

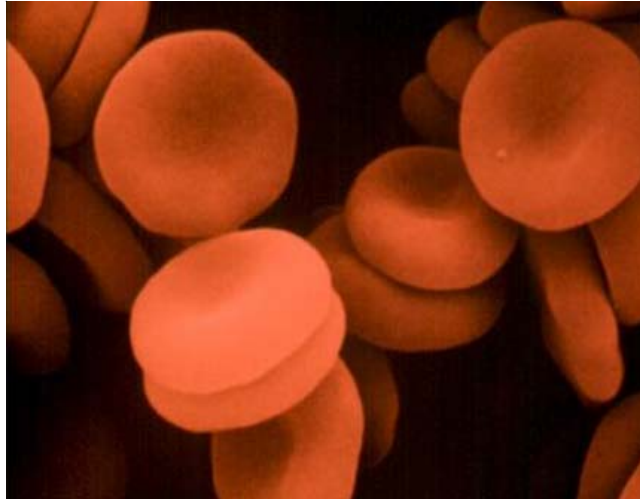


The Church's Perspective On Stem Cell Research

By H. Grace Bishop Serapion

Introduction

Stem cell research has become one of decisive issues in the last presidential election. President George W. Bush's policy is to restrict federal funding to embryonic stem cell research. In August 2002, the president decided to restrict federal funding to embryonic stem cell lines that had already been created. Bush's policy restricted embryonic stem cell research to the clusters of cells derived from frozen embryos that would otherwise be discarded by fertility clinics. President Bush says his policy is a balance of science and ethics. Laura Bush, whose father has Alzheimer's, told a crowd in Milwaukee "stem cell research doesn't offer a cure right around the corner, and it is irresponsible to suggest that it does." Another view was given by Senator John Kerry, who announced his pledge to advance embryonic stem cell research. He said, "what if we could cure cancer, Parkinson's, AIDS, and Alzheimer's?" He charged the president with making "the wrong choice to sacrifice science for extreme right-wing ideology." With the death of Christopher Reeve, the attention is refocused again on this issue. Christopher Reeve, "superman in wheelchair", as one friend called him, was a tireless advocate for stem-cell research. The vice



presidential candidate, John Edwards, took advantage of Reeve's case and said, "If we do the work that we can do in this country...people like Christopher Reeve are going to walk, get up of that wheelchair and walk again." The Bush camp attacked Edwards'

statement as "opportunistic", and emphasized that the president supports the research as long as no more embryos are destroyed.

In California, one of the propositions on the November ballot is Prop 71 that would fund \$3 billion for stem cell research. Newsweek Magazine described it as "creating a haven for science and a 21st century gold rush for biologists and biotech companies." Proposition 71 is designed to sidestep Bush's funding restriction and is considered the boldest and most ambitious endorsement of stem-cell research in the nation.

1. What are stem cells ?

Stem cells are a type of cells found in both animals and humans, and they have the potential to develop and differentiate into many types of specialized cells in the body.

2. What are the characteristics of stem cells ?



Stem cells have three characteristics:

- They are “unspecialized”, which means that they do not perform specialized functions, unlike the red blood cells that have a specialized function and carry the oxygen through the bloodstream.
- Under certain conditions, they can be transformed into cells with specialized functions.
- They are capable of reproducing themselves over an extended period of time.

3. What is the importance of stem cells ?

Stem cells can serve as a repair system for the body during the lifetime of a human being or an animal by replenishing other cells.

4. What are the human embryonic stem cells ?

Human embryonic stem cells appear in an embryo five to seven days after fertilization of the human egg. They are ordinarily extracted from extra embryos that have been donated for research by parents who tried to conceive a baby through in vitro fertilization (IVF) in fertility clinics. The embryos are created by in vitro fertilization, in which doctors fertilize an egg with a sperm in a petri dish, and then implant it into the womb after it has matured for two to five days. Doctors store extra embryos as a backup, but many couples decide not to use them. Some donate the extra embryos for research. There are tens of thousands of

extra frozen embryos across the country. Embryonic stem cells have the potential to develop into all cell types of the body.

5. What are the adult stem cells?

Adult stem cells are obtained for scientific research from many organs and tissues, including the brain, bone marrow, blood vessels, skin, and liver. These stem cells are generally limited to becoming the cell type of its tissue of origin.

