

## **Understanding & Taking Advantage of the Stem Cell Debate**

by Craig A. Smith

On Monday, March 9, 2009 President Barak Obama lifted restrictions on the use of federal funds for human embryonic stem cell research. Reaction to this move has been understandably mixed. On the one hand, some feel that removing these restrictions may lead to significant advances in the treatment of a wide variety of medical conditions. On the other hand, some feel that they are now being forced to contribute tax dollars to research which requires the destruction of human beings. Unfortunately, the national media coverage of Obama's decision and the reactions to it have not adequately represented the complexity of the ethical and theological issues involved.

As Christians, it is important that we be able to make informed decisions about where we stand on this debate, not only so that we can stand firmly on what is right, but also so that we can take advantage of this strategic intersection between our faith and our culture. Many non-Christians are currently willing to talk about the moral issues raised by this debate and this can easily serve as a natural bridge to sharing the Gospel. This short article is intended to serve as a primer to help Christians understand the basic terms and issues involved in this conversation. It is also intended to be a resource to help Christians take advantage of the opportunity this issue provides for making an impact for the Kingdom in our spheres of influence.

### **What exactly did President Obama do?**

On Monday, March 9, President Obama issued an executive order reversing a previous ban President George Bush placed on the use of federal funds for research on human embryonic stem cell lines created after 2001. In effect, Bush prohibited researchers from obtaining federal funds to create new lines of human embryonic stem cells or to do studies using lines that were created by private companies after 2001. By lifting this ban, Obama has opened the door for federal funding to again be used to create and study new lines of human embryonic stem cells. How much federal money will actually be spent on this kind of research and to precisely what ends cannot be known until grants have been applied for.

### **What is a human embryonic stem cell line?**

Human embryonic stem cell lines are cultures of cells derived from early-stage (i.e. 4-5 days old) human embryos. At this stage, human stem cells are *pluripotent*, meaning that they have the potential to develop into any of the 200+ types of cells which make up the human body. This characteristic has long been thought to be lost once a cell differentiates into a particular type of tissue, although very recent discoveries have now shown that even differentiated cells can be reprogrammed to return to their original pluripotent state (see below). Until this new discovery, stem cells were the only known source of pluripotency. This is the primary characteristic of stem cells that has made them an object of such intense interest.

At present, human embryonic stem cells are produced via a cloning technique that produces exact genetic replicas of the previous cells. For this reason, stem cells are said

to belong to “lines”; e.g. since all cells cloned from the original human embryonic stem cell “X” derive from, and are genetically identical to, that original cell, they are all said to belong to the “X” line.

### **What is the interest in human embryonic stem cell lines?**

Because they are pluripotent, stem cells can theoretically be made to turn into any of the 200+ types of cells that make up the human body. All that is required is knowing which chemical factors cause a cell to become, for instance, heart tissue rather than skin tissue. This means that potentially any kind of needed cell can be produced: new heart cells, new skin cells, new bone-marrow cells, etc. In theory, then, stem cells might someday make possible the replacement or regeneration of lost or damaged tissue or even of whole organs. Treatments or cures for everything from cancer to diabetes to asthma are envisioned.

### **What is the source of the controversy?**

Human embryonic stem cells are obtained, as their name suggests, from human embryos: essentially human eggs fertilized by human sperm.<sup>1</sup> However, obtaining the stem cells requires the destruction of the embryo. Since many people consider human embryos to be human beings, albeit at a very early stage of development, obtaining stem cells in this manner is thought to be done at the cost of a human life.

### **How should Christians view human embryos?**

It is clear that the Bible places a high value on human life which the Bible seems to understand as beginning prior to birth. Exo. 21:22-25 mandates that if someone’s actions lead to an injurious or stillborn birth, the guilty individual is to be fined or executed accordingly, in keeping with the eye for an eye, life for a life system of restitution. Psa. 139:11 and Jer. 1:5 indicate that God takes note of - and is involved with - individuals while they are still being formed in their mothers’ wombs. Neither the Old nor New Testaments make a clear distinction between human beings *in utero* and *ex utero*; i.e. between the unborn and the born. The same words are used to describe human beings both before and after their birth.

However, it must be admitted that the Bible is not a scientific treatise on human development and that the number of applicable references is limited. Thus even Bible-believing Christians can and have advanced arguments for treating human embryos differently than human fetuses or infants. In technical terms, *zygotes* are fertilized eggs from fertilization to implantation whereas *embryos* are that phase of development from implantation (which occurs within the first week after fertilization) to about eight weeks, at which point all of the major structures and organ systems have formed and the *fetus* stage begins. Because their major organ systems are undeveloped, embryos are not capable of developing or surviving on their own and this is often a major factor in the argument that human embryos are not really human beings. But is this a solid argument?

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<sup>1</sup> It should be noted that, in the case of existing human embryo lines, each embryo is produced by cloning rather than the normal fertilization process.

