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Scientists mimic embryonic cells using ordinary skin from lab mice

BY MALCOLM RITTER
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NEW YORK -- In a leap forward for stem-cell research, three independent teams of scientists reported Wednesday that they have produced the equivalent of embryonic stem cells in mice without the controversial destruction of human embryos.

They got ordinary skin cells to behave like stem cells. If the same could be done with human cells -- a big if -- the procedure could lead to breakthrough medical treatments without the contentious ethical and political debates surrounding the use of embryos.

Experts were impressed by the achievement.

"I think it's one of the most exciting things that has come out about embryonic stem cells, period," said researcher Asa Abeliovich of Columbia University in New York, who didn't participate in the work. "It's very convincing that it's real." But he and others cautioned that it would take further study to see whether this scientific advance could be harnessed for creating human therapies. For one thing, the procedure used in the mouse studies wouldn't be suitable, and it's not known whether the mouse results could be reproduced with human cells.

"We have a long way to go," said John Gearhart of Johns Hopkins University, a stem-cell researcher who also wasn't involved in the new work.

In any case, scientists said, the advance does not mean that research that involves getting stem cells from human embryos should now be abandoned. "We simply don't know which approach ... will work the best," said researcher Konrad Hochedlinger of the Harvard Stem Cell Institute, who led one of the three teams.

Embryo destruction opposed

Embryonic stem cells are prized because they can develop into all types of tissue. So experts believe they might be used for transplant therapies in people who are paralyzed or have illnesses ranging from diabetes to Parkinson's disease. To harvest human embryonic stem cells, embryos must be destroyed, an action many people oppose. Scientists have long hoped to find a way to reprogram ordinary body cells to act like stem cells, avoiding the use of embryos altogether. The new mouse studies seem to have accomplished that. Past experiments seeking alternative routes to getting stem cells have generally involved tampering with an embryo or egg.

Overcoming moral concerns

At a news conference Wednesday, Hochedlinger and a member of a second team said their work was not an attempt to evade the ethical objections to embryo destruction. Instead, they said, the goal was to learn how cell reprogramming works.

But in a telephone interview, a prominent critic of embryonic stem-cell research welcomed the new work on ethical terms. "This is what we were looking for people to explore because it may provide all the advantages of embryonic stem cells without the moral problem," said Richard Doerflinger, deputy director of anti-abortion activities for the U.S. Conference of Catholic Bishops. "So I'm very encouraged."

Hochedlinger and colleagues present their work in the inaugural issue of the journal *Cell Stem Cell*. (The first word in the journal's name refers to its publisher, Cell Press.)

The other two teams reported their results Wednesday on the Web site of the journal *Nature*. Rudolf Jaenisch of the Whitehead Institute in Cambridge, Mass., is the senior author of one paper, and the work behind the other paper was led by Shinya Yamanaka of Kyoto University in Japan.