



BIOMEDICAL RESEARCH

A First Step in Relaxing Restrictions On Stem Cell Research

Scientists are breathing a huge sigh of relief now that President Barack Obama has put his signature on an executive order lifting the restrictions on stem cell research laid down by President George W. Bush on 9 August 2001.

In the same chandeliered White House room where 2 years ago Bush announced his veto of a bill passed by Congress to override his policy, Obama announced “we will lift the ban on federal funding for promising embryonic stem cell research [and] will vigorously support scientists who pursue this research.”

The signing ended with a standing ovation from the crowd, which included politicians, lobbyists, ethicists, stem cell researchers, and a goodly contingent of Nobelists—including Harold Varmus, head of the President’s Council of Advisors on Science and Technology. Even Kyoto University researcher Shinya Yamanaka—famous for developing induced pluripotent stem (iPS) cells—flew in for the event. Also in evidence was Robert Klein, maestro of the California Institute for Regenerative Medicine.

Obama also used the occasion to tackle the alleged politicization of the science behind

subjects ranging from stem cells to global warming during Bush’s reign. The president announced that he has sent a memorandum to the Office of Science and Technology Policy directing it to develop “a strategy for restoring scientific integrity to government decision-making” within the next 120 days. Kurt Gottfried, chair of the Union of Concerned Scientists, says the memo signals “a sea change from the last Administration.”

The signing of the new executive order on human embryonic stem (hES) cells is “a great outcome,” says University of Pennsylvania stem cell researcher John Gearhart. It “lifts a cloud in many areas. . . . It will allow more people to get involved [in hES cell research]—and it also sends a message internationally that [National Institutes of Health (NIH)-funded researchers] can collaborate with people.” The development of iPS cells, ES-like pluripotent cells that can be grown without the destruction of embryos, has removed some of the intense pressure for scientists to have access to ES cells, and Gearhart himself is using iPS cells. Nonetheless, he says he still needs ES cells to study the mechanisms of embryogenesis and as

◀ **Crowd pleaser.** Obama won a standing ovation for relaxing stem cell restrictions and promising to restore the integrity of science in decision-making.

a standard against which to compare iPS cells.

The executive order sweeps away a cumbersome level of bureaucracy that required researchers who receive both federal and private funds to keep separate accounting systems and use separate equipment depending on which cells they are working with. Harvard University researcher Kevin Eggan said earlier this year that the expected policy change “will have a huge immediate impact on my daily life.” Roughly half his graduate students have NIH training grants, which has meant they could not participate in any non-NIH-approved work. The change, he said, “will mean I don’t have to spend 7 or 8 hours a week dealing with Harvard administration making sure that the costing allocations for my lab are appropriately followed.”

Some other scientists see the executive order’s value as primarily symbolic. Because so many scientists are focusing on iPS cells, “I think it is going to have minimal effect in the short term” on research, says Martin Grumet, director of the Rutgers Stem Cell Research Center in Piscataway, New Jersey.

NIH has 120 days to finalize guidelines on research with the hundreds of hES cell lines that will soon be available to researchers. Such guidelines will likely draw heavily on existing ones on informed consent and other procedures that have been put out by the National Academy of Sciences and the International Society for Stem Cell Research. It’s a “very exciting time at NIH right now,” says Story Landis, head of the NIH Stem Cell Task Force.

NIH Acting Principal Deputy Director Lawrence Tabak said at a press conference that “our expectation is [that] some stimulus money will be available for use with the new guidelines.” That’s good news for researchers hoping for a piece of the package, which, among other things at NIH, allocates \$200 million to a 2-year grants program that covers stem cells, regenerative medicine, and a dozen other fields.

Congress is already poised to pass legislation to codify the new order. The White House has been working with members of both the House and the Senate to ensure swift passage of the measure that was twice vetoed by Bush. Those bills (S. 487 and H.R. 873) ▶



specify that federally funded researchers can work only with ES cell lines derived from embryos created for fertility treatment that would otherwise be discarded.

Political battles are not yet over, however. Representative Chris Smith (R-NJ), co-chair of the House Pro-Life Caucus, held a press conference accusing the Administration of

“incentivizing the creation and destruction of human embryos.” Francis Collins, former head of NIH’s National Human Genome Research Institute, told *Science* he is trying to help members of the religious community come to terms with the policy.

