

The Debate Over Stem Cell Research

In the national debate on embryonic stem cell research the issue is often presented in highly emotional terms. Selective language is used in an effort to tip the scales in favor of a perceived good end to try to justify the means. We hear about all of the wonderful medical advances that might possibly result from this type of research and eventual therapy. The image of a child struggling with diabetes is placed in the balance

against what is described as “just clumps of microscopic cells.” One national news magazine dismissed the entire ethical and moral aspect of stem cell research by labeling one side “embryonic research” and the other “pro-life politics.”

In order to make an informed moral judgment about one of the most important issues that we as a people are facing today we need to examine the facts carefully to understand what exactly is at issue and why it is wrong to use an evil means to achieve a good end.

Need for Correct Information

While stem cell research may not be at the top of the list of concerns that many of us face in our day-to-day life, it is nonetheless of such significance that we all need to understand fully its realities as well as its consequences. Decisions made now could establish a principle that asserts and endorses that we are free to use the drastic means of taking another human life, if we deem that the end result justifies that dire action. To concede that the end – even if it is potential relief to long-standing illnesses and injuries – justifies the means is to send our children and grandchildren headlong down a slippery slope on a moral toboggan with neither a steering bar or brakes.

“What is stem cell research?” “Why are there differing opinions on whether it is good or bad?” “Should there be government control over this type of scientific tampering with the origins of human life?”

What is a Stem Cell?

A stem cell is an unspecified cell that can renew itself and give rise to one or more specialized cell types with specific functions in the body. While it is a tiny speck to the human eye, it nonetheless has the potential to develop into a range of different tissues and is able to serve as a sort of repair system for the human body. The science of cell therapy concentrates on ways to replace, repair or enhance the biological function of damaged tissues or organs by transplantation of isolated or characterized cells. Thus, we hear so much about the potential for all kinds of cures and health care advances.

Embryonic...

At the very beginning of human life after the male sperm cell and female egg come together to form an embryo, there come into being human cells that scientists tell us are undifferentiated. Stem cells at this stage are called “embryonic stem cells” because they are located in a human embryo. Stem cells from human embryos are believed to have the potential to become a wide variety of cell types. The stem cells, which are acquired from embryos that have been classified as “left overs” from in vitro fertilization clinics or embryos that will be cloned specifically to be research subjects, are considered fair game for destruction for research purposes.

...and Adult Stem Cells

Fortunately the truth is that embryos are not the only source of stem cells and clearly not

the best source. There are a number of alternative sources of stem cells that offer more realistic hope for cures and treatments of diseases and illnesses. Stem cells from adult tissues have the potential to yield specialized cell types of the tissue from which it originated such as liver (hepatic), brain (neural), or blood (haematopoietic). These are called adult stem cells and scientists today assert that not only are adult stem cells more readily available, they also are more effective.

Stem cells derived from placental or umbilical cord blood have proven to be remarkably effective, similar to other adult stem cells. Originally it was theorized that stem cells from these various sources would be ineffective because they are limited in their ability to become various types of cells. However, alternative sources of stem cells have been successfully differentiated into needed tissue and are already healing human illnesses. According to the most recent research, adult stem cells have produced 140 successful treatments for 56 diseases.

In any number of states today, proposals have been put forward for public funding of embryonic stem cell research, with promises of potential cures and economic development. Morally, ethically and humanly speaking, one cannot justify taking innocent human life for any alleged good that might come from it. But even pragmatically, the potential benefit of embryonic stem cell research is a poor argument for such funding. Research conducted with embryonic stem cells has yet to produce a single medical benefit to any patient anywhere in the world. Nonetheless it is proposed in various states to siphon off resources that could be far better spent on much more promising medical developments that do not carry such dangerous moral and ethical consequences.

The Catholic Church's Moral Teaching

Adult stem cell research holds out the promise of a large step forward in the healing process. This research has been described as the most promising advance in medical science in the last decades. The Catholic Church is not opposed to the development of these therapies and remedies for a host of ailments and deficiencies that afflict the body. Stem cell research using stem cells from ethical sources is a continuation of the work that has been done for millennia by physicians and researchers seeking cures for illness and healing for the sick.

