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TEN PROBLEMS WITH EMBRYONIC STEM CELL RESEARCH

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Embryonic stem cells are the basic building blocks for some 260 types of cells in the body and can become anything: heart, muscle, brain, skin, blood. Researchers hope that by guiding stem cells in the laboratory into specific cell types, they can be used to treat diabetes, Parkinson's disease, heart disease, or other disorders. The primary clinical source is the aborted fetus and unused embryos currently housed in frozen storage at IVF facilities. A developed stem cell line comes from a single embryo, becoming a colony of cells that reproduces indefinitely. Consider now the following ten problems with Embryonic Stem Cell Research (ESCR).

1. The issue of who or what

As the nation sits embroiled over the battle of where to draw the line on ESCR, the real issue that truly divides us is whether embryonic stems represent a who or a what. In other words, are we talking about people or property?

Since Roe v. Wade we have not been willing or able as a nation to address the issue. As a result, those who oppose ESCR and those who support it will never reach an acceptable point of compromise. Still, in the midst of the flurry of all this biotechnology and all the problems it presents, there is some very good news that has been overlooked by almost everyone. Ready? Cloning proves scientifically that **life begins at conception**—a position to which the author and most Christians philosophically already adhere.

Additionally, the insights provided by cloning technology destroy the scientific and legal basis of distinguishing a preembryo from an embryo, the popular distinction made at 14 days after conception. This is significant because this distinction determines the handling and treatment of human life less than 14 days old, which is so basic to all ESCR.

In short, our understanding of embryonic development as provided by cloning technology could force not only those who participate in ESCR specifically, but also those who participate in in-vitro fertilization (IVF)

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procedures generally, to recognize there is no real preembryo—embryo distinction and that all human life begins at conception. Therefore, as a nation, we should rightly adjust the moral and legal treatment and status of all embryos to people not property from the point of conception.

2. The deliberate misuse of terminology in defining stem cells

Proponents of ESCR often use the term pluripotent. This word intends to imply that the ESC cannot make or reform the outer layer of the embryo called the trophoblast. The trophoblast is required for implantation of the embryo into the uterus. This is a distinction used by proponents of ESCR to imply a fully formed **implantable embryo** cannot and does not reform after the original embryo is sacrificed. This is significant because to isolate the stem cells, scientists peel away the trophoblast or skin of the embryo much like the peel of an orange. They then discharge the contents of the embryo into a petri dish.

At this stage of development, the stem cells that comprise almost the entire **inner body** of the early embryo look and function very similar to one another. Once put into the petri dish, the un-programmed cells can be manipulated to multiply and divide endlessly into specific cell types. The question regarding use of the term pluripotent is whether stem cells emptied into the petri dish can reform the trophoblast creating an **implantable embryo** of the originally sacrificed embryo?

The uncomfortable truth is, James Thomson, who led the effort that first isolated and grew embryonic stem cells in the laboratory says the trophoblast can reform under certain circumstances. That means even after months of continuous proliferation of the cells, implantable cloned human beings of the original embryo might be forming as the stem cells are grown in petri dishes. Therefore, use of the term pluripotent is scientifically inaccurate and deliberately misleading.

3. ESCR is related to human cloning

Understanding how ESCR and human cloning relate requires delineation between the two forms of human cloning: reproductive and therapeutic.

Reproductive cloning creates a later born twin from a single cell of another person by transplanting the DNA of the adult cell into a human egg whose nucleus has been removed. This process is somatic cell nuclear transfer. In this procedure, the resulting embryo is implanted in a woman and carried to birth. Proponents say that reproductive cloning is a logical extension of infertility treatments, hence the intimate link to IVF procedures.

By contrast, therapeutic cloning occurs when an adult undergoes a cloning procedure to duplicate his own cells in order to stave off personal disease, illness or the effects from sudden and serious injury. This procedure also begins by creating a clone of the adult through somatic cell transfer. In therapeutic cloning however, the embryos are allowed to live up to 14 days, at which time their trophoblasts are removed, as in standard ESCR, to harvest the highly prized stem cells for the donor's treatment.

In summary, therapeutic cloning begins with the same procedure as reproductive cloning. The goal of reproductive cloning is to produce a baby. The goal of therapeutic cloning is to produce embryonic stem cells for research and or treatment.

Additionally, whenever embryonic stem cell research results in the spontaneous reformation of the trophoblast around other stem cells, a fully implantable cloned life of the originally sacrificed embryo is created, however temporarily.

