Stem Cell Research: Therapeutic Cloning - 2003

I have put before you this day life and death.
Choose life that you and your children may live.
Deuteronomy 30:20

Jewish text holds that human beings are charged with doing everything possible to save another person's life. Our tradition requires that we utilize all of our knowledge and abilities in order to heal the sick. "When one delays in doing so, it is as if he has shed blood."
Shulchan Arukh Yore De'ah 336:1

Issue
Recent developments in biological science have opened doors to incredible life-enhancing and life-saving technologies. While embryonic stem cell research and the application of technologies such as therapeutic cloning raise complex moral issues, they hold tremendous promise for treatment of disease and devastating medical conditions.

Background
Modern medical research is rapidly developing more effective cures for a host of diseases. In the past, doctors could usually only treat the symptoms of illness—the treatments rarely addressed the causes of disease. Today, many of the cures being developed by scientists are based on advanced techniques that are able to target the causes of disease rather than simply treating the symptoms. One of these techniques is called stem cell therapy.

Cells are the basic building blocks of the human body. They compose our skin, muscles, bones and all of our internal organs. They also hold keys to how our bodies function. There are hundreds, perhaps thousands, of specialized cell types in the adult body. All of these cells perform specific functions for the tissue or organ they comprise. These mature cells have been differentiated, or dedicated, to perform their special tasks.

Stem cells are unique in that they are uncommitted to any specific function and remain as such until they receive a signal to develop into a specialized cell. While all stem cells are capable of renewing themselves, there are important differences among the various types of stem cells.

1) Totipotent cells: The fertilized egg and the two cells resulting from the first cell division following fertilization are totipotent cells. They are considered to be "master" cells of the body and contain all the genetic information needed to create all the cells of the human body.

2)Pluripotent cells: After 3 - 4 divisions the cells of an embryo become progressively more specialized. At the next stage of division they become pluripotent cells, which are highly versatile and are capable of developing into any cell type except the cells of the placenta

3) Multipotent cells: At the next stage of cellular division, cells become even more specialized and are described as multipotent, meaning they can give rise to several other cell types, but are specialized for a particular function and capable of giving rise to various kinds of cells found in the tissue from which they were derived, such as blood stem cells that give rise only to red blood cells, white blood cells and platelets, or skin stem cells that give

rise only to the various types of skin cells. Very recently, however, scientists have been able to redirect bone marrow and blood stem cells to behave like brain cells, cardiac and skeletal muscle cells and liver cells, which suggests that perhaps they can become an important source for research.

At the present time, pluripotent stem cells can be obtained from several sources, including tissue that has been removed during terminated pregnancies and excess embryos that are produced by in-vitro fertilization clinics. They can also be derived from embryos that are created for research by using a technique known as somatic cell nuclear transfer (SCNT), in which the nucleus of a normal egg cell is removed. This cell is then fused with the nucleus from a somatic cell (that is, a cell from the human that is not an egg or sperm). The fused cell then begins the cellular division process, producing pluripotent stem cells. This technology is the basis for cloning. The reservoir of cells, developed from a single embryo, is known as a cell line. Stem cells harvested in this manner have been used for research on potential cures for debilitating diseases and medical conditions.

Adult tissue such as umbilical cord blood and bone marrow are sources of multipotent stem cells. However, the multipotent adult stem cells are less versatile than the pluripotent cells harvested from embryos. Most scientists consider that embryonic stem cells have a much greater utility and potential than the adult stem cells, because they develop into virtually every type of cell in the human body, other than those of the placenta. In addition, embryonic stem cells continue to divide indefinitely, whereas adult stem cells have not been seen to do so.

Researchers in the past few years have isolated these stem cells from human embryos and grown them in a laboratory setting. This research has already provided dramatic developments in medicine and health and holds tremendous promise for further developments. It is not unrealistic to say that stem cell research has the potential to revolutionize the practice of medicine and improve the quality of life.

Scientists hope to use stem cells to cure and control such illnesses as Parkinson's disease, Alzheimer's disease, diabetes, chronic heart disease, liver failure, cancer, multiple sclerosis and spinal cord injury. This could be accomplished by manipulating stem cells to generate new tissue that would replace the diseased or damaged tissue, nerve cells or skin cells. As this technology becomes more advanced, it could be possible to create entirely new organs that could be transplanted to replace ones that are diseased or damaged. An estimated 128 million Americans are afflicted with conditions that may benefit from embryonic stem cell research and gene therapy. Additionally, this research could help us gain better comprehension of genetics and human development, including causes of birth defects.

There are two types of human gene therapy and it is important to understand the differences between them. Somatic gene therapy targets the cells in specific organs and tissues of a person with a genetic defect needing disease prevention or treatment. This is also referred to as therapeutic cloning and is based on the SCNT technology, described above.

Germline gene therapy, on the other hand, would target the genes in the reproductive system of an individual. Because the alterations would be passed on to all future generations of that individual, with unknown potential complications and results, Women of Reform Judaism is not taking a position on germline gene therapy at this time.

The confusion between therapeutic cloning, with its enormous potential to heal, and reproductive cloning, which uses the same technology to reproduce living organisms, has led to much public debate and concern. This resolution addresses only therapeutic cloning. At this time, Women of Reform Judaism is not commenting on reproductive cloning. We must, however, recognize the importance and medical and scientific potential of therapeutic cloning. As Reform Jews, we need to continue to think and talk about the issues associated with these technologies and to promote continuing and informed public dialogue about them.

Currently, members of Congress have become increasingly interested in monitoring and governing research in the area of genetics. The bioethics legislation being introduced in Congress includes a ban on cloning in all circumstances, both for therapeutic and for reproductive purposes, as well as a bill that would prohibit reproductive cloning but does not restrict scientists from continuing research on embryonic stem cells.

Jewish tradition holds that the practice of medicine is a mitzvah, a religious duty. Medicine, as we know it today, is a scientific discipline that includes more than merely dispensing treatment to patients. It is an experimental science founded on carefully controlled laboratory and field research. According to the CCAR Responsum 5761.7, "The scientist who tests and develops a therapy is engaged in the mitzvah of healing just as surely as is the physician who administers it to the patient; the work of each is just as essential to the saving of human life as is the work of the other."

Our tradition has charged us with preserving life and promoting health. We have been given the wisdom to make informed, ethical choices. As science continues to pose complex moral questions, we must apply that wisdom and fulfill our obligation to engage in healing and alleviating human suffering.

Resolution
With a measured and cautious approach to the complex moral issue of genetic research and with the belief that "the one who saves a single life is as if that person has preserved the entire world," Women of Reform Judaism calls upon its affiliate Sisterhoods to:

1) Urge legislative and executive policies and action to encourage and provide funding for research using:
- Both embryonic and adult stem cells, over and above the existing cell lines approved for funding by the current administration;
- Somatic cell nuclear transfer (SCNT) technology for therapeutic cloning; and
- Somatic gene therapy.
2) Oppose efforts to restrict, penalize or criminalize scientists, clinicians, or patients for participating in stem cell research and SCNT technology for therapeutic purposes;
3) Support efforts by the scientific community to monitor those using SCNT technology and to develop regulations regarding its use;
4) Continue to promote informed dialogue and study regarding the ethical, social and theological implications of reproductive cloning; and
5) Hold educational programs that explore the complex issues of the genetic revolution within a framework of Jewish values.