

Glossary of Terms

adult stem cell research: Research in which stem cells are non-fatally extracted from bone marrow, blood, skin, or from a person's umbilical cord blood.

cloning: A form of artificial reproduction in which the offspring produced is genetically identical to the individual from whom he or she originated. Reproduction is achieved without sexual union and without the union of gametes.

embryo: A unique boy or girl produced by natural human reproduction or artificial reproductive methods such as cloning.

embryonic stem cell research: Research in which a unique boy or girl is killed within eight weeks of conception to harvest stem cells.

gametes: Male and female germ cells (i.e., sperm and eggs).

in vitro fertilization (IVF): A method of artificial reproduction in which the man's sperm and the woman's egg (oocyte) are combined in a laboratory dish, where fertilization occurs. The resulting embryo is then transferred to the uterus to develop naturally. Usually, two to four embryos are transferred with each cycle.

natural human reproduction: Entails a male-female sexual union and the resultant union of gametes that can fuse together through fertilization to form offspring.

nucleus: The part of the cell that contains an individual's essential genetic material or "genetic inheritance."

oocyte: A woman's egg before maturation.

reproductive cloning: Cloning in which a cloned human embryo is placed in a womb for eventual birth.

somatic cell: A non-germ cell.

therapeutic cloning: Cloning in which an innocent human person is killed to obtain his or her stem cells.

[1] Other meanings of the word "cloning" are discussed in two documents of the Pontifical Academy for Life: Notes on Cloning (September 28, 1998) and Declaration on the Production and the Scientific and Therapeutic Use of Human Embryonic Stem Cells (August 25, 2000). These documents are available online at

http://www.vatican.va/roman_curia/pontifical_academies/acdlife/.

[2] Pontifical Academy for Life, Reflections on Cloning (July 11, 1997), nos. 2-3. This document is available online at http://www.vatican.va/roman_curia/pontifical_academies/acdlife/.

[3] Notes on Cloning. At times, the term "cloning" refers not to the reproduction of an individual through the transfer of a cell nucleus but to the replication of DNA or of cells, which can be morally licit: "Only the reproduction of cells starting from cells taken and separated, without doing any damage, from a human individual (who is procreated naturally and not

purposely cloned to provide cell lines), is to be considered licit, as well as the reproduction of DNA fragments for which, however, the cloning of a human individual is not foreseen as a premise or an aim in order to obtain them" (no. 3).

[4] Congregation for the Doctrine of the Faith, Instruction on Respect for Human Life in Its Origin and the Dignity of Procreation *Donum Vitae* (February 22, 1987), section II. This document is available online at

http://www.vatican.va/roman_curia/congregations/cfaith/doc_index.htm. [5] *Donum Vitae*, section II.

[6] 6 Reflections on Cloning, no. 3. [7] *Ibid.* [8] *Ibid.*

[9] Cardinal Alfonso Lopez Trujillo, Pontifical Council for the Family, Cloning: The Disappearance of Direct Parenthood and Denial of the Family (August 8, 2003). This document is available online at

http://www.vatican.va/roman_curia/pontifical_councils/family/.

[10] Notes on Cloning, no. 3. [11] Reflections on Cloning, no. 3. [12] *Ibid.* [13] Cloning: The Disappearance of Direct Parenthood and Denial of the Family, no. 3. [14] Gina Kolata, "Human Embryos Created Through Cloning," *New York Times* (February 12, 2004),

<http://www.nytimes.com/2004/02/12/science/12CELL.html>.

[15] The article does not discuss the fate of the ten embryos who arrived at the blastocyst stage but who were not killed for the sake of yielding stem cells. [16] United States Conference of Catholic Bishops, Secretariat for Pro-Life Activities, "Current State Laws on Human Cloning" (undated; available online at

<http://www.usccb.org/prolife/issues/bioethic/statelaw.htm>).

The secretariat maintains an excellent web page on cloning and cloning legislation:

<http://www.usccb.org/prolife/issues/bioethic/cloning/index.htm>.

[17] Lisa M. Krieger, "Fight for Stem-Cell Funds," *San Jose Mercury News* (November 7, 2004),

<http://www.mercurynews.com/mld/mercurynews/news/politics/>

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Cloning: An Affront to Human Dignity

ISSUE: What is human cloning? Why does the Church teach that cloning is immoral?

RESPONSE: Cloning is a form of artificial reproduction in which the offspring produced is genetically identical to the individual from whom he or she originated. Human cloning is immoral because it attacks the dignity of human procreation and because it is an affront to the dignity of the individuals involved in cloning.

What Is Cloning?

Cloning is a form of artificial reproduction in which the offspring produced is genetically identical to the individual from whom he or she originated. Natural human reproduction entails both a male-female sexual union and the union of gametes: male and female germ cells (i.e., sperm and eggs) that can fuse together through fertilization to form offspring.

In cloning, reproduction is achieved without sexual union and without the union of gametes. Although the term "cloning" has several meanings, the word "cloning" typically refers to a four step process involving the transfer of a cell nucleus. [1]

- First, the nucleus of a somatic cell of the individual that one wishes to clone is removed. A somatic cell is a non-germ cell; the nucleus contains the individual's genetic inheritance.
- Second, an oocyte's nucleus is removed. An oocyte is an egg before maturation. When an oocyte's nucleus—its essential genetic material—is removed, its maternal genetic material is also removed.
- Third, the nucleus of the somatic cell is fused with the oocyte whose nucleus has been removed. This fusion results in a new individual who is a genetic replica of the individual from whom the somatic cell's nucleus was removed.
- Fourth, this new individual can be placed in the womb so that he or she can be brought to birth; this process is popularly called reproductive

cloning. Alternatively, the new individual is not placed in the womb, but is instead experimented upon or killed to obtain his or her stem cells; this process is popularly called therapeutic cloning.

