
Today's News

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For Universities, Expected Shift on Stem-Cell Funds Means New Opportunities and New Risks

By [PAUL BASKEN](#)

Washington

President Obama plans to sign an executive order today largely ending eight years of limits on federal financing of human-embryonic-stem-cell research that have tangled university laboratories in bureaucracy while slowing advances in one of the most promising fields of medical research.

Mr. Obama is acting just three weeks after he signed an economic-stimulus measure that allocates more than \$10-billion for medical research (*The Chronicle*, February 25). His move will now free some of that money for an avenue of work fraught with ethical and political dilemmas and yet loaded with potential for fighting mankind's toughest diseases.

The move has been anticipated since Mr. Obama was elected president last November. The moment's arrival seven weeks into his administration was confirmed Sunday when White House officials said Mr. Obama would use today's event to sign paperwork reversing Bush administration restrictions that ruled out nearly all federal financing of research involving human embryonic stem cells. Leading advocates of stem-cell research from across the country have been invited to attend.

"This is a great moment in the history of biomedical research in our country," said Patrick White, vice president for federal relations at the Association of American Universities. "An executive order from President Obama is precisely what is needed to fix the failed policy that we've had for the last eight years."

A human embryo is the cluster of cells that grows in the first eight weeks after conception, before it is known as a fetus. Embryonic stem cells, which are usually obtained by researchers from a discarded embryo only a few days after fertilization, have great scientific value because they have the potential to develop into any of more than 200 types of tissue in the body. Their use in scientific research is opposed, however, by some who feel that any potential human life form should be preserved.

Mr. Obama's predecessor, George W. Bush, announced on August 9, 2001, that federal money could not be involved with any projects using embryonic stem cells created after that date. That, Mr. Bush said, would allow research involving embryos "where the life-and-death decision has already been made."

Complications for Labs

Universities have chafed under the restrictions. Some abandoned or avoided embryonic-stem-cell research altogether. Others have established separate facilities so that their work on embryonic stem cells is kept physically apart from their federally supported work. Many labs use adhesive stickers to identify equipment purchased with federal money so that it isn't used with ineligible stem cells.

The restrictions made a range of university research work “more costly and cumbersome,” said Ronald G. Crystal, chairman of the department of genetic medicine at Weill Cornell Medical College.

And despite Mr. Obama's oft-stated intent to separate science from politics, some restrictions will probably remain. Stem-cell researchers acknowledged the need for some ethical guidelines on their work, and White House officials said they would rely on the National Institutes of Health to draft the exact guidelines.

Mr. Obama will ask the NIH to draft those rules within 120 days, said Harold E. Varmus, president of the Memorial Sloan-Kettering Cancer Center in New York. Mr. Varmus, who is co-chairman of the President's Council of Advisors on Science and Technology, spoke Sunday on a conference call with reporters arranged by the White House.

Researchers hoping to ease public anxieties over stem-cell studies often cite the past controversy over recombinant DNA technology, in which some genetic disorders can be corrected by adding genetic material into a living cell. Fears of abuses of that technology when it emerged in the 1970s have been calmed by scientists working to develop widely accepted ethical guidelines, said Michael D. West, chief executive of BioTime, a medical products supplier that sells lines of human embryonic stem cells.

Anticipating New Rules

Still, new guidelines for embryonic-stem-cell research might not be as tidy as some of those celebrating Mr. Obama's announcement might like. Before Mr. Bush acted in 2001, the Clinton administration had its own limits on the eligibility of stem-cell studies for federal funds. One such limit required that the work involve only frozen embryos, in a bid to prevent couples and their doctors from creating embryos just for scientific purposes.

But that idea—that freezing was a sign that the couple intended to use the embryo some day if the couple's initial attempts at pregnancy failed—was a fairly arbitrary measure, Mr. West said. It also overlooked the fact that couples didn't freeze embryos found to contain serious genetic defects, he said. Such defective embryos are highly valuable to researchers searching for cures to those diseases, he said.

The freezing process also degrades the quality of embryos, making them less valuable for scientific study, said Anthony J. Mazzaschi, interim chief scientific officer at the Association of American Medical Colleges.

Mr. Mazzaschi said the Obama administration can probably devise a better measure of an embryo-donor's intent, but he admitted some concern about what those regulations will look like. The Obama rules, however, are certain to be an improvement over the Bush administration's seemingly arbitrary choice of August 2001 as the eligibility cutoff date, he said.

