Obama to reverse Bush limits on stem-cell research

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Stem cell cultures are held up in a US lab. US President Barack Obama will on Monday sign an executive order reversing Bush administration restrictions on federal funding for stem cell research, a senior administration official said.

US President Barack Obama will on Monday sign an executive order reversing Bush administration restrictions on federal funding for stem-cell research, a senior administration official said.

The official would not divulge the exact wording of the order, but confirmed, on condition of anonymity, that it would be in line with Obama's campaign vow to restore funding to embryonic stem-cell research.

The president will sign the document in a White House ceremony

Monday morning, the official said, in the latest of a long line of actions reversing the policies of his predecessor, former president George W. Bush.

The move will spark delight among scientists who have long campaigned for the Bush policy to be overturned, but will likely be condemned by conservative right-to-life groups.

Obama spelled out his campaign policy on stem-cell research last August in a list of answers to the Science Debate 2008 scientific lobby group.

"I strongly support expanding research on stem cells," Obama wrote.

"I believe that the restrictions that President Bush has placed on funding of human embryonic stem-cell research have handcuffed our scientists and hindered our ability to compete with other nations.

"As president, I will lift the current administration's ban on federal funding of research on embryonic stem cell lines created after Aug. 9, 2001 through executive order, and I will ensure that all research on stem cells is conducted ethically and with rigorous oversight."

Reports about Obama's plans for Monday were immediately condemned by Tony Perkins, president of the Family Research Council.

"Today's news that President Obama will open the door to direct taxpayer funds for embryonic stem-cell research that encourages the destruction of human embryos is a slap in the face to Americans who believe in the dignity of all human life," Perkins said.

Bush barred federal funding from supporting work on new lines of stem cells derived from human embryos in 2001, allowing research only on a small number of embryonic stem-cell lines which existed at that time.

He also several times vetoed legislation passed by Congress backing the research, which advocates say could help find a cure to diseases like Alzheimer's, diabetes and Parkinson's.

Obama reportedly told Democratic lawmakers shortly after his inauguration in January that he would guarantee lifting Bush-era restrictions on federal funding of stem-cell research.

He also co-sponsored legislation while a senator that would have permitted using federal funding for stem-cell research.

"Barack Obama and Joe Biden believe that we owe it to the American public to explore the potential of stem cells to treat the millions of people suffering from debilitating and life-threatening diseases," his campaign said in a statement last year.

Bush argued that using human embryos for scientific research -- which often involves their destruction -- crossed a moral barrier and urged scientists to consider other alternatives.

Embryonic stem cells are primitive cells from early-stage embryos capable of developing into almost every tissue of the body.

Science's quest to harness stem cell power

The controversial quest to harness the power of embryonic stem cells may be about to enter a new phase in the United States with the Obama administration set to lift a seven-year research ban Monday.

Stem cells are the primitive cells that grow into the roughly 200 types of cell that comprise the body's tissues.

Scientists aim is to coax these cells into becoming lab-dish replacements

for heart, liver, skin, eye, brain, nerve and other cells destroyed by disease, accident, war or normal wear-and-tear.

Parkinson's disease, Alzheimer's, Type 1 diabetes, cancer and cardiac degeneration are among the many disorders that, in theory, could be healed by this wonder cure.

Of the two categories of stem cells, the biggest interest by far has focused on embryonic stem cells.

These are so-called totipotent cells, meaning that they have ability to differentiate, or diversify, into any type of cell.

But embryonic stem cell research has been controversial.

These master cells are extracted from fertilized eggs that typically are allowed to grow for three to three to five days.

The harvested stem cells are kept in self-replicating "lines" for study, but the embryos themselves -- usually surplus embryos from in-vitro fertilization (IVF) -- are destroyed by the process.

American evangelical conservatives have long opposed this research, saying that a human embryo equates to a human life.

In August 2001, former president George W. Bush banned all US federal funding for research that entailed new lines of human embryonic stem cells.

That move caused an outcry among US researchers, who warned investment and talent in their field would shift to other countries.

In July 2006, an attempt in the US Senate to lift some restrictions was

barred by Bush, wielding his presidential veto for the first time.

President Barack Obama has vowed to scrap the ban, and a White House official said the president would sign executive order Monday reversing Bush administration restrictions on federal funding for stem cell research.

The official would not divulge the exact wording of the order, but confirmed, on condition of anonymity, that it would be in line with Obama's campaign vow to restore funding to embryonic stem cell research.

Access to embryonic stem cells in other countries has also been restricted by laws or regulations governing the source of the embryos or by difficulties in finding women willing to donate their eggs.

In contrast to embryonic stem cells are so-called adult stem cells, which while still immature are genetically programmed to differentiate into specific cell types.

Adult stem cells were initially thought to be very small in number, but the tally has been found in many more tissues in recent years. They have now been discovered in brain, bone marrow, peripheral blood, blood vessels, skeletal muscle, skin and liver.

There are already several types of therapy involving adult stem cells, the best known of which, dating from the 1960s, is the bone marrow transplant. Most, though, are at still at experimental or laboratory level.

Compared with embryonic stem cells, adult stem cells are less versatile and are harder to culture in the lab, but in the past two years new work has shown they are more capable, or "plastic," than thought.

In 2007, researchers said they had found a way to make pluripotent stem cells by "reprogramming" adult stem cells taken from skin.

And in January 2008, a team led by Robert Lanza at Advanced Cell Technology (ACT), a Massachusetts biotech company, announced they had created the first human embryonic stem cells without destroying the embryo.

Biomedical researchers caution that several big questions remain to be answered before stem cell research fully delivers on its great promise.

One of the big challenges is understanding exactly how a stem cell "differentiates" into a specialized cells.

Another is how to ensure that transplanted stem cells are not attacked as alien by the immune system. One area of work is to clone stem cells so that they carry the DNA signature of the patient and thus are not treated as foreign.

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