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United States
5 September 2008

Hardly anyone knows more about postdocs than Laure Haak. She has been a postdoc --at the U.S. National Institutes of Health (NIH). She has [written authoritatively about postdocs](#) (as manager of *Science's* Next Wave's Postdoc Network, a precursor of *Science Careers*, and as staff director of a [study of scientists](#) at the National Academy of Sciences). She has received a service award from the [National Postdoctoral Association](#) and serves on its advisory board. But the subject of postdocs can still surprise her.

It happened recently when she looked at postdocs from a whole new angle--as an industrial employer eager to hire some. What she calls a "frustrating" attempt ended with no job offers, she says in an interview, even though she carefully sought out and interviewed 10 people she thought were excellent prospects. To her dismay, those smart, well-trained scientists lacked skills crucial to success in industry--skills she was initially sure they'd possess.

The experience taught her a lot about what scientists need to make the jump from academe to industry, "where there

are so many job opportunities" waiting for those with the right combination of abilities, she says. As if to confirm Haak's anecdotal observations, [a new report](#) from her old employer, the U.S. National Academies, emphasizes the widespread need for scientists who have the very things that Haak was seeking: "deep scientific knowledge as well as skills to apply that knowledge in innovative ways," in the words of study chair and former National Science Foundation director Rita Colwell.

"If you want a job, you've got to go and develop the skills for your next job. The science is important," but "you have to demonstrate to me that you can exist in a wider world." --Laure Haak

THINKING OUTSIDE THE BENCH

A perfect illustration of this amalgam is Haak's own current position as science director at [Discovery Logic](#), a Rockville, Maryland, company that provides information technology (IT) services to governmental

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and private clients. Her job may seem a long way from the lab bench, but the knowledge gained there is the basis of what she does now. Under contract with NIH, for example, Discovery Logic provides IT services that are helping to streamline the grant-approval process. Haak plays a pivotal role in this and other projects as mediator between life scientists and IT experts, explaining to the computer experts how life science and research administration work and explaining to the life scientists and research administrators what computers can do for them.



Laure Haak

Haak needed a program manager to handle the NIH project day to day and thought a postdoc would be perfect--"somebody who had experience writing a grant, somebody who knew about the grant-review process, who knows the science [and] could be involved in managing this project on the client side, ... working with the client to decide the requirements and then bringing those back to the IT people."

She also thought a postdoc would be perfect to help with another of her responsibilities, business development, the process of finding new situations for which the company's capabilities could meet the needs of established or new clients. This person would keep abreast of current scientific, business, bureaucratic, and policy developments in bioscience and spot opportunities. Then he or she would explore these possibilities, meeting with relevant people, figuring out what services Discovery Logic could provide and how they would fit into the potential client's goals, then preparing plans, proposals, and presentations to persuade agencies and firms to hire the company. Haak sought "a gaggle of postdocs who had biomedical experience, understand NIH, understand the grants process, understand the milieu of biomedical science in this country."

After interviewing 10 likely prospects, however, she regretfully concluded that, though "well trained to be a postdoc, [the candidates] have very little of other kinds of applicable job experience. ... They couldn't think outside the box of their lab bench." None had "the concept of working with the client, [that] the client is 'always right,' of how to communicate with them that they're 'right' but they're wrong." Nor did they have crucial skills such as budgeting, project management, running meetings, and writing effective nontechnical prose.

And possibly most surprising to Haak, they did not seem "able to think about the policy implications of what they're doing. They don't understand how their research fits into the grander scheme of things," for example, " 'I'm working on this channel, and this is how it may have some public health implications.' " Furthermore, "they don't understand the whole politics of funding for NIH, that there's a congressional appropriations process and how that works." In short, most seemed "absolutely flummoxed by working someplace that's not a bench."

"That doesn't mean they can't learn," Haak says, "but it means that, in addition to training them in" their specific responsibilities and "in interacting with the IT people, I'd also have to train them to work with a client." That, she says, would make these candidates too costly for her to hire.

"I-Shaped" versus "T-Shaped" scientists

Colwell has a name for the kind of researchers Haak interviewed: "I-shaped scientists," whose knowledge is deep but narrow. Today's competitive industrial marketplace, she says, calls for "T-shaped" technical people, who have skills both "broad and deep," she said at a July news conference to launch the academies' new study on preparing workers for today's scientific job market. In addition to being "deep problem solvers [with] expert problem-solving skills in their home discipline," she said, "T-shaped" scientists are also entrepreneurial and good at communicating with nonspecialists. This matches exactly the range of skills fostered by the [professional science master's](#) degree programs proliferating around the country, she noted. "I suspect many Ph.D. students might take this masters degree" to round out their résumés, she added.

Haak, however, doesn't believe that Ph.D.s need two additional years of formal study to learn how to succeed in industry. If they're alert and strategic, she says, they can develop the

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necessary career knowledge and experience right where they are. Her first post-postdoc job, editing and writing for *Science's* Next Wave, for example, came her way because of volunteer work she had done as a postdoc, writing for a newsletter. This gave her a "whole portfolio of newsletters showing that I knew how to [write and] how to get people to write stuff for me, that I could work under time pressure, and that I could produce a newsletter on a quarterly basis."

Industry employers like herself want scientists who have "gone out of their regular lab work" to build skills in communication, leadership, initiative, planning, budgeting, teamwork, and maneuvering within an organization. They may have learned them serving in leading positions on committees, writing for nontechnical publications, or doing a fellowship in science policy or some other area related to life outside the lab, she says. As Colwell's comments suggest, postdocs can also learn useful skills by taking or auditing courses, which universities often permit their employees to do tuition-free, in fields such as management, budgeting, or science policy. "If you want a job," Haak says, "you've got to go and develop the skills for your next job. The science is important," but to get hired, "you have to demonstrate to me that you can exist in a wider world."

She "highly recommends" that postdocs make time "to participate in some kind of extracurricular activity" that will build and demonstrate those "extra" abilities that employers seek. "You can, for example, serve as the head of the committee that does the speaker series. I want the person who has actually organized it," not just a minor committee cog, she emphasizes. She wants the proven record of making decisions and plans and carrying them out. "What's the speaker series going to be? What are the important issues? Help identify the speakers. Work with people to invite them; that shows that you can work with faculty members. It shows that you have the chutzpah to go call people, that you can communicate effectively, and you can meet deadlines." Another possibility, she suggests, is to serve "on the faculty-hiring committee. Be the postdoc or grad student representative." Postdocs who look for such opportunities will find them, she says, because they abound on every campus.

"I really, really wanted to hire a postdoc," she continues. "I tried so hard to give those people every opportunity." But, she explains, a company "is not a charitable organization. ... I need to see that somebody has the core group of skills so that I have a reasonable certainty that they're going to succeed."

Haak agrees with Colwell that a wide range of challenging and interesting jobs await "T-shaped" people with both technical expertise and an array of other abilities. The word "opportunity," after all, culminates in the sound of "T."

Beryl Lief Benderly writes from Washington, D.C.

DOI: 10.1126/science.caredit.a0800130

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