With the regulatory and political environment unsettled, it's also unclear how many universities will be convinced by Mr. Obama's action to quickly jump into stem-cell research. The federal government now lists only a dozen universities as using its money for embryonic-stem-cell research.

Mr. Mazzaschi said that number may now grow “substantially,” given the large number of institutions using other sources of funds. Other observers are less sure. “You can't just step on the field and start playing,” given the complexity of the area, said Mr. White of the Association of American Universities. “Faculty members and departments are going to have to make a hard decision about whether to pursue this,” he said.

Wider Research Options

Scientific and economic developments over the past eight years may also have made Mr. Obama's reversal less important to stem-cell research than Mr. Bush original imposition of the limits on federal funds (*The Chronicle*, February 4). Those developments include advances in using other types of stem cells. Researchers can take stem cells from umbilical cords and bone marrow, and they have also figured out how to engineer skin cells to behave much like stem cells. Such cells are not as versatile as those taken from embryos, but they attract far less ethical concern.

Private companies and state governments, especially California, have also filled some of the financial void, leaving Washington less relevant to stem-cell research during a period of dwindling federal science budgets (*The Chronicle*, May 8, 2008).

Overseas research has also become more prominent. A study published last year in the journal *Cell Stem Cell*, using 2006 data, showed that American researchers published 46 percent of all peer-reviewed articles in molecular biology and genetics but only 36 percent of those involving human embryonic stem cells. The “significant underperformance” appears connected to the Bush administration's restrictions, wrote the study's author, Aaron D. Levine of the Georgia Institute of Technology.

American universities, once freed of those restrictions, as they await billions of dollars from the economic-stimulus measure, may instead face the danger of an overexpectant public, said Dr. Crystal of Cornell. Stem-cell research could lead to cures for a wide range of ailments, including cancers, diabetes, and heart disease. But, Dr. Crystal said, “it's going to be a lot of work over many years.”

Researchers got “a major wake-up signal” last month, he said, when a medical journal reported the case of an Israeli boy who, after being given experimental injections of fetal stem cells in a bid to save him from a deadly brain disease, developed tumors in his brain and spinal cord directly attributed to the stem cells.

Continuing Opposition

Universities may also face more direct political pressures. The Vatican's official newspaper called embryonic-stem-cell research “deeply immoral” on Saturday, and U.S. Rep. Christopher H. Smith, a Republican from New Jersey, responded to the expected policy change on stem cells and other issues by labeling Mr. Obama the “abortion president.”

Supporters of the change, however, are probably more numerous. Sen. Orrin G. Hatch, a Republican from Utah who backs Mr. Bush in opposing abortion rights, said he supports Mr. Obama on stem cells out of a belief that embryonic-stem-cell research can help cure many devastating diseases.

Although Mr. Obama is taking the political spotlight today, lawmakers may be asked later this year to vote on whether to pass a measure that would prevent a future president from reinstating the Bush administration's limits. Congress also faces the question of whether to renew a measure, known as the Dickey-Wicker Amendment, that prohibits using federal money for either the creation or destruction of

human embryos for research purposes.

The Dickey-Wicker Amendment shouldn't be a significant remaining obstacle to most stem-cell research, said Irving L. Weissman, director of Stanford University's Stem Cell Biology and Regenerative Medicine Institute. But its removal would be symbolically important, as it was crafted by lawmakers who didn't even understand the difference between an embryo and a fetus, Dr. Weissman said.

Mr. Bush's restrictions weren't as onerous as many universities treated them, said Mr. Mazzaschi of the Association of American Medical Colleges. The red stickers that scientists placed on lab equipment purchased with federal money weren't required by federal law. They instead reflected a fear, probably justified, that a government driven by ideology might not know where to draw the line on enforcement, Mr. Mazzaschi said.

William B. Hurlbut, a bioethicist and physician at the Stanford University School of Medicine who served as a member of Mr. Bush's presidential Council on Bioethics, said the Obama administration and Congress need to find a middle ground that is acceptable to most Americans.

"I just hope there is an opportunity for a constructive dialogue" before Congress makes any permanent policy changes, Dr. Hurlbut said. "There are some crucial dimensions of this that could affect the character of our culture for a long time."

Mr. Mazzaschi expressed support for Dr. Hurlbut's repeated warnings that science and politics can never be fully divorced from each other. "Science," he said, "is never going to answer the question of when does human life begin."

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