

OBAMA EXECUTIVE ORDER

For Congress and NIH, Headaches Ahead on Stem Cells

With his long-awaited 9 March executive order lifting restrictions on federal funding for stem cell research, President Barack Obama has opened the door to some political fighting as nasty as any that has been seen so far on the subject of research with human embryonic stem (hES) cells.

As scientists hoped, Obama left all the details of the policy, which erased limits imposed 8 years ago by President George W. Bush, to be determined by the National Institutes of Health (NIH). The Bush policy restricted federal funding to work on hES cell lines created before 9 August 2001 from surplus embryos slated for discard by fertility clinics. NIH has until 7 July to put out a draft set of regulations, digest the tsunami of public comment expected, and establish a final set of guidelines on just what it will fund.

Scientists are thrilled that Obama is following their advice, but the new executive order leaves a void that, albeit temporary, is causing considerable anxiety in some quarters. At issue is the biological source of the hES cell lines now eligible for federal support. The question is whether work will still be limited to lines derived from surplus fertility clinic embryos or whether the government will approve the use

of lines from embryos that have been created solely for research. Many scientists would like to work with lines created through research cloning, or somatic cell nuclear transfer (SCNT). This procedure—which has yet to be tried successfully—would enable a scientist to use a skin cell from a patient with Parkinson's disease, for instance, to reprogram an egg to generate an embryo so a particular disease could be studied in a test tube. Ultimately, some believe cell lines from such embryos could be used in genetically tailored cell therapies. The Dickey-Wicker Amendment prohibits federally funded scientists from harming embryos, which means they would not be allowed to derive the cell lines they work with regardless of the source. But there is no federal law governing cloning—either for research or for reproduction—so scientists could obtain cell lines from privately sponsored sources.

The stem cell community was expecting that as soon as Obama acted, Congress would codify the executive order by repassing a measure—twice vetoed by Bush—authorizing the government to support research, regardless of the date of derivation, on stem cell lines derived from excess embryos created for fertility treatments.

Now, however, with the source of eligible lines unspecified in the executive order, the bill's sponsors are heading back to the drawing board. A Senate staffer won't say whether they are thinking of eliminating the excess embryo restriction: "I think at this moment we are waiting to see what the NIH guidelines are going to be." On the House side, an aide to Representative Diana DeGette (D-CO) e-mailed *Science* that "in light of the president's Executive Order and in consultation with the experts, [sponsors of the bill] are reviewing past legislative efforts to assess what needs to be done going forward." Apparently, the sponsors were caught flat-footed. "The White House wouldn't tell us what was in the executive order before it was signed," says a staffer. While Congress wants to wait to see what NIH says, people at NIH would like to find out more about what Congress wants as they struggle to get draft guidelines ready before the end of April.

The traditional opponents of hES cell research are expecting the worst. Even with the derivation of new cell lines still banned, some fear the new policy will turn the federal government into an indirect supporter of cloning. The executive order "turned out to be far more extreme than [the] biggest proponents had hoped," said the Family Research Council. "With no clear policy from the White House, you and I could be footing the bill for research that clones embryos just to scavenge their parts." Psychiatrist and columnist Charles Krauthammer, a former member of the president's bioethics commission, said in an ▶

AUSTRALIA

Stem Cell Center Looks to Recast Itself in Supporting Role

MELBOURNE, AUSTRALIA—The Australian Stem Cell Centre (ASCC), a controversial experiment in speeding the commercialization of stem cell research, is slated for a radical overhaul. For the next 2 years, the center plans to turn away from its much-criticized commercial focus and recharge its research effort. Then in 2011, ASCC is likely to be transformed into an outfit that provides technical and licensing support for stem cell research.

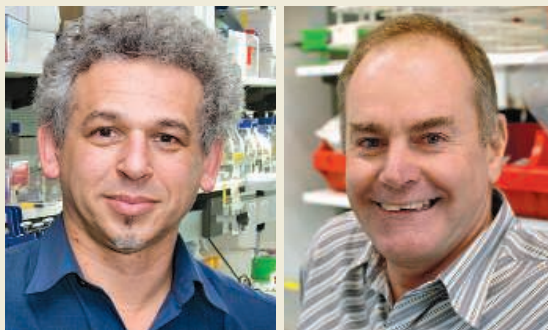
The government-funded consortium of top stem cell researchers, which has received \$75 million since it was founded in 2002, has long suffered from a clash of visions. One camp led by its former CEO, biotech entrepreneur Stephen Livesey, championed a model in which ASCC products would

sustain the center after 2011, when public funding runs out. A second camp led by founder Alan Trounson, now leader of California's stem cell program (see p. 1564), argued that the time frame was unrealistic;

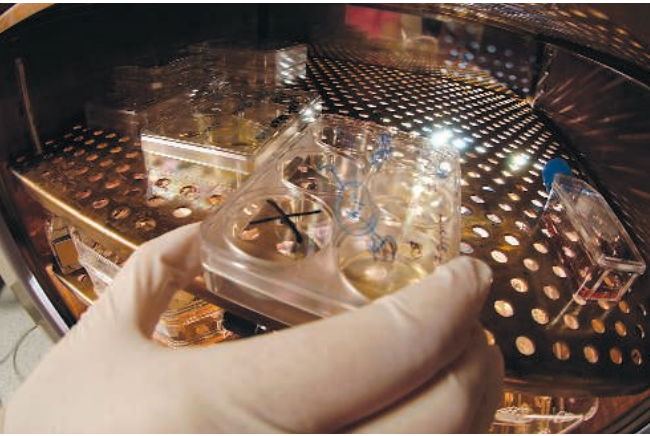
the focus, he felt, should be on excellent research, and commercial spinoffs would follow. Trounson lost the battle and left in 2003. His departure did not ease tensions, which came to a head last August after a government review criticized ASCC's business plan. Livesey was sacked and the board purged (*Science*, 24 October 2008, p. 524).

