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Scientists need a shorter path to research freedom

Francis Collins *explains why the NIH is launching a bid to help some doctoral students dramatically reduce the time required to start an independent career.*

Over the past half-century, a great many things have changed in biomedical research. Along the way, postdoctoral training has become an established step in a research career. But this development has proved a double-edged sword for some — and possibly for the whole field.

Without question, postdoctoral training has enriched the experience of many by allowing protected time for full immersion in research. Postdocs provide essential skills and serve as first authors on many important papers, thus boosting research productivity. But these gains must be set against the significantly longer time it now takes for most young scientists to launch independent research careers. The average age of PhD scientists awarded their first research grant from the US National Institutes of Health (NIH) last year was 42. In 1981, the average was 36. As director of the NIH, I believe this is a problem that should be addressed. We must develop ways to liberate our brightest minds to pursue high-risk, high-reward ideas during their most creative years.

There are many complex reasons for the increased training periods, including an academic culture that emphasizes the need for longer, sometimes multiple, postdoc positions to build a stellar CV. There is a shortage of faculty vacancies, and institutions often insist that recruits win independent funding before appointing them to tenure-track posts. And there is too little emphasis on alternative scientific careers, such as industry, law, teaching and policy.

Many young researchers baulk at the prospect of such an extended period of limited intellectual autonomy. It is also a concern to veterans such as myself. I fear that science may be suffering because of a failure to encourage the independence of the next generation of great minds.

My own pathway to independence involved a three-year postdoctoral fellowship in human genetics in the lab of Sherman Weissman at Yale School of Medicine in New Haven, Connecticut. I was fortunate to be mentored by an adviser who encouraged autonomy and creativity. I used the opportunity to develop an innovative approach, called chromosome jumping, for crossing large strands of DNA to identify genes responsible for inherited disorders. It was a good launching pad; I received my first R01 grant from the NIH at age 34, the same year I began a faculty position at the University of Michigan in Ann Arbor.

In my lab at the NIH, I strive to cultivate the independence of young scientists as early as possible. One of my strategies is to assign new recruits a 'thinking period' devoted to formulating project ideas. Through an iterative process involving myself and the recruit, we refine the research direction until we have settled on a good fit. I think this strategy has worked well in encouraging forward thinking, but it may still be a halfway solution. For the most creative of young scientists, nothing can equal the chance to have a lab of one's own.

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To provide such opportunities, several programmes aimed at promoting greater independence at earlier career stages have sprung up over the years, producing some spectacular investigators. And so, after much consultation with outside advisers, the NIH this week launched its own effort, the Early Independence Award Program (see go.nature.com/nFqYE5), which will initially support ten creative young scientists to pass almost immediately from completing a PhD to running their own laboratories. The awards will be paid by the NIH Director's Common Fund and administered through a peer-reviewed application process, supporting an investigator at a level of US$250,000 in direct costs per year for five years — the equivalent of a standard NIH R01 grant.

Unlike many similar programmes, the awards will give students flexibility to seek a position at any suitable institution. Applicants will need to work with the institution's academic leaders to negotiate an independent position that would be activated if they win an award. We hope that department heads will find this an attractive tool for recruiting talent to invigorate their institution's research environment. For its part, the institution must provide the young investigator with space and resources, and a level of mentoring equivalent to that provided to assistant professors.

I am aware that many speed bumps may lie on this expressway to independence. The programme requires highly motivated and mature applicants who are talented and confident enough to launch their own research programme and negotiate support from a department chair. And it requires institutions willing to support an award winner who will be unusually young in their career. The pilot programme, which we expect to be highly competitive, will issue its first awards next year. Although not intended to replace traditional postdoctoral training, the pilot can be scaled up if successful.

This programme is not for everyone, and postdoctoral positions will continue to expand the skills and experience of most young scientists. But for exceptional individuals with the intellectual and experimental sophistication to initiate an independent career at the end of doctoral training, this programme will provide the opportunity. I have been involved in the launch of many pilots, including that of the Human Genome Project, but I have a special affinity for this one: the future of biomedical research relies on the creativity and energy of its investigators. Unleashing that capability at all stages of a scientist's career should be a priority for us all. ■

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