What the Church, as the conscience of society, calls for is moral and ethical reflection on the use of human embryos for stem cell research. No scientific, technological, or medical advances should take place divorced from human conscience and moral and ethical consideration.

Given the force of demonstrable physical data, science cannot deny that we are dealing with the continuum of human life. Therefore, we are not free to treat embryos the same way that we would treat a cancer tissue, or even a laboratory rat.

The Ethical Issue Involved

At the heart of the moral issue involving embryonic stem cell research is the fact that the embryo is killed so that his or her stem cells can be used for research. Current literature already speaks about destroying the embryo as necessary to "harvest" useful cells for the good of someone else. Since there is an undeniable continuity beginning at conception through growth, birth and the continuing development of life until the natural death of the human person, at what point do we permit harvesting of parts of that living human for someone else?

Embryonic Life is Human

Embryos are at the very beginning of the whole process of human life. We, as human

beings, in solidarity with that life, even though it is tiny and undifferentiated at this point, are not free to view it simply as a commodity for our convenience or benefit. When we enter the sacred precincts of human life – when we approach the chamber of life – we are not the masters of the room. We are not the lords of the house of life. God alone has the right to determine who lives, who dies, and the life span of each person. We are stewards, not masters of human life. Even when we put on sterilized gloves and work with technologically advanced equipment we do not take on the mantle of arbiter of human life.

In response to the questions: “Why does the Church oppose embryonic stem cell research?” “What harm can it do?” and “Should government funding be used to advance this study?” the reply seems evident.

Living with the Consequences

Our basic human obligation to respect the life of another person comes into force even when we are dealing with the tiniest form of human life. Once we place into law the presumption that we can take an innocent human life any time we want, at whatever stage we determine, we put in motion a destructive force. That process will surely empty all technology and scientific advancement of moral and ethical restraint or true value. If our society announces that it will determine at what point a human life can be used for the benefit of another, then all that is left for the next generation to do is decide when – at what age – that principle is applied.

Already there are those who argue that since the embryo is going to be destroyed anyway, we should feel free to do with it what we will. Would that principle apply to anyone who is terminally ill? It is the same offensive principle that was used to exonerate human experimentation on prisoners in concentration camps.

There are those who maintain that scientific advances should not be restrained by moral compunction. We hear over and over the claim that much good will come from this research. The end, we are told, certainly justifies any means that are used. To abandon the longstanding moral imperative that the end does not justify the means puts us on a fast track careening towards moral anarchy.

There are those who say that the voice of moral restraint, the voice of the Church, should be ignored in this area of scientific development. In a way this is a new wrinkle in the over-extension of the idea of separation of Church and state. It is the separation of moral reflection from scientific studies.

The issue of embryonic stem cell research brings us face to face with a fundamental human moral principle and decision. We cannot allow our technology to outstrip our ethical reflection. The two need to move forward together. All our capability to develop and use technology and science must always be done within the context of God's plan – the natural moral order. To be truly human means decisions should reflect the moral order and not be based on the emotional appeal of what seems to work for me right now.

As he concludes his encyclical on human life, Pope John Paul II calls us to reflect the Gospel of Life in our actions, culturally, socially and politically. “Walk as children of light ... and try to learn what is pleasing to the Lord. Take no part in the unfruitful works of darkness’ (Eph. 5.8, 10-11). In our present social context, marked by a dramatic struggle between the ‘culture of life’ and the ‘culture of death,’ there is need to develop a deep critical sense capable of discerning true values and authentic needs.

“What is urgently called for is a general mobilization of consciences and a united ethical effort to activate a great campaign in support of life. All together, we must build a new culture of life; new because it will be able to confront and solve today’s unprecedented problems affecting human life” (95).

We are not free to stand by and watch as others formulate a whole new culture in which human life is viewed basically as a commodity that can be created for parts that are bought and sold. The voice of the faithful must be heard. But first we must all be well informed on the issues, how significant they are and how they will determine the future for generations to come.

