

A Primer on Human Cloning

Christian Life Resources

Cloning moved from the arena of movie-scripting to reality in 1997. It was in that year that *Nature* journal (Nature 385, 810-13, 1997) announced Scottish scientists had cloned a sheep named Dolly. The worldwide scientific, religious, political, ethical and moral implications of cloning continue to spread since then.

What is human cloning?

Human cloning produces the genetic duplication of another human. The genetic code is copied deliberately from one person to make another person with the same genetic material. A cloned embryo is a twin of its donor – essentially at an earlier stage of life. It is human and has only one parent with the same genetic makeup as that parent.

Cloning technologies involve three (3) different types:

1) **Recombinant DNA Cloning** (AKA "recombinant DNA technology"; "DNA cloning"; "molecular cloning"; "gene cloning")

This type involves the transfer of a DNA fragment from one organism to a self-replicating genetic element. The DNA of interest can then be propagated in a foreign host cell. This type of cloning creates fewer ethical concerns since it involves the cloning of DNA rather than the cloning of a human being.

2) **Reproductive Cloning** (AKA "somatic cell nuclear transfer" [SCNT])

This technology generates an animal with the same nuclear DNA as another living or previously existing animal. SCNT bypasses sexual production by creating embryos without fertilization. The nucleus of a cell which contains genetic materials is taken and implanted into a hollowed-out egg deprived of a nucleus. The reconstructed egg is treated with chemicals or electric current to stimulate cell division. The cloned embryo is then transferred into a female's womb (or an artificial womb) until the clone is born. This process is already being tested on human subjects as well as animals.

A high rate of death, deformity, and disability is associated with this form of cloning. Dolly was cloned after 276 attempts.

3) **Therapeutic Cloning** (AKA "embryo cloning"; "clone and kill")

This type involves the production of human embryos solely for research use. To date, cloned embryos are used and destroyed within 14 days of existence.

Scientists harvest embryonic stem cells which can generate into any type of specialized cell in the human body. These stem cells are extracted from the embryo after five days' division. The extraction destroys (kills) the young embryo's life, raising grave ethical concerns from life-affirming organizations such as Christian Life Resources.

In November 2001, ACT (Advanced Cell Technologies), a Massachusetts biotech company, announced the first cloning of human embryos for therapeutic research. This breakthrough had limited success: 3 of 8 eggs actually divided and only one divided into 6 cells before the cloning ended.

So what is the difference between "reproductive" and "therapeutic" cloning?

Since all human cloning is reproductive (it duplicates genetic code of the donor to make a new human life), the issue is really the **intention** for that life. The intent of reproductive cloning is to bring about a live birth; the intent of therapeutic cloning is to harvest the stem cells of the 5-7 day-old embryo and use those stem cells for therapeutic purposes.

Why is CLR in support of a cloning ban?

God, in His Word, provides clear principles dealing with human life:

- God alone has authority over life and death.

See now that I myself am He! There is no god besides me. I put to death and I bring to life.
(Deuteronomy 32:39)
The LORD brings death and makes alive. (1 Samuel 2:6)

- Man has the responsibility to preserve and protect human life.

And for your lifeblood I will surely demand an accounting. I will demand an accounting from every animal. And from each man, too, I will demand an accounting for the life of his fellow man. Whoever sheds the blood of man, by man shall his blood be shed; for in the image of God has God made man. (Genesis 9:5,6)
The commandments, "Do not commit adultery," "Do not murder," "Do not steal," "Do not covet," and whatever other commandment there may be, are summed up in this one rule: "Love your neighbor as yourself." (Romans 13:9)
Speak up for those who cannot speak for themselves. (Proverbs 31:8)

- Human life is present long before birth. In fact, human life and accountability for sin are evident at the earliest stages of life.

Surely I have been a sinner from birth, sinful from the time my mother conceived me. (Psalm 51:5)
Before I formed you in the womb I knew you, before you were born I set you apart. (Jeremiah 1:5)

These passages direct mankind to respect God's authority over life and death. We do not have the right to assume God's authority for ourselves, but rather have the responsibility to protect human life, even from its earliest stages.

Besides the death of human life at its embryonic stage, what other risks are involved in cloning?

There is always the concern that human life will become a commodity rather than appreciated as a blessing from God. When the true value of human life is diminished, it is possible to rationalize and justify actions that are otherwise considered unethical and harmful. The reality is that some already determine that a "potential cure" has a greater value than an existing human life. The risk is that this immoral attitude will spread as the value of human life continues to diminish.

The intent of therapeutic cloning is to destroy human lives within the first week of life. In spite of claims that this will benefit mankind, there is no justification in God's Word for such action. Therefore, all therapeutic cloning must be condemned.

Reproductive cloning is done in the same manner, but for a completely different intent. The goal of sustaining a human life is commendable and more desirable than the planned destruction of those lives, but the inherent risks involved in the cloning process make it hard to justify as a God-pleasing procedure. When considering the very low success rates and the subsequent destruction of the young lives that are considered "failures," this procedure as well cannot be supported or encouraged.

Does a clone have a soul?

The term "soul" is defined in many ways. For some it is an "inner strength" for others it is simply used as a figure of speech, but for Christians it is the part of a person, given by God, that lives eternally. It joins with the physical body at the beginning of life, and separates from the body at physical death.

Although God's Word does not specifically address the issue of clones, we do know that there is no life apart from the presence of a soul. If a human clone is alive, then we conclude that the living human being, regardless of how his/her life began, is a living being because there is a soul present. More importantly, we must conclude that a clone is equally in need of a Savior from sin and therefore will want to share the Gospel message of salvation with him/her.

