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The postdoctoral apprenticeship

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Editorial

Much has been written already about whether the scientific machine is churning out too many PhDs and postdocs when there are a limited number of academic jobs and the competition for funding and space in competitive journals is intense. But gratifyingly, there exists a vast array of other scientific careers. We need to mentor and advise trainees about the diverse and rewarding professional opportunities that are available beyond the postdoctoral apprenticeship period.

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It will always be noble to pursue the study of science, and those with the dedication and intelligence to pursue advanced degrees in scientific fields are certainly capable of making palpable contributions to society. But with only approximately 15% of all postdoctoral trainees nationwide going on to academic positions (1), becoming a tenure-track faculty member should no longer be considered the traditional path through science. I'd argue becoming a professor is the "alternative" career path these days. So what else can you be with a PhD or MD wherein you feel fulfilled as a scientist and can put years of intense scientific training to use? Among other choices, opportunities exist for scientists in government, business and consulting, intellectual property arenas, publishing, academic administration, and in the pharmaceutical industry.

So how best to get those who know, from the beginning, that the academic path is not for them to the right opportunities? And do they need the lengthy postdocs to get them these jobs? The average postdoc is around 5 to 6 years in 2016, and perhaps this is too long for those not opting for a life in academia. Many can be successful in the government sector or even in the financial world with fewer years at the bench. Recent job advertisements for project managers or research scientists, either in pharma or within the government, called only for higher degrees (PhD or MD, and in some cases, an MBA).

If you know a trainee in your lab isn't destined for the academic path — or perhaps should be encouraged to consider alternatives — how to recognize and cultivate specific traits in trainees? If a lab member displays aptitude in communication, mentors should be encouraging them to consider editorial/writing jobs or teaching positions. If another displays significant technical expertise, they could be rightly counseled toward staff scientist or core head positions. If yet another has better emotional intelligence and leadership skills, they would be well served by an introduction to careers in project management or business development. Once we can appreciate these traits, we can design opportunities to get them involved in mentoring younger members of the lab, in writing and editing papers and grants, or in designing collaborations and new endeavors [respectively, the teaching, communications, or managerial paths].

We must also encourage them not to wear blinders during their postdoc; while I fully understand that the primary purpose of a postdoc is to pursue a specific scientific question, that should not mean trainees should be chained to the bench. There are increasingly abundant professional and career development offerings at most institutions across the USA (or through the national postdoc association or professional societies and foundations), and trainees should be encouraged to attend workshops on writing and communication, teaching, interview skills, and time and project management. Networking opportunities and attendance at conferences should be encouraged in particular, as the adage goes (in reference to getting a job), "It's not about what you know, but who you know."

Given that many trainees do opt for a modicum of postdoctoral training, what is the right pay scale for them, and why, until now, have we paid them so pitifully? There is a historical precedent that up until now, most universities have followed — and the time is ripe to reevaluate. The individuals with the determination and grit to get graduate degrees are currently offered an entry-level salary (at many institutions that follow the NIH guidelines) that comes out to between $11 (80h/week) and $21 (40h/week) an hour (~$44,000 salary). These rates don't come anywhere near the same range as skilled, entry-level positions in fields outside of science. Beyond my *JCI* role, I now also work at Memorial Sloan Kettering Cancer Center (MSK), and can report that we have joined several peer institutions in raising postdoc pay to a *minimum* of $50,000 a year. This new minimum salary is in compliance with the changes to the Fair Labor Standards Act, which mandates that after December 1, 2016, employers must pay overtime to any salaried employee earning less than $47,476. [There is some ongoing debate as to whether postdocs are employees, but why quibble?] I can think of few postdocs at MSK, nor many at any of the five other universities I've been affiliated with, who work fewer than 40 hours a week. We have been lucky at MSK to consistently recruit super high-quality postdocs and are making this move to a $50,000 baseline salary to ensure that we continue to attract and retain talented postdocs. It is our hope to continue to increase this minimum, keeping in mind that the cost of living in NYC is higher, but all the while keeping in mind the tight budgets imposed by many funding agencies in the USA. Regardless of these constraints, all scientific institutions should be encouraged to meet or exceed this new threshold.

It is an enormously exciting time to be a scientist today. We should be proud to be scientists, and to be training future scientists no matter what venue they choose.

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1. Powell K. The future of the postdoc. *Nature*. 2015;520(7546):144–147.

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