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Embryonic cell research must continue

But state's restrictive laws drive away business, advocates say

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A new way to trick skin cells into acting like embryos changes both everything and nothing at all.

Being able to reprogram skin cells into multipurpose stem cells without harming embryos launches an exciting new line of research. It's important to remember, though, that we're at square one, uncertain at this early stage whether souped-up skin cells hold the same promise as their embryonic cousins do.

Far from vindicating the current U.S. policy of withholding federal funds from many of those working to develop potentially lifesaving embryonic stem cells, recent papers in the journals *Science* and *Cell* described a breakthrough achieved despite political restrictions.

In fact, work by U.S. and Japanese teams that reprogrammed skin cells depended entirely on previous embryonic stem cell research.

At a time when nearly 60% of Americans support human embryonic stem cell research, U.S. stem cell policy runs counter to both scientific and public opinion. President Bush's repeated veto of the Stem Cell Research Enhancement Act, which has twice passed the House and Senate with votes from Republicans and Democrats alike, further ignores the will of the American people.

Efforts to harness the versatility of embryonic stem cells, and alleviate suffering among people with an array of debilitating disorders, began less than 10 years ago. Since then, scientists have continued to pursue embryonic stem cells because of their ability to transform into blood, bone, skin or any other type of cell. The eventual goal is to replace diseased or dysfunctional cells to help people with spinal cord injuries, neurodegenerative disorders, cancer, diabetes, heart disease and other conditions.

Since 1998, many strategies for addressing sanctity-of-life concerns have been pursued. While commendable, these efforts remain preliminary, and none so far has suggested a magic bullet. In the same way, the recent tandem advances in the United States and by Shinya Yamanaka's team in Japan are far from being a Holy Grail. Though potential landmarks, these studies are only a first step on the long road toward eventual therapies.

The argument that the president's misgivings about embryonic stem cell research inspired innovative alternatives is fundamentally flawed, too. Yamanaka was, of course, working in Japan, and scientists around the world are pursuing the full spectrum of options, in many cases faster than researchers in the U.S.

Reprogrammed skin cells, incorporating four specific genes known to play a role in making cells versatile, or pluripotent, did seem to behave like embryonic stem cells in mice. But mouse studies frequently fail to pan out in humans, so we don't yet know whether this approach will work for human diseases. We simply cannot invest all our hopes in a single approach. Federal funding is essential for both adult and embryonic stem cell research, even as promising alternatives are beginning to emerge.

Unfortunately, under the policy President Bush outlined on Aug. 9, 2001, at most 21 stem cell lines derived from embryos before that date are eligible for federal funding. American innovation in the field thus faces inherent limitations. Even more significant, the stigma resulting from the policy surely has discouraged some talented young Americans from pursuing stem cell research.

Discomfort with the notion of extracting stem cells from embryos is understandable. But many of the life-changing medical advances of recent history, including heart transplantation, have provoked discomfort. Struggling with bioethical questions remains a critical step in any scientific advancement.

A solution that might be more comfortable for many people already exists but cannot be pursued unless the Stem Cell Research Enhancement Act becomes law. Some percentage of the hundreds of thousands of frozen embryos from fertility clinics eventually will be destroyed. American couples, meanwhile, are not being given the choice to donate their frozen embryos to federal research to help others through stem cell advances.

It remains to be seen whether reprogrammed skin cells will differ in significant ways from embryonic stem cells. We remain hopeful, but it's too early to say we're certain.

We hope Congress will override the president's veto of the Stem Cell Research Enhancement Act. Further delays in pursuing the clearly viable option of embryonic stem cells will result in an irretrievable loss of time, especially if the new approach fails to prove itself.

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