

# Stem Cell Research and Human Cloning

## Questions and Answers

### WHAT IS A STEM CELL?

A stem cell is a relatively unspecialized cell that, when it divides, can do two things: make another cell like itself, or make any of a number of cells with more specialized functions. For example, just one kind of stem cell in our blood can make new red blood cells, or white blood cells, or other kinds—depending on what the body needs. These cells are like the stem of a plant that spreads out in different directions as it grows.

### IS THE CATHOLIC CHURCH OPPOSED TO ALL STEM CELL RESEARCH?

Not at all. Most stem cell research uses cells obtained from adult tissue, umbilical cord blood, and other sources that pose no moral problem. Useful stem cells have been found in bone marrow, blood, muscle, fat, nerves, and even in the pulp of baby teeth. Some of these cells are already being used to treat people with a wide variety of diseases.

### WHY IS THE CHURCH OPPOSED TO STEM CELL RESEARCH USING THE EMBRYO?

Because harvesting these stem cells kills the living human embryo. The Church opposes the direct destruction of innocent human life for any purpose, including research.

### IF SOME HUMAN EMBRYOS WILL REMAIN IN FROZEN STORAGE AND ULTIMATELY 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 instead of letting them implant in their mother's womb. 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. The idea of experimenting on human beings because they may die anyway also poses a grave threat to convicted prisoners, terminally ill patients, and others.

### HAVEN'T DOCTORS, SCIENTISTS, AND COMMENTATORS SAID THAT EMBRYONIC STEM CELL RESEARCH WILL LEAD TO THE CURE OF MANY DISEASES?

Some have made this claim, but in fact this is largely speculation. Embryonic stem cells have never treated a human patient, and animal trials suggest that they are too genetically unstable and too likely to form lethal tumors to be used for treatment any time soon. Years ago it was said that stem cells from embryos would be the most useful because they are so fast-growing and versatile, able to make virtually any kind of cell. But those advantages become disadvantages when these cells make tumors, creating a condition worse than the disease. Yet many supporters remain wedded to this approach, having invested a great deal of money and effort and hoping they can still make it work. This kind of exaggerated "promise" has misled researchers and patient groups before—most obviously in the case of fetal tissue from abortions, which in the 1990s was said to promise miracle cures and has produced nothing of the kind.

### IS THE CHURCH TELLING US TO CHOOSE THE LIVES OF EMBRYOS OVER THE LIVES OF SUFFERING PATIENTS?

No. It is calling us to respect both, without discrimination. We must help those who are suffering, but we may not use a good end to justify an evil means. Moreover, treatments that do not require destroying any human life are at least as promising—they are already healing some conditions, and are far closer to healing other conditions than any approach using embryonic stem cells. The choice is not between science and ethics, but between science that is ethically responsible and science that is not.

### IS EMBRYONIC STEM CELL RESEARCH ADVANCING SLOWLY BECAUSE THIS RESEARCH IS BANNED IN THE UNITED STATES?

No. Embryonic stem cell research is fully allowed in the United States—there is no federal law (and almost no state law) against it. The government has only set some limits on the number of embryonic stem cell lines eligible for federal funding. Supporters disappointed at failures using these cells sometimes blame this stem cell research "ban" (which is not really a ban at all). But as noted above, the much more serious obstacle lies in the nature of the cells, which are not working out as some predicted.

### DID THE FEDERAL GOVERNMENT IN 2001 FORBID FUNDING ANY EMBRYONIC STEM CELL RESEARCH?

No. In fact, the federal government has given more than \$175 million to human embryonic stem cell research since 2001. But on August 9 of that year, President Bush said that federally funded research would use only embryonic stem cells already in existence (obtained by destroying embryos prior to that date). In this way, he reasoned, federal funds could be used to explore this research, without encouraging researchers to destroy new embryos in order to obtain federal grants. Some of these existing stem cell samples have been used to create more than 20 cell lines for research, and others remain in storage for possible use in creating new cell lines in the future. There is no legal limit on the amount of funding that can be used for this avenue; if the total funding for it is relatively small, that is chiefly because researchers are not requesting the funds as they are finding other avenues more promising.

### HAS RESEARCH USING ADULT STEM CELLS ACCOMPLISHED ANYTHING?

Thousands of lives have been saved by adult stem cells—most often in the form of "bone marrow transplants" for leukemia and other conditions (where the active ingredient in the bone marrow is stem cells). Today, adult stem cells have been used to help people with Parkinson's disease, spinal cord injury, juvenile diabetes, lupus, multiple sclerosis, sickle-cell anemia, heart damage, corneal damage, and dozens of other conditions. The danger is that this progress toward cures will be halted or slowed by campaigns that divert attention and resources toward embryonic stem cell research.



