

# THIS WEEK

## EDITORIALS

**WORLD VIEW** Red is the colour for global ecology project **p.7**

**SUGAR MICE** Rodent brain circuits help to identify sweet tooth **p.8**



**SPECIATION** Jays show evolution is law of small differences **p.8**

## Redirection home

*Europe's researchers should grab every opportunity to ensure that funds redirected towards strategic investment will not miss science altogether.*

The almost 19,000 followers of @EU\_H2020 — the official Twitter feed of the European Union's flagship funding scheme Horizon 2020 — have already had much to discuss this year. Highlights include plans being drawn up by research commissioner Carlos Moedas on how to manage scientific advice after the abrupt axing of the chief adviser post held by Anne Glover; a live stream of a green-transport event; and the announcement of the first grants, including cash for projects to work on robots that wash floors and harvest sweet peppers.

However, @EU\_H2020 has been quiet on a move by commission president Jean-Claude Juncker to raid the Horizon 2020 budget for money to help set up a continent-wide investment fund. The floor-washing robots are safe: Juncker wants to drain the cash — some €2.7 billion (US\$3.1 billion) — from other parts of the budget, details of which were announced through more traditional routes last month.

Hardest hit is the European Institute of Innovation & Technology in Budapest, which will lose €350 million over the next six years. The European Research Council will lose €221 million, starting next year.

Also targeted is cash earmarked for projects across the continent over the coming years, including from information and communications technology, which will lose €307 million, food (€181 million) and nanotechnology, biotechnology and other advanced manufacturing techniques (€169 million).

If Juncker's proposal is approved by the European Parliament and Council, then the €2.7 billion will form part of a €16-billion European Fund for Strategic Investments that the European Commission hopes will stimulate state and private investment and lift the continent's stagnant economy.

@EU\_H2020 might have been quiet on the move, but there have been howls of protest from those on the receiving end of the cuts.

"Horizon 2020 is not a lemon! Stop squeezing it!" was the sharp response from the League of European Research Universities in Leuven, Belgium, when the cuts were first suggested last year. And the advocacy group EuroScience said that it "is not in principle against using a small part of the Horizon 2020 budget for this purpose", but that taking the money from the European Research Council sent "a very bad signal". The European Research Area's Stakeholders Platform, an umbrella group of various organizations expressed "great concern" and warned that the cuts would undermine research and innovation efforts across Europe.

In response, European Commission officials say that the cuts come from an already generous budget — the original €80 billion in spending planned through Horizon 2020 makes it the most lucrative research funding scheme of its type in the world. The €2.7-billion reduction, they point out, could have been worse, and leaves the bulk of the programme intact. They argue that the funds will not truly be lost from science and research; they will return with interest when the strategic fund begins to bear economic fruit.

Perhaps. But it is easy to have sympathy for the organizations that were

banking on that money and must now try to fill the hole. It is also easy to question the use of the word 'strategic' in the title of the fund. Strategy is long-term, and the best and most enduring route to prosperity must remain the careful allocation of investment to research on science and technology — both pure and applied.

Still, as *Nature* has argued before, scientists must accept that the boom times are over, at least for now. Money is tight and priorities are shifting. Those in Europe would do well to remember that.

**"Scientists must lobby for research and innovation to have a central role."**

The new fund could be up and running as soon as September, so some scientists could still be waiting to hear whether they will join the pepper-picking robot researchers in receiving a Horizon 2020 grant (chances are, they won't, the programme is massively oversubscribed, sorry). In principle, research could yet benefit from the redirected money, but scientists and their representatives must lobby for research and innovation to have a central role in the projects — infrastructure and the rest — in which the new fund will invest. The European Research Area's Stakeholders Platform has suggested amendments to the proposed legislation to make that happen, including giving researchers a say in how the money is allocated, and European officials should listen to that advice.

Science may have lost out on the money, but it should not miss out on the opportunity. ■

## House of cards

*Western institutions must speak out against human-rights abuses in their partner countries.*

When the leaders of many of the world's democracies flocked to Saudi Arabia last week to offer their condolences on the death of King Abdullah, many critics called it hypocrisy. They did so, too, when Saudi officials marched in Paris two weeks earlier to defend freedom of expression following the terrorist attacks there.

After all, Saudi Arabia comes near the bottom of the world league in terms of freedoms, such as the right to dissent, to freedom of expression or to practise any religion other than Islam, and has a track record of brutal human-rights abuses and political and religious oppression. But the kingdom's oil and strategic geopolitical importance in the turbulent Middle East means that it has long enjoyed strong ties with the West.

Some scientists have been drawn to the desert state too, not least to the King Abdullah University of Science and Technology (KAUST) in

Thuwal, a graduate university created by the king in 2009, which has a US\$20-billion endowment. The university is the flagship of Abdullah's efforts both to build a knowledge-based society in a country with little science base and to help distance science and education from the stifling influence and control of conservative clerics.

As we report on page 18, some of these scientists have become caught up in the controversy over Saudi Arabia's human-rights record. An international outcry has been sparked by the Saudi authorities' flogging of the activist Raif Badawi in a public square in January — the first 50 of a sentence of 1,000 lashes, along with 10 years in prison, for posts that he introduced on his website for social and political discussion.

