

DON'T DENY HOPE

SAVING AND IMPROVING LIVES THROUGH STEM CELL RESEARCH

Frequently Asked Questions About SCNT (Therapeutic Cloning)

1. Whether you call it "therapeutic cloning" or "somatic cell nuclear transfer" or "nuclear transplantation," it is still cloning - isn't it?

Scientists do many kinds of cloning every day, most of which is commonly accepted. Cloning has allowed scientists to develop powerful new drugs and to produce insulin and useful bacteria in the lab. It also allows researchers to track the origins of biological weapons, catch criminals, and free innocent people.

There's a world of difference between reproductive cloning - something that should be banned right away - and therapeutic cloning. Therapeutic cloning offers great promise for curing deadly and terrible diseases. Therapeutic cloning could *save* lives; it doesn't *create* people.

2. What exactly is therapeutic cloning?

Better described as somatic cell nuclear transfer (SCNT), therapeutic cloning is the transplanting of a patient's DNA into an unfertilized egg in order to grow stem cells that could cure devastating diseases. The promise of SCNT is that the patient's body would accept these cells after transplantation. Therapeutic cloning produces stem cells, not babies. NO sperm is used in this procedure. The cells are not transplanted into a womb. SCNT aims to treat or cure patients by creating tailor-made, genetically identical cells that their bodies won't reject. In other words, SCNT could allow patients to be cured using their own DNA.

3. What exactly is reproductive cloning?

Reproductive cloning is the use of cloning technology to create a child.

CAMR opposes reproductive cloning. Patient advocacy groups and leading scientists, including the National Academy of Sciences, and a huge majority of the American people agree that human reproductive cloning should not be allowed.

4. How can therapeutic cloning, or SCNT, help cure disease?

Many of the most debilitating diseases and conditions are caused by damage to cells and tissue. When combined with stem cell research, SCNT could be used to develop new and innovative treatments - such as replacement cells and tissue - that allow organs to function again and restore hope to millions of families.

SCNT is also integral to improving scientists' understanding of how stem cells and other cells develop. This new knowledge could speed the search for new treatments - and possibly cures - for some of the most complex diseases that plague our society.

In particular, SCNT could allow researchers to move stem cell research to a new level, developing stem cell therapies that are specifically tailored to an individual's medical condition. Moreover, SCNT could help scientists develop stem cells that will not be attacked and destroyed by the body's immune system. This holds particular promise for patients who suffer from diabetes, heart disease, and spinal cord injuries.

5. With therapeutic cloning, aren't we going down a slippery slope with this brand of science toward creating life?

Not at all. With therapeutic cloning, there is no fertilization of the egg by sperm, no implantation in the uterus and no pregnancy. Dr. Harold Varmus, the former head of the National Institutes of Health (NIH) and a Nobel laureate, says there is a profound distinction between cloning with the intent of making a human being and research cloning to help understand and treat life-threatening diseases and conditions.

6. Don't we already have enough stem cells for research? Plus aren't adult stem cells more promising than embryonic stem cells? Why must we use SCNT?

No, we don't have enough stem cells for research. There are only a small number of NIH-approved embryonic stem cell lines available to government-supported researchers and not enough to proceed at full pace with extensive research into treatments and cures. There certainly are not enough to turn research into treatments.

Adult stem cell research shows promise in some areas and should be pursued. However, our nation's top scientists, the National Institutes of Health, and the National Academy of Sciences all agree that embryonic stem cells have greater potential - they are "pluripotent" (can make any cell in the body) and "immortal" (can be grown in a lab indefinitely) - than adult cells.

Another important use of SCNT is to create new embryonic stem cells. The cells currently available to researchers are insufficient because:

- They do not allow full investigation of the genetic causes of disease. For example, scientists need to create new cells that actually contain genetic diseases in order to study how these diseases affect the growth and development of other cells and tissue.
- They are not sufficiently racially or ethnically diverse. Certain diseases are more prevalent in people of particular races, like sickle cell disease. By creating new stem cells from people of specific races, scientists could help unravel the causes of these diseases.

