

# Associated Foreign Press

## Stem cell pioneer says embryonic research still needed

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**A Japanese scientist who helped produce stem cells from skin says controversial research on human embryos must continue for now, as it will take time to put the new breakthrough into practical use.**

The announcement last week of the groundbreaking discovery by US and Japanese scientists won praise from leading critics of embryonic stem cell research, including US President George W. Bush and the Roman Catholic Church. "It was a breakthrough. It allowed us to see a goal. But the goal is far off in the distance," Shinya Yamanaka, the leader of the Kyoto University research team, told AFP in an interview. His team and US researchers led by James Thomson of the University of Wisconsin at Madison said they generated stem cells from human skin. The development would eventually allow doctors to create stem cells using a patient's genetic code, eliminating the risk that the body would reject transplanted tissues or organs.

But Yamanaka cautioned it would still take a long time before researchers could treat stem cells from skin like those from embryos. "Scientists have to continue embryonic stem cell research as it would take some time for us -- at least a year, I would say -- to prove its safety in research on monkey cells," followed by tests on human cells, he said.

Research involving embryonic stem cells -- which can develop into various organs or nerves -- is seen as having the potential to save lives by helping find cures for diseases such as cancer and diabetes. But the studies have provoked a furor among religious conservatives, who argue that such research destroys a human life, albeit one at its earliest stage of development.

Bush has banned all federal funding for research on new human stem cells, battling with Congress, although money is still available for research on embryos gathered before the ban. Japan, the largest spender on scientific research after the United States, has fewer taboos about embryonic research. However, all projects in Japan need approval from a government panel on bioethics, which has restrictions including a prohibition on attempts at human cloning. Many women are also hesitant to donate eggs. "Before our success in the human skin research, we had to do research on animals because it is extremely hard to obtain human embryonic stem cells for research purposes," Yamanaka said.

Yamanaka's team generated versatile iPS (induced Pluripotent Stem) cells, which, like embryonic stem cells, can develop into various organs and tissues. The researchers last year generated the world's first iPS cell by introducing four genes into mice skin. In the breakthrough project, they succeeded in generating the human iPS cells by putting the same four genes into human skin cells.

This alternative way of developing stem cells, however, holds the risk of causing cancer because it uses a retrovirus -- seen as having a carcinogenic quality -- to make the skin cell function as a stem cell. In addition, one of the four genes is a cancer gene. "We have to test the safety of the alternative stem cells first, including the risk of cancer," said Yamanaka. "But honestly, I can't predict at all how long it may take for us to solve the challenges," he said. "We were able to adapt our mice experiment to human skin a year later, but it could have taken years. The same can be said for our future research," he said.

Other challenges include trying to verify that the iPS cells function in exactly the same way as embryonic stem cells using human eggs, he said. Theoretically, iPS cells could also develop into human eggs and sperm. "Further research must be done in order to avoid the misuse of reproductive cells," Yamanaka said.

In a bid to skirt the ethical debate, another set of Japanese researchers in March said they had succeeded in cloning mouse embryos from unfertilised eggs, believing it was less controversial than using fertilised eggs.