In the opinion of this author, the most logical point to identify as the beginning of human life is the moment of fertilization. Developmentally, there are significant differences between not only zygotes, embryos and fetuses, but also between just-born infants and post-pubescent adults. The former is not capable of reproduction whereas the latter is capable of reproduction. Surely this is to be considered a major developmental difference, yet we consider both just-born infants and post-pubescent adults to be human. It is true that embryos cannot survive independently, but this is also true of just-born infants as well as even relatively late-stage fetuses, whom almost no-one hesitates to designate as human beings. Neither are human beings who have sustained major injury and require the use of life-support systems considered non-human.<sup>2</sup> Thus, distinctions made on the basis of development or independent viability do not seem to be solid ground for distinguishing between what is and is not human life. Rather, as George and Tollefsen ask in their non-Christian exploration of embryos: *when is there a single biological system with a developmental trajectory, or active developmental program, toward the mature stage of a human being?*<sup>3</sup> Their answer - which it should again be noted is made on the basis of scientific rather than Christian considerations - is that this moment is the point of fertilization:

...the zygote does not itself serve a functional role in the biological economy of either parent; it is a separate organism, distinct and whole, albeit at the very beginning of a long process of development to adulthood. If it is provided with resources needed by all organisms, namely nutrition and a reasonably hospitable environment, it will continue (assuming adequate health) to grow and develop.

In this sense, George and Tollefsen argue, a human embryo is an independent organism that differs from an adult human only in the degree of progress towards a goal that will not be fully attained until years later. This very practical definition strongly argues that human life, at all its various stages, is precisely that: *the life of a human being*. Consequently, any scientific research which depends on the destruction of *embryos* in actuality depends on the destruction of human *beings* and should be, for this reason, morally objectionable to all Christians. Even if all the hypothetical benefits of human embryonic stem cell research actually come to fruition (about which even many secular researchers are skeptical), the manner by which these benefits were realized will always be problematic. How many people would be comfortable receiving medical treatments developed as a result of the horrific experiments conducted on Jewish concentration camp prisoners by their Nazi captors? If there is a substantive difference between these two instances, it is not immediately obvious.

### **Is there a middle ground?**

The national press has concentrated on the ways in which President Obama's executive order will advance research that was hindered by President Bush's policy. However,

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<sup>2</sup> The debate about euthanasia is not about whether such individuals are human or not but about whether or not the maintenance of human life under such conditions is ethical.

<sup>3</sup> Robert P. George and Christopher Tollefsen, *Embryo: A Defense of Human Life* (New York: Doubleday, 2008), 39.

there have been recent advances in this field that have been significantly underreported, and which may make Obama's actions essentially irrelevant. In 2006, Sinya Yamanaka, a Japanese researcher announced that he had succeeded in turning the skin cells of a mouse into what are, essentially, pluripotent embryonic stem cells. In 2007, he repeated this success with human skin cells. Researchers in other countries have replicated his work.

There appear to be several ways of producing what are known as *induced pluripotent stem cells* (IPS cells), but all of them involve the introduction of chemical factors which force a differentiated cell to return to its pluripotent stem cell state, from which it can then be made to turn into any type of cell desired. While some difficulties of accuracy and efficiency in this process remain, the advantage of this approach is obvious: stem cells can be obtained without the destruction of human embryos. Given the current state of research and the wide-spread confidence that stem cells will be shortly available without the destruction of human embryos, President Obama's recent executive order seems premature at the very least.

### **Taking advantage of the faith/culture intersection of stem cell research.**

The news of President Obama's reversal of Bush's policy on federal funds for stem cell research provides an opportunity for Christians. People are talking about the ethical and moral implications of stem cell research and attempting to think through the complex issues, often without any clear sense of how to go about navigating this minefield. Here are some questions you can ask that may prove to be a bridge to sharing the Gospel of Jesus Christ:

*What possible advantages have you heard that stem cell research may provide us?*

Note: As of this writing, there are no approved treatments or human trials using embryonic stem cells. However, treatments using adult stem cells<sup>4</sup> or cord blood stem cells, which do not require the destruction of embryos, are numerous. The possible benefits of embryonic stem cell research are, to this point at least, entirely hypothetical.

*Why do you think we even have a need for treatments for all these problems?*

According to the Bible, the problems we are facing now are the result of human sin corrupting the natural order of things (Gen. 3, Rom. 2:20-22).

*Are you comfortable with the idea of receiving medical benefits that depend on the destruction of human embryos? Why or why not?*

Be ready: this might lead to a discussion of what makes things right or wrong. Many people in our culture hold to a kind of Star-

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<sup>4</sup> Adult stem cells are undifferentiated cells found in specific tissues or organs which can differentiate to yield the major cell types of that tissue or organ. They are not fully pluripotent, but they do allow for the repair or regeneration of the tissues or organs in which they are found.

Trek morality: the good of the many outweighs the good of the few or the one. In other words, a thing is considered right if it benefits more people than it harms. There are two problems with this theory of morality. First, there is no way to know of the balance will ultimately tip out. Perhaps the destroyed fetus would have grown up to cure cancer and perhaps one of the people saved by an embryonic stem cell therapy will be a dictator who launches a nuclear war and kills millions. We simply can't judge how much good or evil will result from a given action. Second, people who hold this view will often abandon it if it is they themselves who face harm or death for the benefit of others. And even if they stick to this theory, the question still has to be asked: isn't there a difference between sacrificing yourself for others (possible Gospel connection) and being sacrificed without your consent? The former may be noble (John 15:13), but who doesn't consider the latter to be a wrong?

*When do you think human life begins?*

See the article above for some ideas on how to address this issue.

*Did you know that the Bible not only says that all human life is equally valuable, but also that God is involved with us even before we are born?*

Read Gen. 1:26-28, Exo. 21:22-25, Psa. 139:11, Jer. 1:5 and be prepared to show people these verses and talk about their implications for the value and beginning of human life. And, of course, be ready to give the ultimate proof of God's concern for human life: He sent His only Son to die on the cross as a substitutionary sacrifice for our sins!

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