

UK scientists

Keep on Going Through Difficult Times



Amid announcements of dramatic cuts in public spending and the reorganisation of higher education funding, scientists still face the same old problems: not enough funding, the necessity of mentoring, too much tiresome paperwork, not enough income and recognition, how to juggle children and a career and how to make time for lobbying.

At the beginning of July, the science magazine *Nature* and the UK science organisation *Royal Society* hosted the *Tomorrow's Giants* conference in London with 181 attendees. Scientists took the opportunity to discuss with research managers, politicians and *Nature's* Editor-in-Chief, Philip Campbell, today's pressing career issues and what it takes to form tomorrow's top scientists.

More funding needed

Conference participants said sufficient and diverse funding opportunities were a major prerequisite to stabilise academic careers. Since it takes a long time to build a scientific career and scientists are specialised, a variety of career paths must be considered and more short-term and long-term funding is needed. It is especially difficult for young investigators to establish their careers, therefore, career structure and development should be made transparent. To encourage interdisciplinary research, scientists wanting to make transitions should be recognised and rewarded, attendees remarked. Although the gap between industry and university is narrowing, industry is not regarded as a safe haven. Industry changes direction quickly and it is difficult to predict, where industry is moving, one participant argued. This makes it difficult for academics to acquire the appropriate skills.

Attendees also reported difficulties in providing long-term funding for research group core members, who were not leaders and for group members with technical expertise. A lot of long-term well-trained staff is being lost, they complained. In the course of the conference it became evident that universities could offer such positions, depending on available funds.

Mentoring important

To keep researchers in science, good mentoring is crucial, conference participants stressed. One had to bear in mind that pioneers and top scientists were also once students and that many important discoveries were made at a young age. Therefore, bad mentoring, especial-

ly early on in a scientific career, could be very detrimental. However, mentoring, as an important and time-consuming task, needs rewarding because there is not always a direct benefit for the mentor, researchers demanded.

To support the leaders of tomorrow, research institutions should support all kinds of excellent personalities, and promote curiosity and motivation, speakers and panellists suggested. They characterised top scientists as far-sighted and inspired leaders, not followers, who are also driven by ego. To support future leaders, environments are needed in which discoveries may be encouraged at a young age.

What impact does science have?

Scientists also stressed the problem of trying to fund basic research that does not yield economic impact over the next five to ten years. They criticised that grant applications involve too much paperwork to declare the economic and societal impact of the outlined research.

This problem might even increase in the future. In the evaluation of research quality in universities by the new Research Excellence Framework (REF), the retrospective impact of research on economy, society, public policy, culture, the environment, international development or quality of life is supposed to play an important role. The REF will replace the Research Assessment Exercise (RAE). The Higher Education Funding Council for England (HEFCE) allocates grants for infrastructure and running costs to universities, according to their performance in such research quality assessments. The new government's Universities and Science Minister, David Willets, recently had to delay the implementation of the REF by one year because a method of assessing impact, which is sound and acceptable to the



Modern researchers have to juggle career, family and their social life

Photo: photocase.com/methias the dread

academic community, is still to be found. The Science and Technology Committee appointed by the House of Commons concluded in its report on 'The Impact of Spending Cuts on Science and Scientific Research' that, however meritorious the idea of awarding funding on the basis of past impact might or might not be,



Photo: Fotolia/Nina Malyna

You want to be rich and famous? Don't become a scientist!

the difficulties associated with capturing past impacts effectively and allocating funds fairly based on these impacts, would be insurmountable. Participants of the *Tomorrow's Giants* conference argued that the expectations of society and politicians regarding the societal and economic impact of science might be too high and that blue-sky research would be necessary to create an innovative and excellent research landscape.

Family and income issues

Having a family and a research post still seems difficult for many. One conference participant complained the worst thing that happened to her career was having kids. It was suggested that a good track record should allow a career break to raise a family. The financial situation of scientists might also need improvement. Many researchers still live in shared housing in their thirties, a panellist remarked. Although remuneration has improved since 2006, scientists consider their work and contribution to society to be underpaid and undervalued. They argued that remuneration is better in other professions with similar qualifications and that the public sector should be less affected by economical crises than the private sector. As often observed in times of difficult professional perspectives, the importance of "passion" and "obsession" for science were stressed.

