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Dolly's legacy

Ten years on, mammalian cloning is moving forward with central societal issues remaining unresolved. Yet human reproductive cloning seems inevitable.

Ten years ago, given a week's notice by *Nature*'s usual embargoed press release, journalists were gearing up for what many of them recognized as the hottest science story for years. The press release announced the cloning of sheep from adult cells. A journalist on a British Sunday newspaper, *The Observer*, picked up the same story from a film production company and ran with it ahead of the embargo date. Furious editors and writers on other newspapers scrambled to catch up. "It is the prospect of cloning people, creating armies of dictators, that will attract most attention," said *The Observer*. And so it proved. Within days the president of the United States, the head of the European Commission, the Vatican and many others were calling for a review of the regulations on cloning research, if not an outright ban.

The world was simply not prepared for the debate. The cloning a year previously of sheep from embryonic cells had led Davor Solter, in an accompanying News & Views article in *Nature*, to warn that "it might be a good idea to start thinking about how we might use" the ability to clone from adult cells. But others were dismissive of the prospect, or predicted it to be many years away.

The researchers who cloned Dolly had kept their research under wraps. But learning from their media experiences with embryonic cloning, they had hired a public-relations company and collaborated on a television documentary to be broadcast after publication. Their approach misfired, but their intentions still serve as a model for others: researchers and their institutions have a responsibility to provide their perspective of the context and implications for a broad audience when announcing startling results, both to the media and through their own websites. Journals, including this one, can no doubt do more to help them convey that context.

What of the subsequent research? As we describe on page 800, much of it has focused on the transfer of nuclei of somatic cells in the context of stem cells. The agricultural implications of Dolly received relatively little public attention at the time, but it is here that reproductive cloning has proceeded apace, with a dozen mammalian species cloned. One measure of that progress is the risk assessment, currently open for public consultation, by the US Food and Drug Administration (FDA; see www.fda.gov/cvm/CloneRiskAssessment.htm).

Although generally upbeat about safety, the FDA report highlights one critical lack of progress: the efficiency of mammalian cloning is still low. The agenda for fundamental biology is clearly highlighted. One area of study, for example, is epigenetics: which chemical markers attached to the DNA are altered? And what exactly happens in chromatin structure, compared with conventional reproduction? We can look forward to progress in these areas. Meanwhile, although US consumers are uneasy about animal cloning, it seems unlikely that they will oppose its application, let alone its products.

In contrast, what has been universally deemed as unacceptable is the pursuit of human reproductive cloning — or the production of what some have called a delayed identical twin. Here, the two issues that have dominated the discussion have been dignity and safety. There is a consensus that dignity is not undermined if a human offspring is valued in its own right and not merely as a means to an end. But there is no consensus that we will eventually know enough about cloning for the risks of creating human clones to be so small as to be ethically acceptable.

The debate may seem to have been pre-empted by prompt prohibition. But as the science of epigenetics and of development inevitably progresses, those for whom cloning is the only means to bypass sterility or genetic disease, say, will increasingly demand its use. Unless there is some unknown fundamental biological obstacle, and given wholly positive ethical motivations, human reproductive cloning is an eventual certainty. ■

Rise to the challenge

The European Research Council, launched next week, is a stimulus for weak universities.

Outside Europe it may be hard to imagine the scale of the triumph involved in the creation of a Europe-wide agency for competitive basic research, along the lines of the US National Science Foundation. After what seems like another hundred-years' war, a solution to member countries' concerns — that they must pay into a pot that then funds researchers elsewhere — has finally been found in the form of the European Research Council (ERC). It launches to great fanfare in Berlin next week. Importantly, it is committed to funding the best science, free of regional and political agendas.

The first call for grant applications will be restricted to young investigators, with a second call, for advanced investigators, to be announced later in the year. But too few European universities are ready to host the recipients.

The grants, which can run for up to five years, will be big: between €100,000 (US$130,000) and €400,000 per year, and deliberately designed to be prestigious. With a budget of only €300 million this year, competition will be particularly stiff (although annual funds will rise to €1.5 billion by 2013). The two-tier application procedure will be handled by twenty panels of experts, five in social sciences, eight in physical sciences and seven in life sciences. With the advice of specialist referees that they themselves select, the panels will judge the applications on the basis of merit, without reference to the nation involved.

But they will also assess the ability of the host institute to offer an

appropriately supportive environment. This means providing genuine access to good infrastructure and a vigorous intellectual environment — not least to encourage applications for the grant's attendant posts from the best graduates and postdocs.