Bottom line: scientists need more cell lines to fulfill the promise of embryonic stem cell research.

7. What is so wrong with legislation that bans therapeutic cloning?

Legislation that bans therapeutic cloning ties the hands of scientists who are working on cures and treatments and prevents scientists from helping the 100 million

Americans who suffer from so many terrible diseases. Some legislation even puts doctors and patients in jail if they conduct research or receive this type of treatment in the U.S., as well as in other countries.

8. Some people and organizations favor a temporary moratorium, which sounds reasonable. What's wrong with a moratorium?

A "temporary" moratorium equals a ban. We should be giving our top scientists and doctors every possible tool to push for breakthroughs in treating cancer, Alzheimer's Disease, Parkinson's Disease, juvenile diabetes, spinal cord injuries, stroke and a multitude of other diseases. Further, a moratorium is unnecessary because the National Academy of Sciences has already studied the potential of therapeutic cloning and issued a recent report validating this research.

A moratorium would:

- Put life-saving medical breakthroughs on indefinite hold. Many of the patients suffering from these diseases do not have time to wait. For them, a delay in research could be a death sentence.
- Send the wrong signals to our scientists. It would tell scientists, including those just beginning their careers, that therapeutic cloning should not be pursued for fear that the work could become illegal at some unknown point in the future. It would stigmatize this research as suspect. It, in effect, would bring this type of research to a grinding halt, making it difficult to be restarted once the moratorium expires.
- Allow other countries to take the lead in cutting edge research. While research in the U.S. would stop, it would continue in other countries. The result would be the development of cures and treatments elsewhere. Americans would, therefore, have less access to breakthrough drugs and products.
- Set up political hurdles down the road because lifting a Congressional ban is more complicated and time-consuming than it sounds. Terminally ill patients would be forced to wait while politicians discuss, debate and delay.

With these diseases affecting over 100 million Americans, there is no time to waste. Just ask anybody who suffers from Parkinson's or anyone who cares for someone with Alzheimer's whether they are willing to wait. [Read more about why a moratorium equals a ban.](#)

9. With confusion about the different kinds of cloning, what is to prevent unethical, rogue scientists from performing full-fledged, reproductive cloning under the guise of therapeutic cloning?

We support immediate creation and enforcement of strict regulations to supplement existing FDA regulations, including a complete ban on reproductive cloning, stiff penalties for breaking the law, and rules to ensure that therapeutic cloning occurs under a comprehensive oversight system.

10. Would therapeutic cloning lead to a market for women's eggs and the exploitation of women?

There won't be a market for eggs. The main purpose of SCNT is to perform research to understand how cells develop. Once that is understood, the process can be replicated in a laboratory and there will be no need for new eggs.

We support the review by an independent review board to ensure that the research will be done according to the highest ethical standards including protection of women, informed consent, and no undue financial inducements.

11. Isn't therapeutic cloning a slippery slope that leads to reproductive cloning? Where is the dividing line?

Implantation into a womb is the clear, bright line that divides reproductive and non-reproductive technologies. Without implantation, no new human life is possible. This is where society can and must draw the line.

It is the responsibility of lawmakers to establish lines between what is acceptable and what society as a whole has deemed unacceptable.

12. So what should elected officials do – what is CAMR's solution?

We should immediately adopt legislation that keeps the door open to life-saving medical research, but closes it on reproductive cloning. It would be a tragic mistake to let our outrage over reproductive cloning blind us to the life-saving potential of therapeutic cloning.

This type of legislation reflects the approach recommended by several blue-ribbon scientific and medical panels, including the National Academy's Panel on Scientific and Medical Aspects of Human Cloning and the California Advisory Committee on Human Cloning, as well as 40 Nobel laureates and, perhaps most importantly, millions of patients and their families.

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