What interests scientists most, is research. Their working days are long, making the interaction with society, politicians and the media an additional burden. Conference attendees criticised that the scientist of tomorrow is seen as a kind of PR person with a scientific career. They shared the view that tomorrow's top scientists should be the ones doing the research, not selling it. This view contrasted with the opinion that research and its impact should be seen as different sides of a scientific career.

No time for lobbying?

To gain and to maintain public, political and financial support for research, lobbying is necessary. The recently published Special Eurobarometer survey *Science and Technology* by the European Commission showed that scientists could further improve their public image and should enhance the public's confidence in research. European (53%) and UK (46%) survey respondents agreed that "because of their knowledge, scientists have a power that makes them dangerous". Nearly eight out of ten European respondents expressed concern that science and technology could be used by terrorists in the future and five out of ten European respondents feared that the applications of science and technology could threaten human rights.

Scientific discoveries occur at an increasing pace. European (63%) and UK (62%) survey respondents considered scientists working in university or government laboratories to be the best qualified to explain the impact of scientific and technological developments on society. However, 57% of European and 56% of UK survey respondents agreed that scientists don't put enough effort into informing the public about new developments in science and technology. There is a need for more information and clarity. Those, who were interested in and felt informed about new scientific discoveries, were much more likely to have a positive view of science and technology than those who were not at all interested or who felt not at all well informed.

Difficult times ahead for UK science

Public and political support to science is especially important in times of governmental austerity measures. The financial situation in UK universities is becoming more and more strained. In addition to over £1 billion of cuts announced by the Labour government in December 2009, universities now have to deal with a further £200 million of in-year-cuts to higher education funding, announced by the Conservative-Liberal Democrat coalition government in May 2010. According to Universities UK, a representative body of UK universities and colleges of higher education, the austerity measures comprise a £118 million reduction of the Modernisation Fund and an £82 million reduction in core funding. On top of this, the increase in value added tax (VAT) from 17.5% to 20%, effective from January 2011, will result in a further tax burden for universities, which could amount to over £200 million per year.

On the European level, the funding prospects look more promising. The European Commission plans to invest €6.4 billion in research and innovation via its Seventh Framework Programme in 2011. This means an increase in funding of 12% in comparison to 2010. Health research will be supported by over €600 million, with one-third of the budget going to investigator-driven clinical trials to get new medicines onto the market quicker. Over €1.3 billion are reserved for scientists selected by the European Research Council and €772 million will go to mobility grants for 7,000 researchers provided through Marie Curie Actions.

The Russell Group, which represents the 20 leading UK universities, told that support from charities, business, endowments, philanthropy and other sources, although crucial, would not be sufficient to meet the severe challenges facing universities. In its submission to the *Independent Review of Higher Education Funding and Student Finance*, the group suggested removing the cap on tuition fees and letting universities set their own fees. This represented the only viable option for ensuring sufficient funding for the UK's higher education system, in a manner that was fair, sustainable and protected access, the group commented. The current maximum fee of £3,225 could rise to £9,000 a year.

The future of fee policy

The increase in tuition fees should be accompanied by a reform of the student support system, the Russell Group suggested. The subsidy on student loans should be reduced by introducing a real rate of interest, increased repayment rates and by a system



Photo: Wikimedia Commons/ Eric Wüstenhagen

A stony path ahead not only for scientists in the UK

of privately-funded lending. The Secretary of State for Business, Innovation and Skills, Dr Vince Cable, suggested a flexible graduate tax to support university funding. High-earning graduates would pay more than those on low incomes. The National Union of Students (NUS) welcomed the concept of a graduate tax as a replacement for student top-up fees. Graduate contributions should be "based on actual earnings in the real world, rather than sticker prices in prospectuses, which are based on guesswork," NUS President Aaron Porter said. In autumn 2010, the *Independent Review of Higher Education Funding and Student Finance* is expected to make recommendations to the Government on the future of fees policy and financial support for students.