Federally funded scientists will still not be allowed to derive new lines of hES cells

because of the 13-year-old Dickey-Wicker Amendment. Added annually to the health appropriations bill, the amendment prohibits federally funded researchers from harming human embryos. DeGette has indicated, however, that the time may be ripe to start asking legislators to reconsider their support for the measure.

—CONSTANCE HOLDEN

RESEARCH FUNDING

England Spreads Its Funds Widely, Sparking Debate

Competitions always produce winners and losers, along with appeals to the referee about perceived unfairness, but last week’s announcement of how £1.57 billion in annual research funding will be distributed to English universities drew complaints from some unlikely sources: top research institutions. Science heavyweights, including Imperial College London, Cambridge University, and Southampton University, received cuts or below-inflation increases in their annual funding, and they’re not happy about it, warning of possible layoffs. Nottingham University; Queen Mary, University of London; and others that won substantial increases are not complaining. Indeed, a large number of England’s “new universities,” those created in the 1990s, are ecstatic, having earned money from this research pot for the first time. “This is a great encouragement,” says Les Ebdon, vice-chancellor of the University of Bedfordshire.

Almost all of the U.K.’s universities are primarily state-funded, and to those conducting international-level research, the government allocates annual block grants to cover departmental overhead costs. But not every institution gets an equal share: The higher the quality of a university’s research, the more it gets. Who gets what is decided by a competition held at irregular intervals called the Research Assessment Exercise (RAE), a huge peer-review process involving more than 1000 researchers serving on 15 subject panels and 67 subpanels. Two-thirds of the annual money is allocated according to the RAE results.

English officials used the last RAE, carried

out in 2001, to concentrate funding in departments doing top-level international research, leaving many with no funding despite doing good work. (Scottish, Welsh, and Northern Irish education officials also use RAE data but independently devise their allocation strategies.) The RAE in 2008 saw a slight change of methodology: Instead of giving a single quality score to whole departments, it noted what percentage of each department was doing work in each of four grades, from nationally recognized

funding “will make it easier to hold on to world-class research teams,” says Ebdon.

Changes in student demographics could have made the allocations even worse for England’s traditional research universities. The number of university students in the United Kingdom has ballooned over the past decade, but most flocked to humanities and social science courses while the number enrolling in science has remained fairly steady. As a result, universities hired many more humanities and

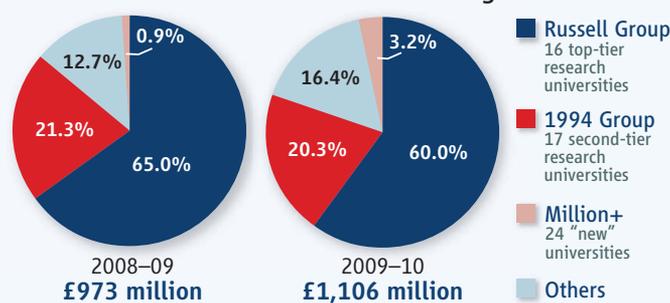
social science academics, who then won good ratings in the RAE. To prevent these newcomers draining money from science departments, the government decided that traditional science subjects would receive the same proportion of the whole pot as in previous years. “The ringfencing was absolutely crucial,” says Hilary Leivers of the Campaign for Science and Engineering.

Nonetheless, there were some dramatic changes of fortune. Nottingham University will receive an extra £9.7 million in 2009–10, a

23.6% increase, while Imperial will get £5 million less, a 5.1% cut. The 16 English members of the Russell Group, which represents the United Kingdom’s top research-intensive universities, together receive 3.3% more than last year. The whole fund being distributed was increased by 7.7%, however, indicating that England is spreading its research wealth more widely. That’s a mistake, the traditional powerhouses warn. “Britain can’t sustain 101 internationally competitive universities. If it’s going to compete it’s got to concentrate its resources,” says epidemiologist Roy Anderson, rector of Imperial College.

—DANIEL CLERY

Share of RAE-Allocated Research Funding



Shifting fortunes. New research quality data has led to shifts in research funding among English universities, with some earning such money for the first time.

to world leading (*Science*, 2 January, p. 24).

When the results were announced last December, the RAE revealed many “pockets of excellence” in institutions not normally lauded for their research, particularly those created after 1992 when a new law gave polytechnic colleges the right to become universities. In the allocations for England, revealed on 5 March, 25 institutions that previously received no RAE-allocated funding are now expecting a check in the mail, and others saw huge increases. The University of Lincoln, for example, sees its share of the research funding jump from £266,000 to £1.9 million. The new