

**Q: When does human life begin?**

A: Science is clear that a new distinct human organism is created at the moment of conception. The Catholic Church teaches that we must respect and protect human life from conception to natural death.

**Q: What are stem cells?**

A: Stem cells are cells that are undifferentiated. This means they have not yet committed to becoming a certain cell type, like a brain cell or a muscle cell.

**Q: Why are stem cells important?**

A: Because stem cells can become different tissue types, it is thought they can replace damaged cells or tissue that cause many conditions such as diabetes, Parkinson's disease, spinal cord injuries, and heart disease.

**Q: Is there a difference between adult and embryonic stem cells?**

A: Yes. Embryonic stem cells come from an embryo, 5-7 days after fertilization (the blastocyst stage). Adult stem cells are abundant in umbilical cords, placentas, bone marrow, and several other tissues in the body. These stem cells, although they do not need to come from adults, are referred to as "adult stem cells" to distinguish them from "embryonic stem cells".

**Q: Is stem cell research ethical?**

A: The answer is not a simple yes or no. Research on stem cells, themselves, is not unethical, they are just cells. Whether stem cell research is ethical depends on how the researchers got the stem cells. Harvesting

adult stem cells from umbilical cords or bone marrow does not require that the individual be destroyed. For embryonic stem cells, this is not the case. In order to harvest embryonic stem cells, the embryo must be destroyed. *Any stem cell research that requires the destruction of human life is unethical.*

**Q: Where do scientists get human embryos for research?**

A: Scientists can get frozen embryos left-over from infertility treatments (IVF), they can create embryos with egg and sperm, or they can use somatic cell nuclear transfer (SCNT) to clone embryos.

**Q: Is it ethical to use embryos left-over from IVF for research since they will probably be discarded or die anyway?**

A: No. It is never ethical to intentionally destroy an innocent human life even if it is for a proposed good.

**Q: Are embryonic stem cells currently providing treatments for disease?**

A: No. To date there have been no human trials using embryonic stem cells. Treatments from embryonic stem cells are decades away if they come at all.

**Q: Are there safety concerns about using embryonic stem cells for treatment of disease?**

A: Yes. Embryonic stem cells have repeatedly caused tumors in animals. Some researchers question whether they will ever be safe to use in humans.

**Q: Are adult stem cells currently providing treatments for disease?**

A: Yes. Several stem cell therapies using a patient's own stem cells are in trials or already in use.

**Q: What is somatic cell nuclear transfer (SCNT)?**

A: SCNT is cloning. In SCNT, a technician takes an egg from a female donor, removes the nucleus, and inserts a somatic cell nucleus with its DNA into the "empty" egg. SCNT is the transfer of the nucleus of a somatic cell (i.e. skin cell) to the egg. The egg begins to divide and a cloned embryo is created. Scientists want to clone human embryos to harvest embryonic stem cells.

**Q: Is human cloning ethical?**

A: No. Cloning human embryos for any purpose is unethical.

**Q: Is research on embryos legal in the U.S.?**

A: Yes. There is no federal ban on creating or destroying human embryos for research. Scientists are free to conduct research on human embryos in most states. The Dickey Amendment restricts using federal tax-payer dollars to fund research that creates or destroys human embryos.

**Q: Is human cloning legal in the U.S.?**

A: Yes. There is no federal ban on SCNT in humans. In most states, researchers are free to clone human embryos. The Dickey Amendment prohibits using federal tax-payer dollars to fund research that clones human embryos.

"God's love doesn't make the distinction between the embryo inside its mother, the child, the youth, the mature adult or the elderly person. All human life is sacred and inviolable, from conception to its natural end."

--*Pope Benedict XVI*

"If human embryonic stem cell research does not make you at least a little bit uncomfortable, you have not thought about it enough."

--*James Thomson, pioneer in embryonic stem cell research*

"... is there really any difference between studying a two-cell human embryo and studying a human cadaver? Well, yes. The embryo is alive. And then there is the matter of informed consent. An adult can make a gift of his or her future dead body to science; no one can ask an embryo anything."

--*Elaine Dewar, investigative reporter*

"Given that embryos are human beings, they have a right to self and a right to life. Exploiting their parts (ie, cells) or killing them for research is moral trespass that society should not allow. Even if the research might, and let's be clear, might benefit others, this trespass is not justified."

-- *James Sherley, associate professor of biological engineering at MIT*

For more information on stem cell research and cloning in light of the Catholic Church's teaching on the sanctity of human life please visit: [www.MaryMeetsDolly.com](http://www.MaryMeetsDolly.com) a Catholics Guide to Genetics, Genetic Engineering and Biotechnology.

**Rebecca Taylor** is a Clinical Laboratory Specialist in Molecular Biology and a Catholic. She has worked in the biotechnology field for over a decade. She has been writing and speaking on Catholicism and biotechnology for four years and has been interviewed on local and national Catholic radio on topics from stem cell research to voting pro-life. She can be reached at [rhtaylor@marymeetsdolly.com](mailto:rhtaylor@marymeetsdolly.com).

# Quick Facts on Stem Cell Research and Cloning For Catholics