



## Concerned Women for America of Kansas

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# Stem-Cell Research

## The Hopes and The Problems

An easy-to-use reference to help  
clarify the issues of:

- Cloning
- Embryonic stem-cells
- Adult stem-cells

Includes:

- Definitions of terms
- Web sites for current information

## Web sites for current, up-to-date information

*Concerned Women for America's web site has background information, definitions, reports on current research, and CWA's policy papers.*

<http://www.cwfa.org>

<http://ks.cwfa.org>

*The Coalition of Americans for Research Ethics, "Do No Harm" web site has the latest news stories about stem-cell research, and commentary by politicians, scientists, and professors, including Dr. David Prentice, senior fellow for life sciences at Family Research Council.*

<http://www.stemcellresearch.org>

*Family Research Council*

<http://www.frc.org>

*Life News has daily e-mail updates.*

<http://www.lifenews.com>

*Alliance Defense Fund*

<http://www.alliancedefensefund.org>

*Bioethics Defense Fund*

<http://www.bdfund.org>

## Overview

Currently, all types of stem-cell research are legal in the United States.

There are limits on the *federal funding* of embryonic stem-cell research. Only research on stem-cell "lines" created before August, 2001 is eligible to receive *federal funds*.

Embryonic stem-cell research has ethical problems, as well as physical problems. The ethical questions arise because embryos are destroyed when the stem-cells are extracted from them. Some justify the research ethically because they believe that a human life isn't created until it is implanted in the womb. That is biologically false. The fact is that an embryo, whether created through asexual or sexual reproduction, is a genetically complete organism that will proceed through every stage of human development unless interrupted.

Because embryonic stem cells are not differentiated in their early development stages, they are hard to control and there is a potential for tumor formation and rejection by the host.

There are no such problems associated with adult stem-cells.

According to the Coalition of Americans for Research Ethics, there are NO successful human trials for embryonic stem-cell research. However, there are more than 65 reported successes in adult stem-cell research.

# What are the facts? Where is the *real* hope?

## Cloning and “SCNT”

Somatic Cell Nuclear Transfer (SCNT) is the scientific term for cloning. It is the process by which “Dolly, the sheep” was cloned. The nucleus of an egg or oocyte is removed and replaced with a nucleus from another cell such as a skin cell, then coaxed into dividing by an electrical or chemical stimulus. This produces a genetically complete organism that will proceed through every stage of human development unless interrupted.

Cloning is “asexual” reproduction. The result is a new life, just as in sexual reproduction, whether or not it is implanted in a womb.

The process involved in “therapeutic” cloning and “reproductive” cloning is exactly the same. The only difference is how the *clone* is going to be used.

- In “therapeutic” cloning, the embryo will be destroyed when the stem-cells are harvested for research.
- In “reproductive” cloning the embryo is implanted in a womb.

In order to overcome the objections to “cloning,” proponents of embryonic stem cell research and cloning call the process “SCNT.”

**Embryonic stem-cells are also called “EARLY” STEM-CELLS by some.**

## Embryonic Stem-cells

### Problems

There are many unsubstantiated claims of promise and hope associated with *embryonic* stem-cell research. Many of the problems are in the research itself:

- There is a potential for tumor formation and tissue destruction.
- There are no human clinical treatments, and only a few, modest successes in animals.
- Destroying embryos presents ethical problems that have not been resolved.
- Cloning embryos for research would require a very large quantity of eggs. Where would they come from?

### What about personhood

SCNT produces a “clone” of the person whose nuclear material has been inserted into the egg. The theory is that cells and tissue from this “cloned” individual who has been denied personhood can then be used by the donor of the cellular material. The rhetoric is that since the reproduction was “asexual” the product is not really human, therefore has no personhood, therefore no rights.

However, it *is* a new life, and unless interrupted, it will proceed through every stage of human development.

**We all used to be EMBRYOS, or as some say, “BLASTOCYSTS.”**

## The 14-day Rule

The present cloning bills being offered forbid the preservation of clones or as they like to term them “unfertilized blastocysts”, beyond 14 days and also forbid the implantation of these clones into a woman’s uterus. Thus the term “clone and kill” came into existence.

However, after 14 days an unfertilized (asexually produced) blastocyst’s stem-cells begin to differentiate into specific cells that will form organ systems, so some scientists are thinking that perhaps a clone should be allowed to live longer so as to be able to harvest specific tissue that will *not* cause the rejection process in the donor of the nuclear material used to create the clone.

The theory is to place a person’s nuclear material into an egg, then grow the “clone” until the proper time which is now being proposed by some scientists to extending into 11 and 12 weeks and more.

### In Vitro Fertilization (IVF)

*In vitro* fertilization is a process in which embryos are cultured in a Petri dish after fertilization outside the woman’s body and allowed to implant in a woman’s uterus.

Very often embryos which are not used are frozen for a possible later pregnancy, or they are discarded. Many researchers would like to use these “left-over” embryos for research. By extracting the stem-cells, however, the embryo is destroyed.

## Adult Stem-cells

### Effective treatments

- Stroke: adult stem-cells from brain, bone marrow, and umbilical cord blood provide therapeutic benefit after a stroke
- Spinal Cord Injury: adult stem-cells are capable of re-growth and reconnection in spinal cord.
- Diabetes: pancreatic liver, intestinal, spleen and bone marrow cells can form insulin-secreting islets.
- Heart Damage: bone marrow, muscle, and heart stem-cells have been found to repair the heart.
- Parkinson’s Disease: neural stem-cells can form all neuronal types, migrate throughout the brain to repair damage, and prevent loss of neurons associated with Parkinson’s disease.
- Successes are also being reported in the following treatments using adult stem-cells:
  - Cancers
  - Autoimmune diseases
  - Anemias
  - Immunodeficiencies
  - Bone/cartilage deformities
  - Corneal scarring
  - Repairing cardiac tissue after heart attack
  - Growth of new blood vessels
  - Skin grafts
  - Wound healing