

STEM CELL RESEARCH: CONTROVERSIAL AND NON-CONTROVERSIAL

What are stem cells?

The National Institutes of Health explain that “A stem cell is a cell that has the ability to divide for indefinite periods. ... Stem cells [are basic cells that] can give rise to many different cell types.” Scientists envision drawing from lines of stem cells to create new specialized cells for transplant into patients to repair or replace tissues damaged by disease, accident, or disability. Stem cells produced from a particular patient may also be used in the lab to determine which drugs work best for that patient in treating or curing his disease.

What are the major types of stem cells?

Embryonic Stem Cells are obtained from developing human embryos which are killed when their stem cells are “harvested.”

Adult Stem Cells are found in a large variety of human tissues (fat, nerve, bone marrow, muscle, etc.) and in umbilical cord and placental blood and amniotic fluid no longer needed by newborn infants. Obtaining adult stem cells does no permanent harm to the donors.

What type of stem cell research is controversial?

Embryonic stem cell research is controversial because it kills the human embryos which supply the stem cells. It involves killing some human beings (in their embryonic stage) to look for possible cures for diseases for other human beings.

How many successful treatments have been developed from stem cell research?

- Embryonic stem cell research: Absolutely none.
- Adults stem cell research: To date, **73 successful treatments** have been developed, counting both human and research animal treatments.

(See www.stemcellresearch.org for details).

What are some of the human diseases/disabilities that have been successfully treated with adult stem cells?

Various types of leukemia, spinal cord, heart muscle, and bone injuries, skin disease, various cancers, lupus, Crohn’s disease, multiple sclerosis, Parkinson’s disease, sickle cell anemia, etc. For a complete list see www.stemcellresearch.org.

What are the disadvantages of using embryonic stem cells?

- Acquiring them requires that the human donor be killed.
- Research shows they tend to form tumors when implanted.
- They are subject to immune rejection by the patient.
- Cloning is one source of these cells using a procedure called somatic cell nuclear transfer. But this process requires thousands of egg cell donations by thousands of women. Egg cell donation poses several medical risks for the women involved.
- After more than a decade of research and millions of research dollars spent, no successful treatment or cures have been developed using embryonic stem cells.

Given the hazards of embryonic stem cell research, and its poor record to date, why is it still promoted?

Scientists are driven to do “basic” research, as well as by the technological imperative. That is, if something is technologically possible, they seem driven to do it, even though it is ethically problematic. They are also attracted by the possibility of obtaining government funding for their research.

SCIENTISTS AND SOCIETY, HOWEVER, MUST ANSWER THE QUESTION: *WHY KILL TO CURE WHEN YOU CAN CURE WHILE DOING NO HARM?*

Is embryonic stem cell research banned in the United States?

Unfortunately, no, there is no federal law against it. Private funds can still be used to support it. Some embryonic stem cell lines are also eligible for federal funding. These had already been developed, and did not involve the killing of additional embryos.

Can stem cells be stored?

Yes, like donated blood or bone marrow, “adult” stem cells can be frozen and banked. In 2003, Congress approved funds to help create a nationwide umbilical cord blood stem cell bank. In 2005, President Bush signed into law the Stem Cell Research and Therapeutic Act which authorized \$265 million to be spent over the years 2007-2010 to stock cord blood and bone marrow stem cells.

Sources say there are some 400,000 to 500,000 human embryos now in frozen storage in the U.S. Many of them will be discarded anyway. Why is it wrong to try to get some good out of them?

In the end we will all die anyway, but that gives no one a right to kill us. In any case, these embryos will not die because they are inherently unable to survive, but because others are choosing to hand them over for destructive research. ... One wrong choice does not justify an additional wrong choice to kill them for research, much less a choice to make taxpayers support such destruction.

Aren't those who oppose embryonic stem cell research asking us to choose the lives of embryos over the lives of suffering patients?

No. They are asking us to respect both. We must help those who are suffering, but we may not use evil means to accomplish a good end. Moreover, **adult** stem cell research has already proven that we have good means to accomplish the same end.

New procedures make harvesting embryonic stem cells unnecessary.

One new stem cell procedure developed in late 2007 turns adult skin cells into embryonic-like stem cells making the killing of human embryos to obtain their stem cells unnecessary. These new cells are called induced pluripotent stem cells (iPSC).¹ With further manipulation, they can be turned into other types of cells to be introduced into a patient's body to grow new tissue of various types. The same process can be accomplished with greater speed and efficiency using adults' fat cells.²

Paradoxically, the process of reversing a mature cell's development to make it a less developed and more basic cell has been found to create a new ethical problem. Dr. John Gurdon, who was jointly awarded the Nobel Prize in 2012 with Shinya Yamanaka for their work which produced the

first iPS cells, has suggested that the reversal process can go too far, as it were, and result in “a totally normal, reproducing, adult [individual] from a skin cell without the use of an [human] egg.”³ That is, he is suggesting that you may end up with a human embryo!

Another development called “direct conversion” avoids the need to create embryonic-like iPS cells from adult stem cells. Professor John D. Gearhart of the University of Pennsylvania, who is doing this research, indicates that it involves changing one kind of mature, specialized cell directly into another type of mature cell, without having to go through the embryonic stage.⁴ Gearhart cautioned that this research is at an early stage, and needs considerable work to make it viable.

References

1. See Gina Kolata, “Scientists Bypass Need for Embryo to Get Stem Cells,” *The New York Times*, (November 21, 2007) online, and Steven Ertelt, “Researchers Replicate Study Producing Ethical Embryonic-Like Stem Cells,” LifeNews.com (December 24, 2007).
2. Dave Andrusko, “Adult Fat Cells Easily Become Multi-Purpose Stem Cells,” National Right to Life, “Today’s News and Views,” (September 10, 2009).
3. Hilary White, “Top Researcher: iPS Cells ‘Probably Already Embryos, Have Already Cloned Animals,” LifeSiteNews.com (April 23, 2013).
4. Steven Ertelt, “Direct Conversion May Make Embryonic Stem Cell Research Obsolete,” LifeNews.com (November 29, 2010).

Compiled and written by Raymond J. Adamek, Ph.D.

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