4. The current status of ESCR in the U.S. is unsettled at best

President Bush announced on August 9, 2001, that federal funds would not be used for ESCR that result in the future destruction of embryos. They can, however, be used to conduct research on the 64 stem cell lines that currently exist because "the life-and-death decision has already been made." However, scientists who work with some of these cells say many of the 64 lines are not yet developed and some may never pan out. Some researchers are uncertain about the quality of the cells and wonder if the limited number is enough. Proponents of this research are now focused on gaining more ground by passing legislation in Congress.

5. There is law that could apply to ESCR

Originally attached to the 1995 Health and Human Services (HHS) appropriations bill, the "Dickey Amendment" has prohibited federal funding of "any research in which a human embryo or embryos are destroyed, discarded or knowingly subjected to risk of injury or death." Unfortunately, there are no laws to protect preembryos (embryos under 14 days old) or that prohibit private individuals, research firms, or pharmaceutical companies from forming, manipulating, or destroying stem cells, human clones, or embryos.

6. Polls show that the American people do not approve using public money to destroy human embryos in medical research

7. ESCR puts us on the road to growing humans for body parts

The un-programmed cells of an early embryo are derailed from their natural course of development and coaxed through chemical manipulation to become very specific tissue types that will be used to treat the unhealthy or diseased tissue of those already born. Opponents of funding ESCR have argued vehemently against this stark utilitarian treatment of human life, unfortunately with little effect.

Regarding the justification that the embryos "left over" in IVF clinics (reportedly >300,000 in the US alone) will simply be discarded anyway, reflects a chilling absence of moral conscience. We do not consider it appropriate to take organs from dying patients or prisoners on death row ***before*** they have died in order to increase someone else's chances for healing or cure. Neither, then, should we consider any embryos "spare" so that we may destroy them for their stem cells.

How far down this road have we already come? Consider the story of Adam and Molly Nash. Molly was diagnosed with Fanconi anemia—a hereditary and always fatal disease. Doctors determined that the best hope for Molly was a cell transplant from a relative whose cells matched Molly's, but without anemia. So Molly's parents produced fifteen embryos by IVF, only one of which had the right genetic material. It was implanted in Mrs. Nash who gave birth to Adam. Adam's stem cells were taken from his umbilical cord and implanted in his sister. Despite all the success of the treatment and the medical justification, the fact remains that Adam was *conceived, not just to be a son, but a medical treatment.* Adam was a means—valuable only insofar as he carried the right

genetic material. If he hadn't, he would have been rejected—like the other fourteen discarded embryos. The undeniable conclusion is that we are growing humans for body parts.

8. Contemporary moral issues often follow the flow of money

Stem cell research and human cloning are about transforming the mystery and majesty of life into a mere malleable and marketable commodity. In the short term, this is big business and offers great fame and fortune to the pioneers and biotech companies who master their secrets and harness the power of life through ESCR.

9. ESCR currenlty has major disadvantages

The promises of ESCR are right now nothing more than hoped for possibilities. Successful clinical trials for people are years away at best. Why? The reality is that the scientific evidence so far does not support public statements.

First, one minor complication is that use of human embryonic stem cells requires lifelong use of drugs to prevent rejection of the tissue. Second, another more serious disadvantage is that using embryonic stem cells can produce tumors from rapid growth when injected into adult patients. A third disadvantage reported in the March 8, 2001, *New England Journal of Medicine* was of tragic side effects from an experiment involving the insertion of fetal brain cells into the brains of Parkinson's disease patients. Results included uncontrollable movements: writhing, twisting, head jerking, arm-flailing, and constant chewing. Fourth, a recent report in the *Journal Science* reported that mice cloned from ESC were genetically defective. If human ESC are also genetically unstable, that could materially compromise efforts to transform cells extracted from embryos into successful medical therapies. Finally, the research may be hampered because many of the existing stem cell lines were grown with the necessary help of mouse cells. If any of this research is to turn into treatments, it will need approval from the FDA, which requires special safeguards to prevent transmission of animal diseases to people. It is unclear how many of these cell lines were developed with the safeguards in place. This leads to a host of problems related to transgenic issues.

10. The Success and Promise of Adult Stem Cell Research

In all fairness, adult stem cells have restricted differentiation potential and do not proliferate as well as ESC. On the other hand, while ESCR yields, at best, meager results, and has only far distant possibilities of successful clinical applications, current clinical applications of adult stem cells are abundant! They include treatments for the following: corneal restoration, brain tumors, breast cancer, ovarian cancer, liver disease, leukemia, lupus, arthritis, and heart disease. Thousands of patients are treated and cured using adult stem cells. Alternative sources for adult stem cells include: placenta, cord blood, bone marrow organ donors, and possibly fat cells.

For these ten reasons my conclusion is that more dollars should be invested in adult stem cell research and the macabre research associated with ESCR should be abandoned entirely.