Researchers applying to the ERC must choose their host institute, and if their home base doesn't offer them much of a package, they can approach any other university or research centre. The phrase "without reference to nation" may at this point begin to seem disingenuous. Some countries are relatively inflexible in the conditions that their universities can offer individual scientists. Their universities may not, for example, be able to offer a salary attractive by local standards if they are hampered by fixed salary scales.

In short, the most flexible universities will be best placed to attract ERC grant holders. This is as it should be. The ERC is in effect a wake-up call for universities to free themselves of their chains and become internationally competitive.

It is fortuitous for Germany that it currently holds the rotating European Union (EU) presidency, and therefore hosts the launch of the ERC — part of the EU's Seventh Framework Research Programme, which runs until 2013. The German government is currently trying hard to loosen the chains around the country's universities, forged during the 1970s' anti-elitist movement that rigidly imposed equal status on them. Similar events squeezed competition between universities out of other European countries such as France and Italy, which are now also trying to recover. The former communist Central European countries, now members of the EU, have an even longer history of institutionalized academic paralysis.

One of the most effective instruments that Germany has created to re-inject the competitive spirit is the Excellence Initiative, which throws a few million euros and considerable prestige at a handful of universities judged in a high-profile competition to be strongest in research. All universities have been energized in the process. The ERC, if it works as planned, should provide such a stimulus across Europe, and ever more so as its experience and budget grow.

When the German chancellor Angela Merkel opens the ERC launch next Tuesday, she will at the same time be launching a new phase in European research — but only for those universities that are up to the task. ■

Regulatory fist-fight

A move to wrest control of US federal regulations from government agencies should be opposed.

In an executive order passed last month, the administration of President George W. Bush tweaked the terms of the relationship between government agencies and its own Office of Management and Budget. The changes are subtle and arcane, but significant nevertheless. The administration will now review supporting documents as well as the regulations themselves. Agencies will have to present some additional cost–benefit figures. And the official in charge of coordinating all this from the agency end must now be a presidential appointee. This person will initiate rule-making and be "involved at each stage of the regulatory process".

Because deliberations on regulation are open to public scrutiny only after an agency submits its plans to the president's budget office (the Freedom of Information Act does not apply to deliberative processes within agencies), they can be smothered at birth inside the agency by the presidential appointee, away from public scrutiny.

Administration officials have downplayed the significance of these changes and, according to the Congressional Research Service, most of these officials are already presidential appointees. But the move represents yet another incremental power shift. The Bush administration's approach has been to make small bureaucratic changes or insertions here and there that make it more laborious to pass regulations, and easier for industry and the president to have regulations shift in their preferred directions. The influence of well-considered scientific advice has been progressively weakened.

Consider, for example, the Data Quality Act of 2001, which opened the door for industry to take issue with the data used to make regulatory decisions. In 2005, in a move opposed by scientists, the salt industry used it to challenge the findings of a federally funded study of sodium and blood pressure (see *Nature* **433,** 671; 2005). Consider also two failed attempts, one in 2003 to control the peer review of science informing regulation, and one last year to bundle all regulations into a centralized risk-assessment process run by the budget office. US scientists have the National Academies to thank for fending these off (see *Nature* **442,** 223–224; 2006).

At a hearing last week of the House science committee, Sally Katzen, who ran the department dealing with regulation at President Bill Clinton's budget office, described the effect this way: "Each step has placed a thumb on the scales, and now we have a whole fist."

The fact that this hearing and another in the judiciary committee were held at all is good news. Democrats and Republicans alike should see these moves for what they are: attempts to influence regulations at agencies that have been given their missions by Congress. It is all of a piece with Bush's habit of signing laws with attached statements indicating which bits of the law he doesn't intend to follow.

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Congresswoman Linda Sánchez (Democrat, California), chair of the Subcommittee on Commercial and Administrative Law in the judiciary committee, intends to ask the Office of Management and Budget for more information on how the new executive order is to be implemented in practice. But only time will tell whether its provisions have a large or small effect. It is difficult for Congress to overturn an executive order. They do so by passing a law that contradicts it, but this law could be vetoed by the president. It would be better if Congress, encouraged by scientists, were to make such a fuss that the administration backs off.

If no one protests, this order may well be followed by other such manoeuvres, each designed to make science a mere vestigial irritant to the otherwise smooth implementation of Bush's personal will. This would be a bad idea even if the president were a fan of precautionary regulation based on empirical science. But he isn't. ■