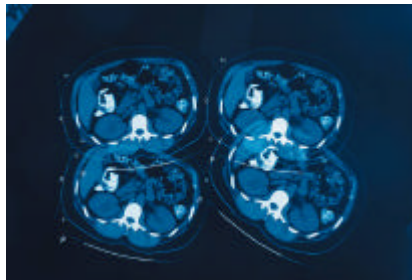
The Catholic Church brings a living ethical tradition to this and so many current issues. It does so with confidence because the Church’s moral reflection is guided by a wisdom rooted in God’s word and directed by God’s Spirit.

A Prayer...

Creator God, continue to enlighten and strengthen all of us as we face the issues of our day with an attitude and perspective rooted in the Gospel and the Church’s teaching and guided by your Holy Spirit so that we truly pass on to our children and their children a civilization of love.

[This material is taken from a pastoral letter written 22 February 2005 by Bishop Donald Wuerl who at the time was Bishop of Pittsburgh Pennsylvania.

You may find it at <http://www.diopitt.org/pastoralletters/stemcell.htm>.]



Questions and Answers on Stem Cells

What is a stem cell?

A stem cell is essentially a “blank” cell, capable of becoming another more differentiated cell type in the body, such as a skin cell, a muscle cell, or a nerve cell.

Why are stem cells important?

Stem cells can be used to replace or heal damaged tissues or cells in the body.

What are the two broad classes of stem cells?

The two board classes of stem cells are embryonic type and adult type.

The embryonic type are: embryonic stem cells and embryonic germ cells.

The adult type are: umbilical cord stem cell, placental stem cells and adult stem cells.

Where do adult stem cells come from?

- Umbilical chords, placentas and amniotic fluid – Adult type stem cells can be derived from various pregnancy-related tissues.
- Adult Tissues – In adults, stem cells are present within various tissues and organ systems. These include the bone marrow, liver, epidermis, retina, skeletal muscle, intestine, brain, dental pulp, and elsewhere. Even fat obtained from liposuction has been shown to contain significant numbers of adult type stem cells.
- Cadavers – Neural stem cells have been removed from specific areas in post-mortem human brains as late as 20 hours following death.

How do embryonic and adult stem cells compare?

Embryonic stem cell advantages:

1. Flexible – appear to have the potential to make any cell.
2. Immortal – one embryonic stem cell line can potentially provide an endless supply of cells with defined characteristics.
3. Availability – embryos from in vitro fertilization clinics.

Embryonic stem cell disadvantages:

1. Difficult to differentiate uniformly and homogeneously into a target tissue.
2. Immunogenic – embryonic stem cells from a random embryo donor are likely to be rejected after transplant.
3. Tumorigenic – capable of forming tumors or promoting tumor formation.
4. Destruction of human life.

Adult stem cell advantages:

1. Special adult type stem cells from bone marrow and from umbilical chords have been isolated recently which appear to be as flexible as the embryonic type.
2. Already somewhat specialized – inducement may be simpler.
3. Not immunogenic – recipients who receive the products of their own stem cells will not experience immune rejection.
4. Relative ease of procurement – some adult stem cells are easy to harvest (skin, muscle, marrow, fat), while others may be more difficult to obtain (brain stem cells). Umbilical and placental stem cells are likely to be readily available.
5. Non-tumorigenic – tend not to form tumors.
6. No harm done to donor.

Adult stem cell disadvantages:

1. Limited quantity – can sometimes be difficult to obtain in large numbers.
2. Finite – may not live as long as embryonic stem cells in culture.
3. Less flexible (with the exception of #1 under “Adult stem cell advantages”) – may be more difficult to reprogram to form other tissue types.

Why are adult stem cells preferable to embryonic stem cells?

Adult stem cells are a “natural” solution. They naturally exist in our bodies, and they provide a natural repair mechanism for many tissues of our bodies. They belong in the microenvironment of an adult body, while embryonic stem cells belong in the microenvironment of the early embryo, not in an adult body where they tend to cause tumors and immune system reactions. Most importantly, adult stem cells have already been successfully used in human therapies for many years. As of the date of this publication, NO therapies in humans have been successfully carried out using embryonic stem cells. New therapies using adult stem cells, on the other hand, are being developed all the time. There are many examples of success stories using adult stem cells.

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