

Post Postdoc: Are New Scientists Prepared for the Real World?

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Postdoctoral researchers are an essential part of the scientific community, yet their status in the academic community often fails to reflect their significant role in advancing the nation's scientific research programs. Postdoctoral scholars often spend long periods of time in academic appointments that give them little opportunity for career development, training, and research independence, they assert. Several recent reports corroborating their claims, the federal government's pledge to secure US scientific competitiveness, and the formation of groups like the National Postdoctoral Association (NPA) have alerted funding agencies to the postdoc issue and spurred efforts in some circles to revitalize the postdoctoral research experience.

Graduate students and recent recipients of PhD degrees in the sciences often say they entered graduate school with the intention of pursuing a faculty position after serving the obligatory postdoctoral fellowship. The employment options available to the approximately 50,000 postdoctoral researchers in the United States, however, increasingly tend to be outside the traditional academic track. According to data from the National Science Foundation (NSF), between 1973 and 2003, the number of doctorate graduates hired into full-time faculty positions fell by 40 percent at all universities, and by an astonishing 60 percent at research universities. Meanwhile, according to a recent survey by Sigma Xi, the national scientific honor society, the number of postdoctoral students has grown by almost 3 percent in the last 10 years, while the number of academic jobs has grown by only 0.8 percent.

Because transitioning to a career in academia is increasingly difficult, many PhD scientists are applying for jobs

elsewhere. An article in *Science* in April 2006 related that 35 percent of life science PhDs work in industry, up from 15 percent in 1981. These positions often require skills apart from scientific knowledge, such as management, collaboration, communication, and leadership abilities. Nonetheless, the Sigma Xi study reports, 43 percent of postdocs feel that they receive no formal training or oversight, although 62 percent definitely want more formal training and mentoring.

Federal agencies have begun to address the postdoc issue in reports and initiatives. In February 2005, the National Institutes of Health (NIH) announced its "Pathway to Independence" program, which specifically targets young researchers. The program awards grants to postdoctoral students so that they can complete their supervised research and start their own research programs, which should boost the number of NIH investigator-initiated (R01) research grants from 20 to 25 percent.

August 2006 guidelines released by the NSF geosciences directorate request that grant applicants who support postdoctoral researchers map out mentoring activities to ensure that postdocs receive necessary training in grant writing, lab management, ethics, and teaching. Alyson Reed, executive director of the NPA, is among those who would like to see other NSF directorates issue similar guidelines for grant proposals. Reed cautions that "there is always the question of paying lip service to a grant guideline versus actually practicing the principles outlined."

A report released by the National Academy of Sciences in September 2006 on women in academic science and engineering draws additional attention to the issue of support for young researchers, with its call for paid

parental leave and educational and training programs for postdocs.

The White House Office of Science and Technology Policy (OSTP) has attempted to deal with the issue as well, but so far with little substantive progress. A draft report released by OSTP called for collaboration and consistency within the federal agencies for support of graduate and postdoctoral research. The American Association of Universities warned, however, that it was "wary of strict adherence to uniform and rigid standards without any consideration given to the need for variations in policies at different agencies." Such comments have sent the program back to the drawing board. "We are in the process of figuring out how to improve the program. We intend to move forward. We are just not sure how or when," says Ted Wackler, executive secretary of OSTP.

In the meantime, the United States is taking note of some international programs to foster employment and research opportunities for postdocs and PhD candidates. In Ireland and Great Britain, for example, fellowship programs were established recently to assist young researchers in setting up independent labs and launching careers as leading scientists. It is yet unclear whether US efforts to provide more diverse postdoctoral experiences will continue to move forward.

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