

THIS WEEK

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Murky manoeuvres

Scientific reform promised to give Italy's scientists the respect and autonomy they deserve, and political posturing must not be allowed to tip the burgeoning system off balance.

Three separate Italian court decisions, each in some way hinged on science, have shocked the international research community in recent months.

On 12 October, Italy's highest civil court ruled that compensation should be paid to a man who developed a tumour close to his brain that he claimed was caused by work-related use of mobile phones. On 22 October, a judge in L'Aquila sentenced six scientists and a government official to prison for manslaughter, saying that they failed to appropriately convey the risk of the 2009 earthquake, causing the deaths of 29 people who would otherwise have left their homes (see page 15).

The third decision, by a court in Brescia in July, ordered the temporary closure of Green Hill, a dog-breeding company in Montichiari that supplied animals for the toxicity tests officially required by bodies such as the European Medicines Agency and the US Food and Drug Administration, while mistreatment charges by animal-rights groups were investigated. The business had been regularly and rigorously checked by authorities over previous years, but has now effectively been destroyed because the judge placed the dogs in the care of the animal-rights groups, which distributed them to private homes.

Judges in Italy, as in democracies elsewhere, are supposed to make independent decisions based solely on the law. But the influence of a general societal mood is hard to avoid — and in Italy that society lacks understanding of, or respect for, science and its complexities.

Science is subject to a level of irrational suspicion in many countries, but in Italy there is a perception that science doesn't even matter — a state of affairs encouraged by decades of underfunding and political disdain. Italy invests just 1.26% of its gross domestic product in research and development (R&D), compared with Germany's 2.82% and a European Union (EU) average of 2%. In 2009, Italy employed only 226,000 full-time-equivalent R&D staff, whereas Germany had 535,000. The system has long suffered from the lack of a legally enforced meritocracy, allowing cronyism to taint academic appointment and promotion. Heads of research agencies have often been political appointees rather than competent experts.

Successive governments, well aware of the problems, introduced a series of reforms that tinkered with the system without fixing it, causing only further uncertainty. Then, three years ago, came a watershed: the reform-to-end-all-reforms intended to give more autonomy to research agencies, along with appropriate accountability. It sought to introduce an independent system to identify suitably qualified candidates as agency presidents (see <http://doi.org/fwskwv>), as well as a national research-evaluation agency whose assessments would be linked to funding. Designed by the centre-left government of Romano Prodi, it was finally passed into law in 2009 by the centre-right government of Silvio Berlusconi.

Enactment of such major reform has been a struggle, particularly for the newly appointed presidents of the 12 research agencies — which include the National Research Council, the National Institute of Nuclear Physics and the National Institute of Astrophysics — who

are currently finalizing their new statutes. But a spirit of confidence has emerged. The agency presidents have formed a loose, cooperative alliance. And even the historically timid national academy, Accademia Nazionale dei Lincei, has become outspoken — for example, loudly challenging the L'Aquila court decision.

But research minister Francesco Profumo seems set on tipping things off balance again. In a murky manoeuvre, he announced reform plans in a financial newspaper on 11 October that would, along with other major

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changes, merge all 12 agencies into a single national organization — before the end of the year. He argued, unconvincingly and without a technical plan, that such a system would help to save money and win EU research grants. In the style of the old guard, whose day was thought to be done, he did not consult the

general scientific community on the matter, not even agency presidents.

It is impossible to imagine such a thing happening in, say, Germany, a country whose successful scientific system Profumo says he would like to emulate. German politicians and their administrations are in appropriate awe of their research-agency presidents and of the scientific culture they represent. It is also hard to imagine courts there crudely running rough-shod over science.

Profumo's amateurish proposal, which he tried to insert into Prime Minister Mario Monti's crisis-related financial law for 2013–15, did not survive first-round parliamentary scrutiny, but Profumo seems set to try to push for some sort of high-speed change — his government is slated to dissolve in March.

Crucial for now is that scientific leaders are left in peace to complete the reform-to-end-all-reforms, and that science doesn't fall victim, once again, to opaque politics. Building respect for science takes time. ■

Bad press

Japan's media have played a large part in exacerbating the effects of a fraud.

It is a shame that Shinya Yamanaka's recent Nobel prize had to be tainted by the shenanigans of Hisashi Moriguchi, the University of Tokyo project scientist who fabricated a story about having used Yamanaka's fêted technology on induced pluripotent stem (iPS) cells to treat patients who had heart failure.

The poor quality of journalism that led to the story being so widely reported was not an isolated incident in the coverage of science, in Japan or elsewhere. The *Yomiuri Shimbun's* presentation

of Moriguchi's 'accomplishments' was particularly disappointing. But other newspapers, including the *Nihon Keizai Shimbun*, have now admitted to having run unverified stories about Moriguchi over the past decade. Given the esoteric nature of the studies involved, reporting on science can be intimidating. So here are some practical steps to help a journalist challenge a specialist.