Do not be afraid of those who kill the body but cannot kill the soul. Rather, be afraid of the one who can destroy both soul and body in hell. (Matthew 10:28)

As the body without the spirit is dead, so faith without deeds is dead. (James 2:26)

What cloning technology is on the horizon?

The cloned embryo dies after its stem cells are extracted. Speculation exists that these embryonic stem cells hold "promises" of cures for a number of human injuries, illnesses, and disease such as Alzheimer's, Parkinson's and diabetes.

Reproductive cloning is also a way for scientists to repopulate endangered animals or animals that have difficulty in breeding. In 2001, the world's first cloned endangered animal was born. The gaur (a wild ox) died two days later from an infection. That same year a mauflon, a wild sheep, was also cloned. It is living at a wildlife center in Italy.

Scientists also hope to generate tissues and organs for transplantation. It is speculated that once the organ is cloned, it would be rejection-free.

In January 2006, a scientist team at the WiCell Research Institute, a private laboratory affiliated with UW-Madison, developed a precisely defined stem cell culture system free of animal cells and used it to derive two new human embryonic stem cell lines, named WA 15 and WA 16, from donated frozen embryos.

Despite the theories, embryonic stem cell research has failed to produce any successful cures. However, other scientists point to adult stem cells (from umbilical cord blood and bone marrow) which are showing successes in patients with conditions such as heart disease, multiple sclerosis, and diabetes.

What animals have been cloned?

A tadpole was first cloned in 1952. Sheep, goats, carp, cows, mice, pigs, cats, rabbits, and gaur have since been cloned by nuclear transfer technology. In 2003, a horse, white-tailed deer and mule were cloned. An Afghan hound dog, named Snuppy, was cloned in South Korea in 2005. The world's first extinct mammal, a subspecies of a mountain goat known as a Pyrenean ibex, was cloned using tissue samples from one found dead in early 2000; the kid, born in January 2009, died 9 minutes after birth due to malformed lungs. In April 2009 the first cloned camel was born in the United Arab Emirates.

Some species are more resistant to SCNT and cloning experiments have failed with monkeys and chickens.

Research involving cloning is very expensive and many institutions can receive lucrative funding for research. Cloning has had a high rate of failures, miscarriages and stillbirths. The rate of "success" of cloned offspring is less than 10 percent. For example, 841 horse embryos were created and only two dozen lived past their first week.

At this time, cloned animals tend to have immune dysfunction, aggressive behavior and increased rates of infection, tumor growth and other disorders. Studies of cloned mice show early death rates. Cloned calves also died prematurely and were disproportionately large in size. Australia's first cloned sheep died suddenly and mysteriously having appeared healthy.

What is the status of human cloning in the United States?

The U.S. House of Representatives has passed legislation twice to ban both **therapeutic cloning** – taking the life of a human at the embryonic stage in order to extract stem cell lines – and

reproductive cloning for the purpose of creating babies with genomes identical to a living person.

For a current listing of state cloning laws, [click here](#).

On March 9, 2009, President Barack Obama signed an executive order to lift restrictions on the federal funding of embryonic stem cell research. In comments made at the signing, Obama stated his administration would develop "strict guidelines" to avoid human cloning experimentation for human reproduction, because its misuse or abuse cannot be tolerated. Despite assurances by Obama that the government never "opens the door" for human cloning, critics say stem cell research can lead to the cloning process.

Is cloning legal outside the United States?

A South Korean research team announced successes in human cloning in early 2004 by producing embryonic stem cells for therapeutic reasons. However, in January 2006 Seoul National University found that Prof. Hwang Woo-Suk faked this claim.

A government panel in Japan approved therapeutic cloning in June 2004.

Britain now allows human cloning for therapeutic purposes.

France banned human cloning for therapeutic purposes in July 2004 but suspended a ban on stem cell research for five years.

Likewise, Singapore banned human cloning in September 2004 but allowed therapeutic cloning to extract stem cells for research.

The United Nations passed in early 2005 by majority vote a recommendation for all nation states to ban all forms of human cloning.

In May 2005, a South Korean team claimed to have developed 11 human embryonic stem cells tailored to match individual patients. An investigation revealed all 11 lines were faked.

In November 2007, Prof. Ian Wilmut, the Scottish scientist who produced Dolly the sheep, announced that he was abandoning "therapeutic" human cloning, the technique he pioneered, in favor of working with a reprogramming technique that regresses an adult stem cell back to its "embryonic" state without having to create a cloned human embryo or use eggs.

What does the medical community say about human cloning?

The American Medical Association and the American Association for Advancement of Science issued a formal statement against human reproductive cloning. However, cloning for therapeutic reasons is gaining momentum in the scientific and medical world.

What should people do about the cloning issue?

There are various answers to this question, but the first thing is to believe that all desires and deeds should be done to God's glory (1 Corinthians 10:31). When the motive is right, then subsequent actions are also God-pleasing.

Educate yourself on this topic. There are many people who hear parts of the story and base their conclusions on limited or biased information. For example, even the scientists who are most committed and most knowledgeable in the area of cloning, explain that cures for human diseases are at least a decade away. Yet politicians, the media, and the general public can twist the facts and conclude things that are not accurate.

Express your opinions, especially to people of influence. Let your political representatives know your stance, write letters to the editor of your local paper, and talk to friends who might not know all the information.

Pray for the Lord's help in giving you strength and guidance. With His help, you can be a faithful witness to the truth.

For additional information and resources in dealing with this life topic, visit the Christian Life Resources website at www.ChristianLifeResources.com or call us at 1-800-729-9535.