“The issue of research involving stem cells derived from human embryos is increasingly the subject of a national debate and dinner table discussions,” said President George W. Bush in a 2001 speech announcing his policy on embryonic stem cell research. More than a decade later, the discussion and debate has not only continued but has become increasingly confusing and contentious. Unfortunately, the complexity of the issue and the peculiar terminology used often prevents many Christians from developing a fully informed opinion on the matter.

Though not intended to be an exhaustive explanation of this important topic, we believe this will help to clarify and explain the questions most frequently asked about embryonic stem cell research.

**WHAT ARE STEM CELLS?**
In the human body there are around 200 different cells. Most cells are a particular type (such as the ceruminous gland cell) and have a specific function (in the case of the ceruminous gland cell, producing earwax). Stem cells differ, though, in that they are relatively undifferentiated and unspecialized—they have not yet obtained a special structure and function.

These cells are multipotent, meaning they can give rise to several other differentiated and specialized cells of the body (for example, liver cells, kidney cells, brain cells). All specialized cells arise originally from stem cells, and ultimately form a small number of embryonic cells that appear during the first few days of development.

**HOW ARE STEM CELLS DIFFERENT THAN OTHER TYPES OF CELLS?**
Stem cells have two unique characteristics: (1) an almost unlimited capacity for self-renewal (they can theoretically divide without limit to replenish other cells for as long as the person is alive) and (2) they retain the potential to produce differentiated and specialized cell types. As stem cells within a developing human embryo differentiate within the cell, their capacity to diversify generally becomes more limited and their ability to generate many differentiated cell types also becomes more restricted.
WHY ARE STEM CELLS SO IMPORTANT TO RESEARCH?
There are two main reasons stem cells are of interest to both scientific and medical research. First, stem cells provide a valuable tool for studying both normal and abnormal cellular processes. By learning how stem cells differentiate and become specialized, scientists hope to gain a better understanding of how cells in general work and what can go wrong. Second, stem cells may prove to be an indispensable source of transplantable cells and tissues for repair and regeneration. If stem cells can be used to produce new and differentiated cells that are damaged because of disease (such as Parkinson’s disease) or injury (e.g., spinal cord damage), it would transform regenerative medicine.

WHAT ARE EMBRYONIC STEM CELLS?
Embryonic stem cells (ESCs) are stem cells that have been taken from the inner cell mass of a blastocyst, an embryo of about 150 cells that has not yet implanted into a woman’s uterus. (“Embryo” is the term for humans and other mammals in the stage of development between fertilization and the end of the eighth week of gestation, whereupon the being is referred to as a fetus until the time of birth.)

WHERE DO THE EMBRYOS FROM EMBRYONIC STEM CELLS COME FROM?
Some infertile couples that wish to conceive turn to in vitro fertilization (IVF). Oftentimes during the process, more embryos are created than are implanted into a woman’s womb. If they have no intention of giving birth to these embryos, the couple can donate them for research purposes. Currently, all human embryonic stem cell lines in use today were created from embryos generated by IVF.

WHAT ARE ADULT STEM CELLS?
The term adult stem cells simply refers to any non-embryonic stem cell, whether taken from a fetus, a child or an adult. Adult stem cells are sometimes referred to as somatic stem cells to differentiate them from human germ cells, sperm cells and egg cells.

WHAT IS A STEM CELL LINE?
A stem cell line is a family of constantly dividing cells, the product of a single group of stem cells, which can be grown indefinitely in the laboratory.

WHY IS THERE A CONTROVERSY OVER ESC RESEARCH?
The process of obtaining stem cells leads to the destruction of the embryo from which the cells are taken. Because human life begins at conception, embryo destruction is immoral since it is the destruction of a human being. Even some people who do not believe that human embryos are deserving of full moral status worry about what the effects of normalizing such practices may have on society.

Advocates of ESC research, however, argue that it is unethical to impede potential advances that could heal disease and relieve the suffering of fully developed human beings. They believe that the moral status of a 150-to-200-cell early human embryo should not take precedence over responsible scientific inquiry.
DOESN’T THE GOVERNMENT BAN THE USE AND FUNDING OF EMBRYONIC STEM CELL RESEARCH?

Research using cells taken from destroyed embryos is illegal in many countries, including Germany, Austria, Ireland, Italy, Portugal and New Zealand. Most African and South American countries also have some form of restriction or ban.

However, in the United States there are no restrictions on research and only minimal restrictions on government funding of embryo-destructive research.

In 1995, Congress attached language to an appropriations bill prohibiting the use of any federal funds for research that destroys or seriously endangers human embryos, or creates them for research purposes. This provision, known as the Dickey Amendment, has been attached to the Health and Human Services appropriations bill each year since 1996.

In 2009, President Barack Obama issued Executive Order that lifted all restrictions against federal funding of stem cell research. The courts ruled that the language of the Dickey Amendment prohibited the use of government funds to directly destroy an embryo, but could not prohibit funding a research project using embryonic stem cells.

AREN’T EMBRYONIC STEM CELLS MORE EFFECTIVE THAN ADULT STEM CELLS AT TREATING DISEASES?

No. In fact, just the opposite is true: there are more than 70 conditions currently being treated with adult stem cells, and zero with embryonic stem cells. Despite the media hype of the early 2000s, embryonic stem cell research has proven to be useless at treating medical conditions. When tested on animals, embryonic stem cells turned into tumors. As biological engineer James Sherley once explained, “Figuring out how to use human embryonic stem cells directly by transplantation into patients is tantamount to solving the cancer problem.”

Government and private funding sources have consistently shown a preference for adult stem cell research. For every dollar spent on embryonic stem cell research, four dollars is spent on research using adult stem cells. However, because of its unethical nature, more needs to be done to oppose any federal funding and discourage private funding of embryo-destructive research.

CAN CHRISTIANS SUPPORT EMBRYONIC STEM CELL RESEARCH?

Several passages in the Bible strongly suggest that human life begins at conception (Job 31:13-15; Ps. 51:5; 139:13-16; Matt. 1:20). The Bible is also clear about the taking of innocent life (Exod. 20:13; Deut. 5:17). For these reasons, Christians should not support medical research that requires killing innocent human beings at the earliest stage of their development.