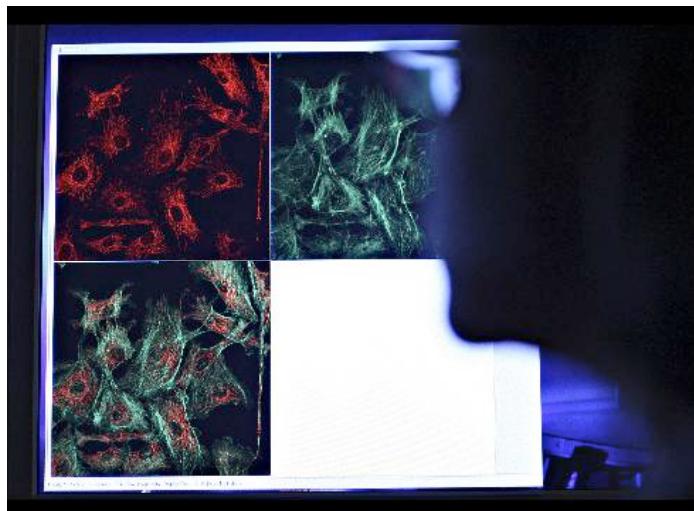


## Stem Cell Technique Wins U.S. Funding, Fuels Debate

By Tom Randall

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*An image from a laser scanning microscope is displayed on a computer monitor as New York Stem Cell Foundation Lab Manager Nichole Diaz, right, is trained to use the machine in a NYSCF lab in New York, on Dec. 18, 2007.*

*Photographer: Daniel Acker/Bloomberg News*

Scientists have begun competing for the first U.S. government grants to investigate a stem cell breakthrough that may lead to new treatments for diabetes, heart disease and brain disorders and avoids destroying human embryos.

The National Institutes of Health, the government's medical research financing unit, began accepting grant applications Jan. 5 from scientists studying an advance reported in November. Japanese and U.S. researchers had transformed ordinary skin into stem cells that, in theory, could be grown in the laboratory into tissue to repair organs damaged by disease or trauma.

The new approach may compete with research under way at Geron Inc. and Advanced Cell Technology Inc. to regenerate nerves and cure blindness, even though scientists say it may be years before they know whether the advance will yield useful treatments. Advocates of extracting stem cells from embryos say exaggerated claims for the new method could derail research programs backed by California and New York, the biggest biomedical projects undertaken by states.

“Misrepresentations of this research are leading people into believing that embryonic stem cell research is not necessary anymore,” said Robert Klein, chairman of the California Institute for Regenerative Medicine, which is responsible for giving out \$3 billion in state grants over the next decade. “That is a tragic distortion of these very new, very tentative discoveries. Patients' lives are at stake.”

The U.S. restricts funding for stem cells harvested from unused embryos created during fertility treatments. President George W. Bush hailed the November breakthrough because it doesn't destroy human embryos and preserves “the high aims of science” and the “sanctity of human life,” Dana Perino, a White House spokeswoman said in a statement. Bush has twice vetoed legislation that would have increased funding for embryonic stem cell research.

**“Tens of Millions”**

NIH is ready to give “tens of millions of dollars” in annual funding for three years, said Story Landis, chief of the U.S. research agency’s Stem Cell Task Force. The state of California, the world leader in funding embryonic stem cell research, also will begin offering grants to study the new technique after the Jan. 10 application deadline.

The U.S. spent about \$640 million on stem cell research in 2007. Because of the U.S. restrictions on embryonic research funding, 10 states developed their own programs, budgeting about \$400 million in 2008 for embryonic stem cell studies and about \$4 billion more over the next decade. Private donors have given at least \$1.7 billion, according to the Rockefeller Institute, an independent research group in Albany, New York.

### No Substitute

Companies already using embryonic cells for research say they think the funding to investigate the new technique may divert money from existing embryonic cell research that’s closer to treating diseases, said William M. Caldwell, chief executive officer of Advanced Cell Technology.

The new technology “is not a substitute for what we’re doing now,” said Caldwell in a telephone interview. His Alameda, California-based company is about to start human testing on an embryonic cell treatment to reverse vision loss in aging people. The company has transplanted embryonic stem cells into the retinas of blind mice, restoring their vision.

Therapies like that could be on the market in a few years, Caldwell said. It could take that long just to prove whether the new technique’s cells are viable, according to the NIH’s Landis.

### New Nerves

Geron Corp., based in Menlo Park, California, hopes to begin the first human tests of embryonic stem cells this year to treat damaged spinal cords. The company uses the cells to produce proteins that encourage the growth of new nerves.

Chief Executive Officer Thomas Okarma said Geron, one of the largest embryonic stem cell companies in the U.S. by market size, won’t invest in the non-embryonic method because it’s “too complicated and too expensive.”

Geron rose 19 cents, or 3.8 percent, to \$5.26 at 4 p.m. New York time in Nasdaq Stock Market composite trading. Advanced Cell Technologies climbed one cent, or 6.9 percent, to 16 cents in over-the-counter trading. Before today, Geron had fallen 20 percent since the Nov. 20 breakthrough announcement and Advanced Cell Technologies had plunged 42 percent.

Japanese and American scientists on Nov. 20 described how they had inserted genes into skin cells to trigger a process that makes the cells similar to embryonic stem cells. The converted cells were then grown into heart, brain, muscle, fat and cartilage cells, using techniques similar to ones Geron and Advanced Cell use for creating specific tissue cells to treat disease.

### Next Step

The next scientific step is to compare the properties of the two types of cells, said Shinya Yamanaka, the Japanese scientist who wrote one of the two breakthrough articles.

Scientists will have to rely on state and private funding for that research because the NIH, under a 2001 presidential mandate, restricts funding for research on cells taken from embryos.

“All of the people who have always been interested in saying we should not do embryonic stem cell research unfortunately will now have another arrow in their quiver,” said Susan Solomon, chief executive officer of the New York Stem Cell Foundation. “The subtleties of very complicated work are something they are all too happy to disregard.”