

When Stem Cell Research Gets Personal (Part 1)

Interview With Bioethicist on Umbilical Cord Cell Banking

By Kathleen Naab

PHILADELPHIA, Pennsylvania, JUNE 8, 2009 (Zenit.org).- The debate surrounding embryonic stem cell research is portrayed as an exercise in discerning politics from science.

But there are undoubtedly some personal issues involved. The stem cell debate gets personal when citizens' tax dollars are used to fund the research, regardless of if the citizens are in agreement.

As the U.S. government follows President Barack Obama's March 9 executive order to direct U.S. tax dollars to the funding of embryonic stem cell research, ZENIT spoke with Father Alfred Cioffi about stem cell research and the particular promise offered by these powerful cells found in umbilical cord blood.

Father Cioffi, a priest of the Archdiocese of Miami, is a research ethicist for the [National Catholic Bioethics Center](http://NationalCatholicBioethicsCenter.org). He has done extensive study and work in bioethics and research, focusing his first doctoral thesis from Rome's Pontifical Gregorian University on "The Fetus as Medical Patient: Moral Dilemmas in Prenatal Diagnosis." He earned a second doctorate in genetics from Purdue University, with a thesis on "The VWG Hypothesis: Predicting Distinct Chromatin Structures from the DNA Sequence."

ZENIT: There is still a lot of public confusion about stem cell research and what it's all about -- oftentimes confusion amplified by false or misleading press reports. Could you explain the basics of the research?

Father Cioffi: The cell is the basic unit of life on this planet earth. All living creatures are made up of cells. Our bodies are made up of trillions of cells: bone cells, skin cells, liver cells, brain cells, etc,. Stem cells are cells deep within our body that produce other cells; stem cells make other cells. So, when we are either developing, or when there is an injury or disease, stem cells are active making new cells -- either to form an organ or tissue, or to repair a damaged organ or tissue.

Stem cell research uses stem cells in the lab to try to heal injured organs and tissues of the human body. It does this by seeking to turn human stem cells into cell lines. Our bodies are made up of approximately 220 cell lines: bone cells, muscle cells, brain cells, liver cells, etc,.

According to their origin, there are two types of stem cells: embryonic stem cells and adult stem cells. Embryonic stem cells come from embryos; adult stem cells come from "adults," that is, from people who are already born -- so, even babies have "adult" stem cells, because they are already born. So far, the only stem cells that have given results are the adult stem cells, and there's a fairly simple explanation for this.

Embryonic stem cells actually have too much potential; why? Because all of the organs and tissues of the embryo come from embryonic stem cells -- the whole embryo is formed from embryonic stem cells. So, when embryonic stem cells are transplanted into an injured organ or tissue, they actually grow uncontrollably, too fast, too much. The end result is a tumor: cancer. Why? Because, essentially, the whole little embryo wants to grow there, where the embryonic stem cells have been placed.

To obtain embryonic stem cells, the embryo has to be killed, destroyed. That is why the Catholic Church, and many people of conscience, are opposed to embryonic stem cell research.

In contrast, adult stem cells, coming from the various organs and tissues of our bodies, are more tame, and do not grow as fast or as much. Why? Essentially, because all that is needed to heal, say, a skin cut, is for the adult skin stem cells to grow just enough skin to replace the damaged area. In other words: Adult stem cells are already pre-programmed to replace the various organs and tissues of our body, each according to its type.

No one has to be killed to obtain adult stem cells. In fact, an added advantage is that they can be obtained from the same patient, thus avoiding the problem of immune rejection of the embryonic stem cells. That is why the Catholic Church actually encourages adult stem cell research.

ZENIT: So when U.S. President Barack Obama spoke of the triumph of science a few weeks ago with his reversal of the Bush ban for federal funding on stem cell research, he missed the mark?

Father Cioffi: He missed the mark indeed. Sadly, that decision was entirely driven by an ideology that puts a particular agenda in front of whatever scientific evidence there is. The reader can go to www.stemcellresearch.org, and see for himself the dozens of cures that have already been obtained with adult stem cells, and the zero cures with embryonic -- all documented with research articles in scientific journals.

ZENIT: So why is there interest in embryonic stem cells?

Father Cioffi: Three main reasons, I believe: finances, theoretical biology, and ideology.

Finances: Sadly, because of the money involved. It's all about the patents. It turns out that, since there have been so many successes in adult stem cell research, practically all of the patents are already taken up by biotechs and pharmaceuticals. However, due to the lack of results with embryonic stem cells, the slightest success in a particular biochemical pathway breakthrough is patentable, and the patent field here is wide open. Certainly, this is highly speculative research (using embryonic stem cells), which is what tends to give better returns when there is the tiniest hint of possible success. At a time when the economy is struggling, these speculative investments are a big temptation to provide the "quick fix" that everyone is desiring, so promises sell big during these times. To witness: In 2004, pro-embryonic stem cell ideologues convinced the people of California to devote \$3 billion of their state taxes to this research, sold as the "cure-all" for the state's financial bankruptcy.

Theoretical biology: Theoretically, embryonic stem cells should be able to regenerate and replace all of the 220 cell lines that make up the tissues and organs of our body. Why? Because they come from the Inner Cell Mass of the very early human embryo (the blastocyst: about one to two weeks old), and the entire embryo develops from the Inner Cell Mass. In practice, however, as I explained above, these cells have too much potential, and end up growing uncontrollably, causing tumors. Therefore, some scientists are saying: "Give us enough time and money, and we'll tame these 'wild' embryonic stem cells to grow into the various cell lines needed." And that's precisely what we, as pro-life people, don't want scientists to do, because using more time and more money means destroying many more human embryos in the process. And, of course, if they are successful eventually, that would only stimulate even more scientists to destroy more human embryos for their coveted stem cells.

Ideology: Embryonic stem cell research has nothing to do with the legalization of abortion, and has everything to do with the legalization of abortion. It has nothing to do with the legalization of abortion because there is no pregnancy involved. That is, these early embryos (blastocysts) are typically frozen in liquid nitrogen (cryopreserved) in in vitro fertilization clinics, and are considered "excess" by their parents, since their parents already obtained the pregnancy and birth of the baby that they wanted. If there is no pregnancy, then there is no "conflict of interest" between the mother and her unborn. On the other hand, it has everything to do with the legalization of abortion. Why? Because, by giving some human status to these frozen human embryos, it begins to undermine the abortion mentality that says, "They are not really human beings." In other words, the pro-abortion (pro-choice) forces in our society are adamantly opposed to any suggestion of even the earliest human embryo being recognized as human. In the mind of these ideologues it is

essential to continue to promote the perception that these early human embryos are "just a clump of cells" that should be used for advancing medical cures.