

Young scientists deserve better of the system (yet again)

A high-level report on careers in the life sciences raises often-repeated worries about employment practices afflicting graduate students and postdoctoral researchers in the United States. A major rethink is required.

This week sees more fine words added to the mountain of pronouncements on the vexed issue of careers of young scientists, and in particular the consequences of the fact that there is a glut of talented young researchers with little prospect of ever obtaining tenured positions. But who among those potentially accountable for changing things for the better will lift a finger to improve matters?

Every scientific discipline suffers from the problem to some extent. The latest report (see page 103), from the US National Research Council (NRC), examines the situation of young life scientists in the United States. Even there, where private and public investment in research is climbing ever upward above the 1997 total of almost \$40 billion, advertised permanent positions are hugely over-subscribed. Meanwhile, researchers in contract positions get closer and closer towards senility before finding permanent scientific posts — or having to leave research without accumulating reasonable employment benefits.

A sobering statistic in the report reveals that, whereas 61 per cent of those who obtained a PhD in the early 1960s achieved tenured university positions within ten years, that figure has fallen to 38 per cent for those qualifying in the mid-1980s. One can only contemplate with gloom the possible statistic ten years hence.

Four years ago, a report from the National Academy of Sciences drew attention to similar statistics across all scientific disciplines, but took a much more relaxed view of the situation. It concluded, for example, that employment outside academic institutions does not necessarily constitute a misuse of doctoral programmes. Since then, funding for the life sciences has increased at a rate that may have exacerbated the plight of young scientists.

Dubious alternatives

Many of the NRC report's messages have been heard often before: problems of dissatisfaction from over-optimistic career expectations, the importance of the master's degree as a useful alternative to the doctorate, the high proportion of immigrant researchers in the United States, and the need for better information for graduates on the difficulties of postdoctoral employment.

But the report makes important new headway in at least one respect: it introduces some justifiable scepticism towards the idea that there are easy career alternatives outside science for those with PhDs or postdoctoral experience. A wider question becomes even more pressing than hitherto: should so much in the way of research funds be used to provide training that is of dubious relevance to most ultimate career destinations?

The NRC report is also welcome because of the attention it brings to the tasks that young scientists are given within US laboratories which in other countries, notably Germany, would be carried out by permanent technical staff. But it is not clear why institutions currently enjoying a surplus of cheap labour should adopt an expensive increase in their permanent overheads. Their research can thrive even though young scientists are being diverted from research goals by tasks that do not directly benefit their careers. After all, publications, rather than experi-

ence in teaching or tending and developing sophisticated equipment, are what counts when trying to move outwards or upwards.

The report advocates a halt in the expansion of PhD programmes. However, as is also the case with many of the report's other suggestions, there is no central authority in the United States that can directly enforce such a policy. And there are good reasons why the upward pressure will persist. In the US system, small universities with big aspirations are not going to be prohibited from pursuing their ambitions, and congressional politics will continue to encourage a wide distribution of centres of research excellence.

Changing thresholds

Underneath the surface of the career problems of the postdoc sits the highly charged issue of immigration. The report recommends against direct restrictions on immigration. It may be that it has erred towards timidity in avoiding that option, and that a deeper investigation of numbers and the possible consequences of tightened quotas would be worthwhile. Such solutions may be suspect for reasons of practice, politics and principle, but that will not stop some people promoting tighter restrictions, and it is surely advisable to have a full analysis on the table.

Another approach could be to raise the threshold of acceptance into postgraduate research — an obvious though slow way forward in meeting the report's recommendation of an immediate freezing of numbers, but one that at least does not discriminate against foreign applicants. Why not insist on higher levels of qualification or demonstrated ability, perhaps including a master's degree for some categories, as a condition of funding young scientists for research?

Beneath these aspects of the problem lies a tension, particularly characteristic of the United States, between local pressures and institutional autonomy on the one hand, and limited central power on the other. Who is going to encourage institutions to change their employment practices? There seem to be two possible sources of leverage. One, highly controversial and in principle, at least, wholly undesirable, would be restrictions on immigration. The other lies at the door of the National Institutes of Health (NIH). The rate of NIH funding increases in recent years is fuelling the boom in applicants and temporary employment which the NRC is highlighting in its report. Four years ago, the National Academy of Sciences concluded that the problem did not require significant changes in practice. That is no longer tenable. The NIH holds no direct regulatory power, but can nonetheless exercise enormous influence over the laboratories it supports. By introducing consideration of employment structures and practices into its funding criteria, it could exert pressure for overdue change in laboratories across the United States.

Such a policy would represent a significant and contentious shift. But the problems facing young scientists are both chronic and acute. A fresh approach is required to prevent the current boom in the life sciences from degenerating further into a boulevard of broken dreams for too many young investigators. □