6. Why do researchers want to study stem cells ?

- Stem cell research may provide information on the complex events that occur during human development that lead to serious medical conditions, such as cancer and birth defects.
- Human stem cells could be used to test the safety of drugs.
- Of the more attractive factors is that researchers indicate that stem cells offer the possibilities of a renewable source of replacement cells and tissues to treat diseases like Parkinson's, Alzheimer's, heart disease, and diabetes, as well as treat spinal cord injuries. It is estimated that more than 100 million Americans could potentially benefit.

7. How are embryonic stem cells extracted and transformed ?

During normal development, an embryo grows rapidly. By three days, it multiplies into a ball of eight cells. By day five, it contains



250-300 cells, including a distinct inner mass of stem cells that eventually transform into special tissue, such as heart, liver, kidney, etc. Before the cells differentiate, scientists remove the inner mass of the stem cells and place them in a nutrient-rich petri dish. There the cells multiply, producing millions of identical copies, called lines. In this early-undeveloped state, the cells have a potential to grow into any type of tissue. Scientists are trying to push stem cells along particular developmental pathways, morphing them into replacement cells for organs damaged by diseases.

8. What is the current state of stem cell research ?

Stem cell research is at a very early stage. Not a single person has yet been cured by embryonic stem cells . There are stories of success in animals. Currently, achievement has been reached in various areas, such as:

- Spinal cord injuries: Scientists have successfully transformed stem cells into spinal cord tissue. The cells may one day be implanted into victims of paralysis and help restore movement.
- Parkinson's: Researchers have begun molding stem cells into specialized brain cells, to replace those destroyed by Parkinson's disease. Animal studies suggest stem cell transplants ease the symptoms of the disease.
- Juvenile Diabetes: Some scientists report that they have coaxed stem cells into insulin-producing cells. Transplanting these into diabetic mice appears to improve survival

and the blood sugar levels.

- Heart disease: Researchers have been exploring ways to use stem cells as replacement tissue for damaged heart cells. A recent study suggested that the cells helped heart attack recovery in animals.
- Alzheimer's disease: In an attempt to understand this complex disease, scientists have been using embryonic stem cells to develop human brain cells that carry Alzheimer's mutations.

9. What is therapeutic cloning ?

Therapeutic cloning is the use of cloned embryos to treat diseases. Scientists extract the nucleus from a patient's somatic cell and fuse it to a hollowed out egg cell (i.e., an egg without a nucleus). The egg then grows into an embryo that has a genetic replica of the donor's DNA. Stem cells are then extracted from the embryo. The cloned embryo produces stem cells that could regenerate the damaged tissue, without the risk of rejection.

10. What is the effectiveness of adult stem cells therapies ?

C. Christopher Hook, director of ethics education for Mayo Graduate School of Medicine, said in an interview published in Christianity Today (November 2004), "the advances of adult stem-cell therapy development have been nothing short of astounding. I don't see any reason to believe that we will not achieve the therapeutic goals we all desire, using adult stem cells." The September issue of Nature Cell Biology reviews the ability of bone marrow derived cells to be reprogrammed after incorporation



in the defective tissues, healing and regenerating the organ.

11. What is the Church's position on stem cell research ?

The goal of stem cell research is a noble goal, i.e. to cure millions, who are suffering from incurable diseases. However, a noble goal should be achieved in a noble way. We should note the following:

- Embryos are human beings, since life begins at the moment of fertilization, whether this occurs in a womb or in a petri dish.
- Embryos should not be subjects of research. This is against human dignity. There is no justification to produce embryos for research or to use what is called extra embryos for research. You cannot create lives just to destroy them.
- Cloning is against God's plan for human reproduction. It is very hard to draw a line between therapeutic cloning for research and human cloning.
- Scientists should be guided by ethical principles. They should focus their research on ethically acceptable areas, such as adult stem cell research.
- Christians should support a candidate, who opposes therapeutic cloning and restricts funding on stem cell research.
- Christians should oppose any proposition that advances embryonic stem cell research and therapeutic cloning.



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By Mark I. Boulos.

The Conclusion of his article is...

In conclusion, we firmly reject any and all manipulation of human embryos for research purposes as inherently immoral and a fundamental violation of human life. We should diligently seek alternatives that also offer promise of sparing and improving human life. The use of adult stem cells is a suitable alternative to the exploitation of embryonic stem cells.

We encourage the scientific community to reject pressures for embryonic stem cell research exerted by the pro-abortionist lobby, and the biotech and pharmaceutical industries. We endorse the scientific community to devote their energies and resources to discovering, harvesting and utilizing non-embryonic stem cells, such as those derived from adults, placentas and umbilical cords.