” says **Cheryl Schaffer**, director of finance and *continued »*



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UPCOMING FEATURES

Focus on Singapore — March 6

Careers in Drug Safety/Toxicology — March 13

Careers in Green Science — April 3

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—Crystal Icenhour



administration at the Washington, D.C.-based Union of Concerned Scientists (UCS).

Perhaps not surprisingly, networking is a key skill in the nonprofit world. **Judy King**, director of human resources at the International Life Sciences Institute, says she needs “people-people”—a trait often lacking in scientists who prefer working in a laboratory. Scientists with more diverse backgrounds are often better equipped to find ways to reach out and make connections with potential partners.

Industry is another beast altogether. Communication skills fall under the rubric of being an effective team player. Success in industry is defined by the team’s ability to work together to meet a deadline. If a scientist can’t effectively convey his/her needs to nonscientist team members, a project could be doomed to fail.

But students raised in academia are often taught to work independently. “One of the biggest difficulties that an academic faces when transitioning to industry is learning to deemphasize the individual achievements and maximize the team achievements,” says **Paul Matthews**, vice president of imaging at the GlaxoSmithKline (GSK) Clinical Imaging Center housed at Imperial College in London. And in today’s economic climate, team goals are subject to change quickly.

“With the headcount constraints in today’s economic climate, industry needs to hire leaders as well as technically excellent scientists,” says **Scott Reines**, newly retired vice president of pharmaceutical research and development at Johnson & Johnson, a pharmaceutical company based in New Brunswick, New Jersey. Increasingly, he says, leaders are the people who are most flexible and adaptable to changing corporate priorities.

Even in academia, leadership becomes more important as a field matures. An interesting example, says Matthews, is how the field of genetics has evolved over the past decade. “Ten years ago, geneticists worked in isolation, but now there is a premium on leadership—individuals able to pull together consortiums of geneticists to amass the cohorts of thousands of subjects required to address problems of complex disease genetics,” he says. In fact, industry-academic partnerships designed to effectively build and mine such massive datasets are on the rise, offering additional routes for students to explore nontraditional career options.

“Students tend to define science careers as simply ‘academic’ or ‘nonacademic’—but that does a disservice to the range of nonacademic possibilities,” explains **Michael Alvarez**, director of Stanford School of Medicine’s Career Center. For example, industry needs bench scientists, but also science-savvy legal, consulting, banking, and media personnel.

Fortunately, an increasing number of opportunities exist for students to learn about and hone the skill sets needed to be competitive for a nontraditional career.

No-Sweat Skills Shops

“Helping postdocs gain the skills necessary to succeed in any career

Featured Participants

American Physics Society
www.aps.org

American Physiological Society
www.the-aps.org

American Society for Cell Biology
www.ascb.org

Barcelona Biomedical Research Park (PRBB)
www.prbb.org

Dalhousie University
www.dal.ca

Duke University
www.duke.edu

Dundee University
www.dundee.ac.uk

European Molecular Biology Organization (EMBO)
www.embo.org

European University Association
www.eua.be

German Cancer Research Center (DKFZ)
www.dkfz.de

GlaxoSmithKline Clinical Imaging Center
cic.gsk.co.uk

Imperial College London
www3.imperial.ac.uk

International Life Sciences Institute
www.ilsa.org

Johnson & Johnson
www.jnj.com

Mayo Clinic
www.mayoclinic.com

National Postdoctoral Association
www.nationalpostdoc.org

Penn Biotech Club
www.pennbiotechgroup.com

Phthisis Diagnostics
www.phthisisdiagnostics.com

Science/AAAS Outreach program
sciencecareers.sciencemag.org/tools_tips/outreach

Stanford School of Medicine Career Center
med.stanford.edu/careercenter

Union of Concerned Scientists
www.ucsusa.org

University of California at San Francisco
www.ucsf.edu

University of Pennsylvania Career Center
www.upenn.edu/careerservices

US National Institutes of Health
www.nih.gov

Vitae
www.vitae.ac.uk

path is a primary focus of NPA,” says Johnson-Phillips. Sessions on Zen and the Art of Personal Conflict Management or on Maximizing Your Postdoc Experience can be found at their annual meeting and regional symposiums.

At NIH, **Lori Conlan**, director of the office of postdoctoral services in Bethesda, Maryland, has helped develop career advancement tool kits specific to academia, industry, and making career decisions. Conlan oversees the industry track, which consists of monthly seminars focused on industry recruitment tips—including how to transition to team-based science, industry etiquette, and values. More important, she says this format allows her to provide personalized feedback on resumes, cover letters, or other job application documents.

Professional societies—eager to diversify a successful cadre of members—can also help fill the career development role. The American Society for Cell Biology (ASCB) recently reprinted two popular career guides in one volume, *Career Advice for Life Sciences I and II*, and is compiling a third from monthly career advice columns published in its newsletter. Their annual meetings offer similar career advice workshops covering 27 career topics and sectors including careers in pharmaceutical or biotech industries or scientific publishing. “We know that postdocs and graduate students see the insecurity experienced in academic labs related to grants, and that they need to decide earlier on if an academic career is for them,” says ASCB Executive Director **Joan Goldberg**. Other societies, including the American Physiological Society and American Physics Society, offer similar career forums.