The Badawi case once again highlights the responsibility of researchers and scientific institutions who collaborate with authoritarian and repressive regimes such as Saudi Arabia to denounce human-rights abuses. Eighteen Nobel laureates explicitly raised that point in a letter last month to the president of KAUST, calling for "influential voices in KAUST" to speak out against Badawi's brutal treatment, arguing that no university can be viable in a society lacking basic freedoms.

Some scientists and their institutions, such as the US National Academies of Science, have a long history of speaking out to defend freedoms, and of campaigning on behalf of persecuted academics and activists, although too many others remain silent. Still, there are concerns that such lobbying has lessened in recent years, with several scientific human-rights bodies, including those of the New York Academy of Sciences and the American Association for the Advancement of Science, shifting their focus to scientific diplomacy and softer human-rights issues, such as access to education, clean water, food and health care. Some have argued that working to open up repressive countries is more effective in the long term than publicly embarrassing them over individual cases of abuse.

Others have rightly expressed concern that scientists and their institutions may be increasingly reluctant to speak out to avoid jeopardizing collaborations with countries, including China, that have dismal human-rights records. The many Western universities that have partnerships with KAUST and other Saudi institutions benefit from petrodollars, and the leading researchers who have joined the KAUST faculty benefit from competitive salaries and state-of-the-art laboratory

conditions. Western universities have also gained from the influx of hundreds of thousands of fee-paying Saudi students under a generous scholarship scheme established by King Abdullah.

What can scientists there achieve by speaking out? Foreign researchers working at KAUST who were contacted by *Nature* seem sincerely

**"Change cannot be expected to come quickly in Saudi Arabia."**

convinced that, by educating and broadening the horizons of young Saudi Arabians, they can do more good by working to help to slowly open up the regime. The scientists are to be applauded for their efforts — this journal has long backed scientific cooperation as

a form of diplomacy, for example with Iran, and has similarly opposed proposed scientific boycotts of Israel.

Unfortunately, change cannot be expected to come quickly in Saudi Arabia because of the unique complexity of its society and culture. As Europe's Enlightenment was taking shape in the eighteenth century, pushing back against religious authority and ushering in modern science, the Arabian peninsula was heading in the opposite direction. The Saudi state was born at the time out of an unholy alliance between Ibn Saud, a tribal leader, and Muhammad Ibn Abd al-Wahhab, the leader of Wahhabism, an extreme fundamentalist sect of Sunni Islam. That pact shapes Saudi rule and society to this day, resulting in a symbiotic agreement, with the conservative clerics giving the monarchy its support in return for their power to impose a society based on radical Islam, and an extreme form of sharia law.

But there does not need to be a conflict between defending individual cases — either publicly or by more diplomatic, behind-the-scenes pressure — and broader outreach efforts. We need both. Campaigns for persecuted individuals whose plights otherwise risk going unnoticed can also, as in Badawi's case, send the powerful message that the world is watching. Scientists at KAUST are perhaps not best placed to speak out, being at risk of potential retribution. But Saudi Arabia benefits hugely, not least in terms of its international image, from prominent collaborations with Western research organizations and universities, which have a duty to use that leverage to speak out on abuses, and to call for greater democratic reforms — both publicly and in their private dealings with their Saudi partners. ■

## Road test

*Realizing the benefits of driverless cars will require governments to embrace the technology.*

The government funding agency Innovate UK has launched a £10-million (US\$15-million) project to study how autonomous, self-driving vehicles will fit into daily life in four parts of England: Greenwich, Coventry, Milton Keynes and Bristol.

Good job. That is the right kind of question to ask about driverless cars. As described in a News Feature on page 20, developers such as Google are making rapid progress on the vehicles. From a technical standpoint, the cars could be ready for widespread deployment within a decade. But when and how they will hit the streets depends on how well people accept and trust them.

Consider, for example, the obvious economic question: will people be able to afford them? Thanks to the need for sophisticated equipment, the vehicles are likely to be much more expensive than their conventional counterparts, at least initially. And that means that buyers will need to see correspondingly large benefits.

A frequently cited benefit is safety: advocates insist that the vehicles could all but eliminate accidents. But convincing people that driverless cars can do away with human accidents and not make robot-minded mistakes of their own is likely to take a good number

of years and millions of kilometres of accident-free test drives.

And when accidents do happen — as they surely will — public reaction will depend on the specifics of the event, and those are hard to predict. The legal issues may be even tougher. Right now, equipment failures are rare and the responsibility almost always rests with a driver. But with driverless vehicles, the courts and insurance companies will have to figure out how to apportion liability among the vehicle's occupants (who may be dozing off), the car maker, the software developers and even the mapping algorithm.

Another much-touted benefit is fuel efficiency. But that is unlikely to be realized until most cars are equipped with systems that allow them to communicate with one another (called V2V systems) and with traffic signals to minimize stop-and-go traffic.

Of course, some wealthy people will doubtless take the plunge. But the most important early adopters will probably be fleet operators: driverless ride-share systems could function as a new form of mass transit. And if the door-to-door service encourages more people to give up their car, then some of the vast areas devoted to parking could be put to other uses.

Governments are likely to be crucial to the transition — not least because many of the benefits accrue to society as a whole. A good example is being set by the United States, which is considering a mandate that would greatly speed up the transition by requiring V2V radios in every new US car. Other countries should follow suit.

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To make such moves fully effective, however, local governments will need to start upgrading roadways with smart signals designed to optimize traffic flow — assuming they can find the money. ■