

Funding the future in UK science

Against a backdrop of some of the most savage spending cuts in the developed world, the UK science budget has emerged relatively unscathed, but funding priorities may yet prove problematic.

No one needs to be reminded that the global economy is only just emerging from the throes of a maelstrom that will make 'austerity' a watchword for years to come. Most of the G20 countries are experiencing severe budgetary cutbacks, with the UK in particular undergoing some of the most punishing and wide ranging. In their Comprehensive Spending Review (CSR) of October 2010, the UK's new coalition government mapped out £81 billion (~US\$130 billion) in savings that must be made over the coming years. So far the strategy seems to be to focus on spending reductions rather than tax rises—perhaps the most palatable option for the general public. In part, the severity of the cuts might of course represent simply a normalization of the profligate spending of the previous years, but by any measure they are brutal. Leaving aside the merits or otherwise of these cuts, what in real terms do they mean for UK science?

Before the CSR, the fate of basic science research, with its often high costs and occasionally vague (at least in the public's perception) benefits, seemed particularly precarious. Indeed, before the CSR announcement, UK Business Secretary Vince Cable gave an ominous speech stating that "neither commercially useful nor theoretically outstanding" research would be funded and that "mediocrity" should be screened out. Those seemed particularly portentous words for a senior politician more normally known for his affinity to science. UK scientists braced themselves for the worst. In the end, the scientific community was at least in part pleasantly surprised when the government announced that the annual science budget would be frozen only for the next 4 years. When inflation is taken into account, this is still a decrease of 10% in real terms; however, it is nothing like the 35% mauling darkly rumoured to be on the cards, or the average cut of 25% across other government departments. Relatively speaking, UK scientists may have dodged a bullet, or at least only received a flesh wound.

Cable's sentiments are of course not without merit. Indeed, funding the 'best' science is what all sensible people want—scientists included—and this is the kind of meritocracy in which society at large wins out. The arts and humanities are set to bear the brunt of the research cuts, and if recent policy pronouncements are anything to go by, then it is likely that the most 'arty' or least commercial of the sciences will similarly lose out. The problem, however, comes in defining what the 'best' science actually is. Should this be related to discipline, size of the community, impact factor, translatability or cost efficiency? These are all questions best left for the scientific community rather than politicians and civil servants. With this in mind, there was thankfully

another welcome move, when Adrian Smith, a scientist, was recently appointed as the new Director General for Knowledge and Innovation at the Department for Business, Innovation and Skills (the department responsible for the science budget). This came after fears that this position could go for the first time in decades to a civil servant with no direct experience with science or engineering. A knowledgeable and appropriately qualified voice will now hopefully be well placed to bend the ear of politicians and policy makers alike.

Although it now seems that research funding has been ring-fenced, at least for the next few years, there is every chance that financial constraints and government policy could give rise to internecine feuding among the various scientific disciplines. Favoring one subject area without clear criteria or the necessary consultation could generate a lot of ill will in the scientific community. No one is under any illusion that this is anything other than a zero-sum game, with funding to one area being at the expense of another. Given this reality, some form of prioritization, as alluded to in the UK's recent CSR, will be inevitable. When it comes to competition for funding, biomedical sciences, with their obvious translational merits, are clearly at an advantage. However, as with the arts, certain scientific disciplines offer many intangible benefits: although stars are pretty to look at, they become so much more exciting when an astronomer explains their birth, evolution and place in the cosmic ecology. In addition, prioritizing one area purely on the basis of translational or commercial potential could have very harmful effects on general scientific literacy in the future.

Another issue that needs to be grasped by politicians and financial planners is the fundamental connection between basic research and commercialization or translation. Essentially all drugs and interventions are underpinned by years of basic research and preclinical study. In the case of immunology, time and again the field has been surprised by the new layers of complexity that have been unearthed, such as T cell plasticity and the interconnectedness of multiple immunocytes and tissue systems. It remains to be determined where all this new information will lead, let alone what therapeutic possibilities it may provide.

An emphasis on translational research for a mostly biomedical science such as immunology is appropriate, but the theoretical and experimental groundwork must be firmly laid before it can bear fruit. Although the UK government and the recent CSR should be rightly acknowledged for their recognition of the importance of science, the worry is that a drive for efficiency has not taken into account the essential yin-yang relationship between basic research and commercialization or translation.

