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Many postdoctoral researchers find it hard to compete for non-academic jobs, two studies reveal.

TRAINING

The perils of a postdoc job

Skills learnt as a postdoctoral researcher might not advance your career outside the lab.

BY CHRIS WOOLSTON

Postdoctoral-research stints might not offer the smooth path into a scientific career that many junior researchers are hoping for. The job might even leave them ill-prepared for their professional futures, according to two studies that explore the realities of postdoc life at major research institutions in the United States and Europe.

One study explored the ‘mismatch’ between the skills sought by employers and the skills learnt in postdoctoral positions at five institutions, including four leading US universities (C. S. Hayter and M. A. Parker *Res. Pol.* <http://doi.org/cw62>; 2018). Another investigated the postdoc recruitment and hiring

procedure at four European universities — a process, the authors argue, that undermines junior scientists’ long-term employability and job security (C. Herschberg *et al. Scand. J. Mgmt* **34**, 303–310; 2018).

Postdocs often aspire to gaining tenure-track positions at universities, and the 97 researchers interviewed in 2016 and early 2017 at the 5 institutions were no exception: 84 had originally planned to go on to an academic career. Only seven took their postdoc with a specific plan to one day work outside academia. At the time of the study’s publication, 5 of the 97 postdocs had landed tenure-track positions, but many of the rest will have to pursue other options, says lead author Christopher Hayter, a higher-education researcher at Arizona State University in Tempe.

“That’s par for the course,” he says.

For a fuller picture of the employment outlook for postdocs, the study included interviews with 9 principal investigators (PIs) and 16 industry representatives. In general, the PIs interviewed for the study showed little interest in helping their postdocs to prepare for a future career, especially if that preparation took time away from the postdoc’s research project.

Hayter and his co-author, management researcher Marla Parker at California State University in Los Angeles, note that the PIs were not actively trying to stall or sabotage postdocs’ careers. The authors point out that PIs aren’t in the career-counselling business, and that many are not familiar with the concept. “I never had someone hold my hand ►

MEDIA

Film falsities

The portrayal of jobs in science, technology, engineering and mathematics (STEM) in US entertainment media offers mixed messages to girls and women, finds an analysis. The report comes from the Geena Davis Institute on Gender in Media, a non-profit organization supported by Mount Saint Mary's University in Los Angeles, California, and the Lyda Hill Foundation, a private science funder in Dallas, Texas. The longitudinal study examined STEM characters in film and television, and found that the roles largely reinforce the narrative that scientists are white men (see go.nature.com/2qrw4vc). Male STEM characters outnumber female ones by 62.9% to 37.1%, and 71.2% of STEM characters are white. The study also found that films and television shows perpetuate the myth that the physical sciences and engineering, among other disciplines, are inappropriate for women. Female STEM characters are, however, as likely as male ones to be portrayed as leaders in their fields, and are shown as equally competent as, and more intelligent than, men in these roles.

AUTHORSHIP

Who reads whom

Scientific studies published by female authors across 100 topics attract between 2% and 6% more undergraduate student readers in the United States, the United Kingdom, Turkey and Spain than do articles by male authors, according to a study. Using Mendeley, a computer program that manages and shares research papers, the author collected reader data from these four countries plus India in 2014 for articles in 100 subject categories (M. Thelwall *J. Altmeter*. 1, 3; 2018). He calculated the mean number of readers by

gender, field, occupation and position — whether the reader was a student or a senior

faculty member. The findings suggest that female authors might have an unrecognized effect on students' education. The author

cautions early-career scientists, particularly female researchers, to look beyond citations for evidence that their research might have a broader impact than that metric alone indicates.



► through my PhD or postdoc,” one PI said in the study. “I had to figure things out on my own, so I now expect the same of my postdocs.”

Most PIs did show some willingness to write letters of recommendation or to make phone calls to help their postdocs land tenure-track positions at universities, partly because the success of their trainees in academic posts would burnish their own reputations. But many PIs in the study had little incentive to help trainees to find jobs in industry.