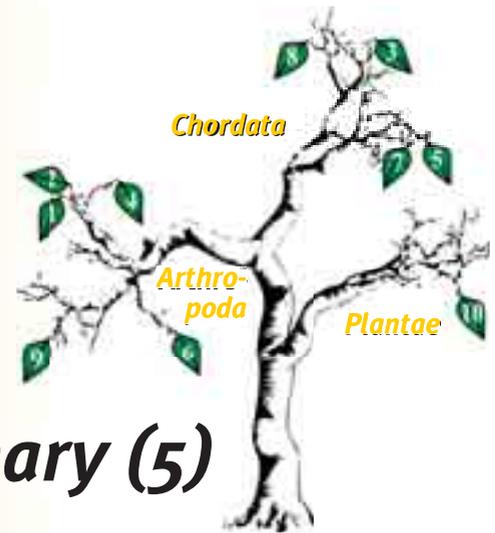
Pay freeze ahead

On the background of a looming 25% cut in education spending over the next four years, universities are waiting to see, which plans and programmes will finally have to be axed. Chancellor George Osborne already announced a two-year pay freeze for public servants. Detailed settlements will be presented in the Spending Review in October this year. The University and College Union (UCU) estimated that a 25% reduction of the education budget could lead to a loss of 22,500 university jobs in England alone, 10,200 of them being academic posts. The planned budget cuts led to on-campus protests by students and staff at 100 UK universities in June. The Vice-Chancellor of the University of Kent, Professor Dame Julia Goodfellow, commented on the situation of scientists, "We all go through tough times in our careers and our research as well as those times when we can celebrate our successes. If I had to give one piece of advice, I would say keep going through the difficult times. Do not give up."

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(Further in-depth interviews from UK scientists at www.lab-times.org)

The Other Dictionary (5)



The hidden meaning behind real species names.

By Jörn Glökler.

1) *Allodape greatheadi*

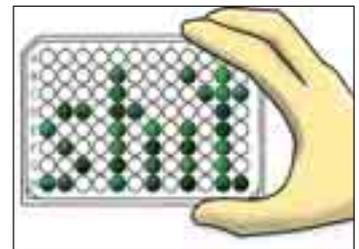
Biggest scientific discovery ever made. Each professor claims at least one allodape as his own.

2) *Concoctio concentra*

The long-term chemical evolution experiment taking place in the huge organic waste container under the hood. Unfortunately, never analysed before disposal.

3) *Aha ha*

The prank played by colleagues, by switching your ELSA plate with a fake one. Some carefully arranged pattern using small amounts of enzyme will usually do the trick.



Aha ha

4) *Hypostomus pagei*

The point at which you notice that the electrophoresis is running on reverse polarisation.

5) *Udotea javensis*

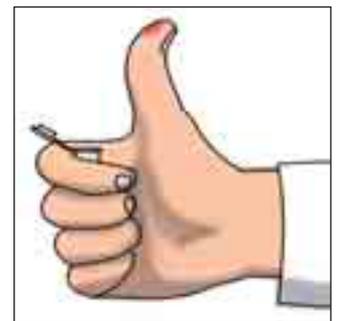
A critical question in life science. Are you a tea or coffee person? As many colleagues are wary of tea drinkers, mind you answer with javensis whenever asked at meetings.

6) *Idotea whymperi*

Generally the wrong answer to *Udotea javensis* (see 5). Real scientists drink coffee!

7) *Calomys sorellus*

The callus developing at the tip of your thumb through working with too much plasticware.



Calomys sorellus

8) *Lophodiodon calori*

The amount of calories burned while waiting for the ultracentrifuge to spin down without brakes.

9) *Lorius lory jobensis*

The [ig]noble reason why scientists will work for low salaries on limited contracts.

10) *Reophax arayensis*

The projected duration of a perfectly simple experiment – plus another day, multiplied by two, and an additional PhD thesis.