One can start by looking at publications. All scientists publish their results. If they don't it is a red flag. The publications give a scientist's affiliations, so if there is any doubt, it is easy to verify whether a scientist actually works where they say they do (a quick e-mail to Harvard University could have saved the *Yomiuri Shimbun* a lot of embarrassment). Publications also list the names of collaborators (making it easy to confirm with them that the scientist has done the experiments claimed), the names of the funders (making it easy to check whether resources were available) and declarations of conflicts of interest (revealing potential biases).

Most importantly, a journalist should talk to other researchers — those who do not collaborate with the scientist in question — about the study's significance and feasibility. Such researchers can usually be found by consulting references in the publication. If not — and an absence of proper references would be a warning sign — an Internet search will quickly bring up names. Although probably truer of North America and Europe than elsewhere, scientists are generally committed to keeping junk out of the literature. If it looks like junk, they'll tell you.

Of course, Moriguchi said that his latest results were not yet published. That should have triggered further questioning. Why would he present his results to the media first? Some scientists have a reason for doing so; Moriguchi did not. And it should have prompted a closer look at his work experience and past publications. Why do records of his career — which were available online — suggest that he had little or no experience in the field in which he was claiming to have made a revolutionary breakthrough? Why did he profess to work in a non-existent university Division of iPS Cell Research and Application?

And why was he taking an unconventional and unfamiliar

technology to the clinic? When he was questioned directly, as he was by *Nature*, things got worse. Why, for example, did he refuse to give the names of collaborators on the latest study? Poking the surface led to an outpouring of dubious statements.

People get away with fraud everywhere, but in Japan it seems that there are cultural factors that mean it goes unreported. Japanese scientists are less likely to be critical of their colleagues; there is less protection of whistleblowers who might not want to risk their careers; and journalists in Japan can be too polite, perhaps intimidated by the illustrious image carried by *sensei* and afraid to ask awkward questions. Possibly because of a lack of confidence in their English or because of differences between time zones, they often do not contact scientists overseas.

The situation is exacerbated by a recent Japanese epidemic: iPS-cell mania. With the excitement over Yamanaka's pioneering results, media outlets are rushing to get new iPS-cell stories first, sometimes regardless of their quality. This tendency is fuelled by a paranoid attachment to iPS-cell technology. Many news stories describe an international race to translate iPS-cell research into medical advances, which Japan might lose. This fear seems to have inspired Moriguchi, who lamented in 2009 that Japan was in danger of falling behind in iPS-cell research (in a Correspondence in *Nature*: H. Moriguchi and C. Sato *Nature* 457, 257; 2009), and the *Yomiuri* reporters, who even envisaged a 'flexible' approval system in the United States that might allow Moriguchi to continue with his research.

This is all very silly. The beautiful thing about iPS-cell technology — and a major reason it won the Nobel prize — is that it can be used easily by scientists everywhere. If Japan wants to show its pride in Yamanaka's accomplishment, it should celebrate all achievements around the world. And if journalists want to understand just how important it is, they should put a new development in an international perspective. ■

Fight the power

Independence of academic institutions is crucial if nations are to rebuild.

It is said that truth is the first casualty of war. But after wars have ended and nations are rebuilding, truth is a potent foe, too.

A free press and a strong academic establishment pose great threats to a despotic regime, and are often the first to feel pressure. In a News Feature on page 24, we document such tensions in Eritrea, where there are efforts to remove foreign influences from the nation's medical schools and to break up its academic institutions. Eritreans who have fled or been exiled lament the sorry state of these institutions, and fear that by severing ties to US universities, the government has squandered chances of extraordinary gains in public health. (Representatives of the Eritrean government did not respond to several requests for comments on these and other allegations.)

Many who helped to lead Eritrea to its independence in 1991 and establish the current regime were academics, students and physicians — the very type of people (and, in some cases, the actual people) that the country's leaders are now marginalizing. This irony should not be a surprise, given that thriving academic institutions in new regimes can serve as hotbeds of dissidence, unrest and further revolution.

For a country such as Eritrea to reach a stable equilibrium, this destructive cycle must be broken. And this is perhaps the best lesson that Eritrea can give to nations that must build new governments. It is expected that academics will be involved in the overthrow of unjust regimes, and that they will subsequently be called on to support

burgeoning governments. But these people must strive to remain independent from the start. The desire to trust and indulge former comrades may be strong, yet academics must reject all interference and resist any attempt by government to grab control of institutions.

To stand up to power in this way is difficult, but there is much at stake. Independent institutions will produce and support well-informed, independent citizens, who remain the most effective defence against corruption and the abuse of power. ■

ANNOUNCEMENT

Nature metrics

As of last week, *Nature* now provides a real-time online count of article-level metrics for its published research papers. Citation data, news mentions, blog posts and details of sharing through social networks, such as Facebook and Twitter, will be available for every research article published since last year.

Nature Publishing Group (NPG) hopes that the information will be of interest to readers, as well as feeding into the evolving debate about alternative ways to evaluate scientific output. The 2014 Research Excellence Framework exercise to assess UK research quality, for instance, will look at article citations and consider other measures for tracking research impact.

The information is available for 20 NPG journals published on nature.com, including the *Nature* research journals, *Nature Communications* and *Scientific Reports*. ■