With the clock ticking, ASCC scientists are reviewing research plans and scoping out alternative funding sources. The Australian government is expected to decide by June whether to endorse a new business plan and release the final 2 years of ASCC's public funding—or close it down early.

Andrew Elefanty, an embryonic stem cell researcher at Monash Univer-



New map. Andrew Elefanty (left) and David Haylock are leading an effort to rethink stem cell research plans.



Supply lines. Obama has left it up to NIH and Congress to decide whether to restrict funding to cells derived from fertility clinic discards.

op-ed column that he does not oppose hES cell research but accused the president of “moral abdication” in leaving it up to scientists whether to create embryos solely for research.

On the contrary, says Harvard University’s George Daley: “We need legislation that allows [such] decisions ... to be left to scientists.” Daley points out that guidelines hammered out in 2005 by a committee of the National Academy of Sciences (NAS) and regularly updated, as well as recommendations by the International Society for Stem Cell Research, do not specify what biological sources should be used but focus on informed consent procedures for obtaining eggs, sperm, or embryos, and proper scientific procedures.

sity in Clayton, and hematologist David Haylock, whose lab studies adult stem cells at ASCC’s administrative center in Monash, were appointed last October to head a committee to chart a new course. The duo has upended the former management’s top-down approach—particularly its power to design projects and decide who should work with whom. “That’s not the way collaborations work best,” says Elefanty. “Right from the beginning, we were bleating: ‘You can’t force researchers to get into bed together.’”

Now ASCC researchers are masters of their destinies. “Previously, everything had to be aligned with commercial due-diligence decisions, which tended to hamper scientists getting together and doing what they do,” says ASCC member Lars Nielsen, a biomedical engineer at the University of Queensland in St. Lucia. “Instead of a product pull, we now have a science push.” Last month, all ASCC researchers were required to submit proposals to the center for projects over the next 2 years.

So far, there’s no available evidence that researchers anywhere are using lines other than from excess IVF embryos, says Willy Lensch, who works in Daley’s lab at Harvard. In a survey of the literature, he has found references to at least 783 lines. “I’ve never encountered a report that IVF was used specifically to make a line of hES cells,” he says.

University of Pennsylvania bioethicist Jonathan Moreno, a member of the NAS embryonic stem cell committee, says, “I would be surprised if NIH went beyond IVF discards” and opened the door to other embryo sources.

But Daley says that even then, “the definition of ‘excess embryos from IVF’ is critical.” Would lines derived only from frozen blastocysts be allowed, as was proposed in the last days of the Clinton Administration, or lines from fresh discarded embryos, like those made in Daley’s lab, be included?

Out in the field, the executive order is lending new energy to efforts in some states to clamp down on hES cell research. The Georgia Senate on 12 March passed a bill introduced just that week with the support of Governor Sonny Perdue. It prohibits the creation of embryos for research—and covers not only SCNT but also parthenogenesis, in which nonviable embryos are generated from unfertilized eggs.

—CONSTANCE HOLDEN

That will better prepare them to compete for non-ASCC funding, says acting ASCC board chair Graham Macdonald.

Under a revised business plan that ASCC expects to deliver to the government by the end of April, ASCC would focus on licensing key technologies developed by the center, such as Haylock and Susie Nilsson’s artificial niches for multiplying adult stem cells. ASCC would abandon attempts to commercialize a blood-cell product—the Holy Grail from its inception but a strategy that reviewers say was unattainable by 2011.

Beyond July 2011, ASCC would cease conducting its own research. Instead, it would provide services such as stem cell cultivation and commercialization expertise, with an eye toward joining the ranks of 12 other national infrastructure facilities. Its 130 scientists, meanwhile, would stay with their home institutions and seek research funding from traditional sources.

—ELIZABETH FINKEL

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ScienceInsider

From the Science Policy Blog



The FBI is investigating the 7 March fire-bombing of a UCLA neuroscientist’s car by **animal-rights extremists**. It’s the latest in a string of terror attacks on University of California scientists that goes back to 2006. The university and local authorities are offering a reward of \$445,000 for information related to the incident. The targeted scientist was not identified by authorities.

ScienceInsider revealed that the **Defense Advanced Research Projects Agency** is looking into funding research on **geo-engineering**, the deliberate tinkering with Earth’s climate to combat global warming. The secretive and risk-taking agency sponsored a nonclassified meeting this week in Palo Alto, California, to explore the topic. But at least one climate scientist invited to the meeting feels that the military shouldn’t be helping to develop such techniques.

A Washington, D.C., meeting was convened to brainstorm ways to help the **Iraqi academic and research enterprise** get back on its feet. Despite billions of dollars in aid to the war-torn nation since the U.S. invasion in 2003, presenters at the conference reported little progress in rebuilding the scientific infrastructure. Among the ideas floated were fellowships to encourage young Iraqi scientists to visit the United States, but participants fear that could result in a brain drain.

And in more sobering news from the **Copenhagen Climate Congress** (p. 1546), ScienceInsider blogged on alarming new results regarding **polar ice** shrinkage and the unappreciated threat of **soil carbon**. Researchers at the meeting also released a new scheme aimed at more fairly distributing **emissions allocation certificates** under a future greenhouse emissions cap, starting with the principle that every human should operate under the same emissions limit. And is **Denmark** really the green role model it advertises itself as?

For the full postings and more, go to blogs.sciencemag.org/scienceinsider.