The postdocs who were surveyed also commented on the perceived lack of support from supervisors. “I learnt that you’re doomed if you think your PI is going to provide career guidance,” said one. Another put it more bluntly: “A lot of PIs just love to squash any interest you have, other than being chained to the bench.” Some found ways around the resistance. “If I need to go to a [non-academic career] workshop, I just lie,” a postdoc said.

Hayter and Parker’s interviews with industry representatives underscored another problem: postdocs can have a hard time competing for non-academic jobs. One potential employer said that postdocs “have all the academic science skills you don’t need, and none of the organizational skills that you do”. Industry representatives often reported that PhD and master’s students generally have an easier time acclimatizing to non-academic careers than do postdocs.

To partly remedy that mismatch, Hayter suggests, more universities could offer programmes that teach postdocs entrepreneurial skills. “They may not decide that they want to be entrepreneurs, but it would at least open their minds to other possibilities,” he says. One of the universities in his study did establish an entrepreneurship-support programme that has become an important career-development resource for postdocs. Hayter and Parker note that the programme faced opposition from faculty members who thought that it distracted postdocs from their main jobs.

The entire system for hiring, recruiting and training postdocs isn’t necessarily geared towards setting trainees up for success, says Channah Herschberg, lead author of the study in the *Scandinavian Journal of Management* and a PhD student in management at Radboud University in Nijmegen, the Netherlands. The authors’ interviews with 21 PIs in Switzerland, the Netherlands, Italy and Belgium suggest that PIs mainly want to hire postdocs who can help the lab in the short term, even if they aren’t perfect for the position. One Swiss interviewee said that he generally hires a postdoc “who can start immediately, who will be good for the project,

but perhaps not super brilliant, not top class”.

Respondents also said that the hiring process is often based on informal connections and familiarity. As one Swiss respondent put it, a phone call from a colleague can carry much more weight than do publications or impact factors when it comes to hiring postdocs. PIs are especially likely to hire a postdoc who has already worked in their lab or at least collaborated on a shared project. “PIs have limited time, so they have a preference for people they already know,” Herschberg says. In every case, PIs in the study had total control over whom they hired.

The study also describes how PIs generally hire postdocs to complete specific projects that the PIs have conceived and designed. As a result, Herschberg says, postdocs often lack a sense of ownership of or personal accomplishment with their work. And when the time comes to move on to another job, they might not be able to take credit for original ideas. “A lot of postdocs don’t have the opportunity to develop their own line of research,” she says.

Herschberg notes that the qualities that PIs look for in a postdoc — including availability, familiarity and a willingness to work on a short-term project — aren’t necessarily the qualities that will produce the best science or provide the best preparation for a future career. It would help, she says, if funding agencies could give researchers more time to complete their projects, which could translate to longer contracts for postdocs. This, in turn, would give postdocs more job security and opportunities to develop their own skills and ideas.

More-formal recruitment processes that find the best candidates for a given position would also be a step in the right direction, Herschberg says. “If PIs could advertise more openly for positions, they could give opportunities to new people, and the quality of the research might improve,” she says. “We want to recruit the most excellent researchers to our universities, but that doesn’t always happen when it comes to postdocs.”

Sibby Anderson-Thompkins, director of the Office of Postdoctoral Affairs at the University of North Carolina in Chapel Hill, says that the two studies highlight the precarious employment situation, both present and future, for postdocs in the United States and Europe. “They really homed in on some of the challenges and problems,” she says. “We refer to postdocs as trainees, but they aren’t getting the opportunity to really train for different careers.” She notes that PIs are under pressure to complete projects on time and to win their next grant, so cannot always commit themselves to the future of their trainees. “There needs to be a whole retooling of how we design postdoctoral training and how we recruit and hire people into these positions,” she says. ■

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