The *Science/AAAS* Outreach program covers a broad portfolio of topics including lab management and networking workshops. The goal is to give early-career scientists insight as well as much-needed experience. “Professional societies can, uniquely, draw on their expertise and resources, and give that information back **continued**”

Postdoctoral Positions

“Make sure you mentor students, or assume oversight of a lab management issue, such as radiation safety.”

—Lori Conlan



to the community,” says **Brianna Blaser**, *Science*/AAAS Outreach project director.

Some university career centers offer extended programs to gain hands-on, industry-relevant experience. For example, while the current economic climate has presented new investment challenges, industry still sees startups as critical to the bioscience enterprise, says Alvarez. With the help of a prominent law firm, Stanford’s School of Medicine Career Center offers a summer program in bioentrepreneurship for students to explore if their project has commercial potential. The University of Pennsylvania Career Center offers 30-week internships for 6–12 postdocs and medical residents each year who want to work with Penn’s Office of Technology Transfer to gain first-hand experience with patent protection, licensing, and marketing issues.

These universities, and others such as the University of California at San Francisco, offer annual, even monthly, career workshops. Given the booming biotech industry in the Bay Area, Stanford and UCSF place emphasis on entrepreneurship. Alvarez oversees several seminar series ranging from Professional Development Skills, which teaches students how to prepare their credentials, network, and market themselves, to Industry Insights, which brings in senior executives who can discuss how changing regulatory policies or venture capital investment impact industry.

In the UK, the Roberts Report—a 2002 report that found a mismatch between graduate skills and employer needs—prompted increased resources to address “generic” skills courses. In fact, Generic Skills Dundee was developed to unite postdoc organizations from four colleges at Dundee University to tackle specific career management issues. As of this year, they’ve put together 97 individual courses—including Project Management in the Real World and Marketing Yourself in a New Direction. Several other universities have similar programs in place.

Vitae, a UK-based program designed to promote the training and development of postgraduate researchers, offers a series of one-day courses open to all UK students about the particular needs of specific careers or the subtlety of different roles in industry. They’ve also developed online resources to address five categories of skills to succeed in academia or nonacademic organizations: personal motivation, creating opportunities, working with people, influencing change, and understanding commercial context.

Transferable skills training programs are gaining traction at several sites beyond the United States and UK. Some university science programs, such as Dalhousie University’s Integrated Science Program based in Halifax, Nova Scotia, integrate transferable skills training into the curriculum.

In addition to career development workshops at the annual meeting, the European Molecular Biology Organization based in Heidelberg, Germany, provides lab management training to its postdocs. As well, the four outstations that make up the European Molecular Biol-

ogy Laboratory offer science writing, presentation, and other training sessions on their intranet.

Individual European institutions that address these skills, such as the German Cancer Research Center and the Barcelona Biomedical Research Park (PRBB), often focus on communication skills. In fact, PRBB offers several communication courses, one called Radio and Podcasting for Scientists. Recently, Marie Curie Postdoc Training Network awards were updated to include specific training in transferable skills. And the European University Association plans to promote UK-style personal development centers focused on offering doctoral candidates training that will enhance their employment prospects.

Students at universities that do not offer transferable skills training can take advantage of existing resources available online or use the opportunity to network and demonstrate leadership skills by coordinating a local skills training event.

Demonstrate Your Skills

With this level of resources, the onus is left squarely with students to carve their individual career path. The danger is simply checking skills workshops off a to-do list. Prospective employers want to see evidence of a student’s abilities.

“We look for leadership in terms of how an individual has presented new ideas or struck out in new directions—that they’ve stepped out of their box and looked at science in a different way,” says Schaffer of UCS. She often finds this evidence in the form of volunteer positions or internships.

“It’s like with anything else in life—learning about a skill doesn’t mean you can do it,” says GSK’s Matthews. “People have to practice and work through the typical problems of leadership and helping organizations form in real life to consolidate practical management skills,” he adds. It can be surprisingly easy to engage in small things outside of one’s research project and lab. “Students can start by doing something as small scale as organizing graduate seminar groups as well as taking on larger management challenges of organizing courses or working on collaborative science projects,” says Matthews.

Icenhour of Phthisis has specific advice for postdocs—get out of the lab and try new things. “If you want to gain leadership experience, join Toastmasters, a nonprofit organization that helps people develop public speaking and leadership skills. If you want science policy experience or to learn about the nonprofit world, join your university’s postdoc office,” she says.

Julie Vick, a counselor at the University of Pennsylvania Career Center, encourages her students to join a student-run club called the Penn Biotech Club to learn more about the legal, business, and marketing needs of industry.

Conlan of NIH advises postdocs to take a leadership role in the lab. “Make sure you mentor students, or assume oversight of a lab management issue, such as radiation safety,” she advises. And, when you are writing a CV, properly package existing skills. She suggests using action verbs—coordinate, manage, develop, execute—to describe lab roles.

The ability to transfer these common skills from academia to other nonacademic job sectors may mean more than simply increasing career prospects. It can mean the difference in a career—any career—that successfully bridges disciplines to achieve a bigger goal. “The world now requires that scientists and businesses and nonprofits work together to solve problems,” says Alvarez.

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