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# Cloning and Stem Cells

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## Scientific Background

There are certain kinds of cells in human bodies that have not yet specialized in being a particular kind of cell, such as a red blood cell, or a cell in the cortex of the brain, or a heart muscle cell. These unspecialized cells are called "stem cells." While they are scattered and difficult to detect, adult human bodies are filled with millions of such cells. When we cut our skin, stem cells under the skin undergo biochemical change and "differentiate" themselves into skin cells in order to replace the damaged skin. Human red blood cells last only 120 days, and must be replenished constantly by the differentiation of stem cells in order to keep up healthy blood counts.

However, some kinds of cells in the human body do not seem to be able to be replaced when they are damaged by injury or disease. When people have strokes, for instance, nerve cells do not grow back and the damage is permanent. When people have heart attacks, the heart muscle is replaced by scar tissue rather than new heart muscle cells. Thus, medical scientists have looked for a way to use stem cells to repair these kinds of cells that seem otherwise incapable of repairing themselves. This is the promise of stem cell research.

**There are three main sources of stem cells:**

1. "Adult" stem cells—which are awkwardly named because they include stem cells from umbilical cord blood as well as children and adults. These are stem cells that are partly differentiated, but still capable of turning into a variety of cell types. The most readily available sources of these cells are from bone marrow and umbilical cord blood, but stem cells have been found in livers, brains, hearts, and other tissues as well.

2. "Embryonic stem cells"—which are taken from 5-7 day-old embryos. These embryos are either frozen "spares" left over from *in vitro* fertilization, or are freshly fertilized *in vitro* for the sole purpose of using them for their stem cells.

3. "Cloning"—in which an adult human being's DNA is put into a human egg cell from which all of the DNA has been removed to create a "clone" of that human being for the sole purpose of using that clone for its stem cells.

**Is It Scientifically Necessary to Use Embryonic Stem Cells?**

It has been argued by some that the use of embryonic stem cells is necessary for scientific progress, but this is not really true.

1. There has been a great deal of "hype" about embryonic stem cells by activists, specifically regarding the unique breakthroughs that research on them might yield. However, no one seriously believes that paralyzed people will be walking anytime soon if only we would let scientists do research on human embryonic stem cells. These results, if they ever come to pass, are decades away no matter what type of cells are used.

2. No successful treatments have ever been developed, even in animals, using embryonic stem cells. These cells seem to be "wild" and dangerous. They tend to be so unspecialized that they form cancers when they are injected into animals.

3. "Adult" stem cells have already been used successfully in therapeutic experiments in humans. Bone marrow stem cells are now used regularly in replenishing blood cells after high-dose chemotherapy. Umbilical cord blood cells appear to have cured several severe genetic disorders, such as Hurler syndrome and Krabbe disease. Experiments suggest that injected bone marrow stem cells can turn into heart muscle cells that could repair the damage done by heart attacks.

Therefore, it seems hard to justify the claim that embryonic stem cells are necessary for scientific research to cure diseases.

## Moral Principles

Despite distortion by the media, Church teaching regarding this issue is based upon very clear and simple principles:

1. The care of the sick is a good and noble undertaking, and medical science designed to help sick people should be promoted, provided that the science does not violate any moral principles.

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2. Human embryos are human beings at the earliest stage of development, created in the image and the likeness of God, and endowed with all the dignity of any other human being.

3. The end does not justify the means. Human beings ought never be killed or created for the sole purpose of using them to supply parts to help other human beings, no matter how great the suffering or the scientific promise.

## Take Home Points for Morally Sound Public Policy

Based upon sound science and these moral principles, the following "take-home" points can be made regarding Church teaching and public policy:

1. The Church is not opposed to adult stem cell research or the use of adult stem cells to cure diseases. The Church is opposed to destroying human embryos to harvest their stem cells and even more adamantly opposed to creating human embryos though *in vitro* fertilization or cloning for the express purpose of killing them and harvesting their stem cells.

2. The Church would be pleased to see legislation promoting research on adult stem cells and the creation of "banks" for umbilical cord stem cells.

3. The Church opposes all legislation that supports the medical or scientific use of embryonic stem cells obtained by killing human embryos.

4. The Church is also opposed to legislation that would permit only the use of frozen embryos left over from *in vitro* fertilization for stem cell research. Some have argued that this approach is a "pro-life" view, but it is not. First, while created in an unnatural way, these embryos are still human beings and it is wrong in itself to kill these embryos to harvest their stem cells. Second, it is wrong to argue that "since they will just die anyway, it is morally permissible to harvest their stem cells to help other people." We do not think it is morally permissible to take the hearts and livers out of prisoners sentenced to be executed "because they are going to die anyway." If this is a violation of the dignity of prisoners, it is a violation of the dignity of embryonic human beings as well. Third, there are not enough of these "spare" embryos around to supply the demand for scientific research. This sort of law is just "the nose under the camel's tent." As soon as this form of stem cell research is legalized, the demand for embryonic stem cells will lead to a call for legalizing *cloning* to create enough embryos to satisfy the needs of researchers.

5. Cloning is an abomination. Creating copies of ourselves through asexual reproduction in a test tube, and then destroying our new "twin" in order to harvest the stem cells to treat our diseases is so outrageous that it seems almost unimaginable that this has been legalized in states such as Massachusetts and California, among other places. There are no sound moral grounds for distinguishing cloning to make babies (so-called "reproductive" cloning) from research cloning (so-called "therapeutic" cloning). In fact, it is probably morally *worse* to say we will only clone for the purposes of destroying the clone.

## The Bottom Line

If all the clinical success so far has been with adult stem cells, why are people pushing embryonic stem cells? In large measure this is because a very small number of people in the biotech industry are in a position to make a lot of money through embryonic stem cells and cloning. But this will not be likely to bring lasting scientific success. And it is unlikely to create jobs and be a boost to the economy. Sound morality and sound economics would both back the promotion of research with *adult* stem cells.

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