Even though the offspring produced by cloning may be a perfect physical replica of the individual who donated the somatic cell, the offspring is a distinct human person, for the offspring possesses a distinct spiritual soul created directly by God. [2]

The Immorality of Human Cloning

The Church teaches, “any type of cloning is to be considered illicit which implies the creation or splitting of embryos, no matter what techniques are used or what aims are pursued.” [3] Human cloning is immoral because it attacks the dignity of human procreation and because it is an affront to the dignity of the individuals involved.

God has willed an inseparable connection, “which man on his own initiative may not break, between the unitive significance and the procreative significance which are both inherent to the marriage act” (Humanae Vitae, no. 12). Contraception is immoral because it “deliberately deprives the conjugal act of its openness to procreation and in this way brings about a voluntary dissociation of the ends of marriage.” [4] Methods of reproduction that result in offspring apart from acts of marital union are immoral because they, too, dissociate the ends of marriage. [5]

In vitro fertilization departs from God’s plan for human reproduction because it dispenses with the act of marital union; cloning departs even farther from God’s plan because it takes the additional step of dispensing with human gametes. In obliterating the necessity of male and female gametes, cloning “represents a radical manipulation of the constitutive relationality and complementarity which [are] at the origin of human procreation.” [6] “The basic relationships of the human person are perverted: filiation, consanguinity, kinship, parenthood. A woman can be the twin sister of her mother, lack a biological father, and be the daughter of her grandfather.” [7]

Even more, cloning is an affront to the dignity of the individuals who result from cloning. Cloned individuals are deprived of the dignity of sonship, the dignity of

being the fruit of the self-giving of a father and a mother. [9]

Cloning, moreover, necessarily entails an immoral “relationship of domination over the corporeity of the cloned subject.” [10] Man, as the Second Vatican Council taught and as Pope John Paul II has frequently repeated, “is the only creature on earth which God willed for itself ” (Gaudium et Spes, no. 24). God intends human persons to be respected and loved for their own sakes; individuals reproduced through reproductive cloning, on the other hand, are brought into the world because they are replicas of another human being. They are perceived not as ends in themselves, but as mere instruments: They exist so that others can recall the persons from whom they originated and so that they can, in a sense, relive other persons’ lives. [11]

The affront to the dignity of the individuals who result from cloning is even greater when they are experimented upon and killed. In so-called therapeutic cloning, the individuals produced are utterly stripped of their dignity as persons: They have been cloned precisely so that they can be killed for the sake of their stem cells. The Church teaches that such experimentation is immoral because “it exposes the subject’s life or physical and psychological integrity to disproportionate or avoidable risks” (Catechism, no. 2295). The killing of the cloned individual is a grave violation of the Fifth Commandment (“You shall not kill”), for “even in the case of a clone, we are in the presence of a ‘man,’ although in the embryonic stage.” [12]

The cloning of a single individual generally entails the wanton destruction of numerous human lives. As documented in the next paragraph, “procuring human embryos for cloning, either for reproduction or for therapy and research, would imply destroying a large number of them.” [13]

The Status of Cloning Today

In February 2004, South Korean scientists reported that their attempts at therapeutic cloning had succeeded. Somatic cell nuclei were fused with 176 oocytes. Thirty of the 176 clones reached the blastocyst stage of human life, which normally occurs around the fourth day after fertilization; the other 146 cloned human beings presumably died. Twenty of the

30 embryos at the blastocyst stage were killed to extract their inner cell masses. Only one of these inner cell masses yielded stem cell lines. [14] It appears, then, that at least 166 cloned human beings were killed for the sake of yielding one set of stem cell lines. [15]

Human cloning is legal in the United States except in Arkansas, Iowa, Michigan, North Dakota, and South Dakota. Other states ban cloning for reproductive purposes but permit therapeutic cloning. Proposed legislation to ban human cloning nationwide has received the strong support of the United States Conference of Catholic Bishops but has failed in the Senate. [16]

In November 2004, a slim majority of California voters (51 percent) approved a ballot initiative directing the state to spend \$3 billion on stem cell research. The focal point of this voter-approved research will be therapeutic cloning. [17]

In the United Nations, the Holy See has strongly supported proposed resolutions to ban human cloning worldwide.

Summary

In the most common type of cloning (nuclear transfer cloning), the genetic material of the organism one wishes to reproduce is fused with an egg cell whose genetic material has been removed.

- The resulting human clone is either placed in a womb for eventual birth (reproductive cloning) or killed for the sake of his or her stem cells (so-called therapeutic cloning).
- Both types of cloning are gravely immoral for the same reasons: contraception and in vitro fertilization are gravely immoral: They separate the procreative and unitive meanings of human reproduction.
- Therapeutic cloning involves the additional sin of killing an innocent human person in order to obtain his or her stem cells. Both types of cloning typically involve the creation and subsequent deaths of large numbers of embryos.

Catholic citizens and public officials should work to outlaw human cloning.