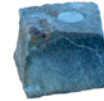


THIS WEEK

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There is life after academia

With high numbers of postdocs emerging from universities, prospective PhD students must be prepared for the fact that they will probably not end up with a career in research.

When is a scientist not a scientist? To many people in the wider world, anyone with a PhD in nuclear physics or molecular genetics would probably still earn the moniker — whether they work as a researcher in an Ivy League laboratory or as a full-time television presenter. To those on the inside, the term is usually reserved for those with science as a professional vocation. Science is something that one ‘does’, not merely something that one has studied. To the hardliners, someone with postgraduate training who then leaves the lab to work elsewhere is judged to have lost their way, or been seduced by the dark side. It is no coincidence that employment opportunities for postgraduates outside research are often labelled ‘alternative’ careers.

Nature, of course, would not come out each week were it not for the scientists who publish here. But the journal's existence also relies on former researchers on the staff who are following alternative careers, whether they work as manuscript editors or journalists, or fill other essential roles. There is scarcely a page of this issue that was not in some way touched by an ex-scientist — please do not call us ‘failed’ — including many who did PhDs and postdocs, and even the odd former faculty member. This piece alone was brought to you with the help of three postgraduate qualifications.

We would say this, wouldn't we, but it would be a huge mistake to assume that those who jump from the research career ladder were unable to hack it.

For a glimpse of why three outstanding scientists left academia and how their training influenced them in their careers and lives, turn to page 20 for our News Feature ‘The ones who got away’. Although ‘data’ is not the plural of ‘anecdote’, their stories speak to the fact that plenty of the most capable postdocs will never become group leaders, and that many will never do research again once they finish their degree or PhD.

The picture is different across the world. Take motive: more students in Britain than in the United States and Germany are likely to begin PhDs without being committed to a career in research (if only because they will be able to put the title ‘Dr’ on their credit card in three years, rather than in six or seven).

REBRAND

Figures collected by the US National Science Foundation show that nearly 20% of Americans with science PhDs were not working in science in 2010, and full-time jobs in academia are proving harder to come by. A telling infographic (go.nature.com/vhlewm) from the American Society for Cell Biology points out that less than 10% of the 86,000 current biology PhD students in the United States will become tenure-track faculty members. “A faculty job is an ‘alternative’ career,” the graphic cheekily states, while noting that more than half of PhD students rank a professorship as their most desired career.

You can look at this glut in a couple of ways. *Nature's* 2011 special, ‘The future of the PhD’, presented all these extra doctors as a problem in need of a fix (see nature.com/phdfuture). In one story, ‘The PhD

factory’, we noted that the world was producing more postdocs than ever, with the implicit suggestion that fewer of them would probably be a good thing: “Supply has outstripped demand and, although few PhD holders end up unemployed, it is not clear that spending years securing this high-level qualification is worth it for a job as, for example, a high-school teacher,” we wrote (see *Nature* 472, 276–279; 2011). Another piece offered suggestions for revamping the education of future scientists — from earlier independence to online courses to ditching the PhD entirely (see *Nature* 472, 280–282; 2014).

“Universities should do more to help their PhD students to gain skills and contacts that will come in handy beyond academia.”

But instead of culling graduate students or abandoning the PhD, why not rebrand it? Rather than being a first rung on a ladder that ends with tenure-track professor (unless you tumble off), doctorates could be treated more like a trail that feeds through to a number of different paths (some easier, some harder, some even rather scary).

Many enlightened group leaders already see their roles as mentors in this way. When contacted about participating in ‘The ones who got away’, one group leader who did not end up in the story suggested that we switch to the headline ‘How scientists have had super careers in areas other than lab research’. Another scientist we contacted runs an annual alternative-careers workshop, so that the PhD students and postdocs in her lab can see that there is life after academia.

The burden should not fall only on group leaders and mentors. When universities are wooing prospective postdocs, they should make it clear that most will not end up as faculty members, while pointing out all the other careers that their graduate students have gone on to pursue.

Universities should also do more to help their PhD students to gain skills and contacts that will come in handy beyond academia, for instance by making it easier for students to take courses in other schools and departments. This is not to say that graduate school should turn into a trade school. Designing, conducting and interpreting experiments teaches young scientists how to do more than move minuscule amounts of water around and calculate *P*-values. Soroosh Shambayati, a chemist turned investment banker whom we profile in the News Feature, found that his talents for setting up multi-step chemical reactions prepared him for trades in derivatives.

Armed with this kind of information and support, would-be graduate students can make more-informed decisions about whether a PhD is right for them, whatever their goals. It would be misguided for new graduates to see their PhD purely as a career stepping stone, but it would be equally wrong to deny PhDs to all but the most committed academics.

Certainly, many of those who pay for postgraduate training are sanguine about where these ‘scientists’ end up working. As National Institutes of Health director Francis Collins told *Nature* in a recent interview: “They are not alternative careers, they are just careers.” ■