### **CAN STEM CELLS BE STORED IN A BANK?**

Yes, like donated blood or bone marrow, they can be frozen and banked. In 2003, for example, Congress approved funds to help create a nationwide umbilical cord blood stem cell bank, in light of the many clinical benefits being discovered from these cells now usually discarded after live births. Many of the embryonic stem cell samples eligible for federally funded research under the current policy also remain frozen in banks, to be thawed and turned into stem cell lines when needed.

### **WHAT IS A STEM CELL LINE?**

It is an ongoing, living colony of stem cells in a laboratory, from which cells can be obtained for research or other uses. Sometimes these are called “immortal” cell lines, but that is misleading because they do eventually deteriorate. Embryonic stem cells are said to be easier to grow in a stem cell line, but they also tend to develop serious genetic abnormalities associated with cancer.

### **WHAT ARE THE ADVANTAGES OF HARVESTING DONOR CELLS FROM THE INTENDED RECIPIENT OF THE STEM CELL THERAPY?**

Because these cells come from the patient, they are an exact match and will not be rejected by the body as foreign tissue. Also, because no foreign substance is placed in the body, there are fewer regulatory barriers to their medical use.

### **WHO IS FUNDING STEM CELL RESEARCH? WHAT ROLE IS FEDERAL FUNDING PLAYING IN DETERMINING RESEARCH PRIORITIES?**

Many private foundations and for-profit biotechnology companies fund stem cell research, but the federal government (especially through the National Institutes of Health) remains the largest source of funds. The government’s funding priorities have a large influence on the direction that medical research takes. Since available research funds began being diverted toward exploring embryonic stem cell research, some very promising adult stem cell avenues for treating juvenile diabetes, spinal cord injury, Parkinson’s disease, etc. have been underappreciated and underfunded. Many advances in these fields have emerged from other countries.

### **WHAT IS HUMAN CLONING AND HOW IS IT RELATED TO STEM CELL RESEARCH?**

In human cloning, the DNA from the nucleus of a person’s body cell is inserted into an egg whose own genetic material has been removed, and the egg is then stimulated to begin embryonic development. The resulting cloned embryo would genetically be an almost identical twin to the person supplying the body cell. This research overlaps with the stem cell issue. That is, human cloning might be done to create an embryo who will be destroyed to provide stem cells genetically matched to a patient, so the cells will not be rejected as foreign tissue. But some cloning research is done for other purposes—for example, to create embryos with devastating illnesses from the body cells of sick patients, to study the early progress of that disease. Most embryonic stem cell research involves embryos created by in vitro fertilization, not cloning.

### **WHY DOES THE CHURCH OPPOSE HUMAN CLONING?**

Cloning is a depersonalized way to reproduce, in which human beings are manufactured in the laboratory to preset specifications. It is not a worthy way to bring a new human being into the world. When done for stem cell research, it involves the moral wrong of all embryonic stem cell research (destroying an innocent human life for possible benefit to others) plus an additional wrong: It creates human beings solely in order to

kill them for their cells. This is the ultimate reduction of a fellow human being to a mere means, to an instrument of other people’s wishes.

### **CAN CELLS WITH THE PROPERTIES OF EMBRYONIC STEM CELLS BE OBTAINED WITHOUT DESTROYING EMBRYOS?**

Yes. For example, in November 2007 several teams of scientists discovered a way to “reprogram” ordinary adult cells to produce cells with the versatility of cells obtained from embryos. These “induced pluripotent stem cells” or “iPS cells” pose no serious moral problem, are easier to produce than embryonic stem cells, and can be tailor-made as an exact genetic match to each patient. Many experts say advances like this will make stem cell research that requires destroying embryos obsolete.

### **DOES OPPOSITION TO CLONING AND EMBRYONIC STEM CELL RESEARCH COME ONLY FROM ONE THEOLOGICAL OR POLITICAL VIEW?**

No. Serious moral concerns about these practices have been raised by an array of both religious and secular groups, including some who disagree with the Catholic Church about abortion—Friends of the Earth, the United Methodist Church, etc. The human cloning ban supported by the Church has been approved twice by the House of Representatives by an overwhelming bipartisan majority. Many other countries (including Canada, France, Italy, Germany and Norway) have passed similar bans. Opposition to the idea of treating early human life as a mere object or commodity in the laboratory transcends religious and political divisions.

For the U.S. bishops’ official 2008 policy statement “On Embryonic Stem Cell Research” and for more information, see [www.usccb.org/prolife/issues/bioethic](http://www.usccb.org/prolife/issues/bioethic).

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