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IN THE LITERATURE
Sources of Embryonic Stem Cells for Research
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Juengst E, Fossel M. The ethics of embryonic stem cells: now and forever, cells without end. *JAMA*. 2000;284(24):3180-3184.

Certain cells in the early embryo (blastocyst stage) are pluripotent; they have the ability to form almost any somatic cell in the human body. These embryonic stem cells are highly prized by researchers who envision being able to "guide" the stem cells to differentiate into specialized types of body tissue such as muscle, nerve, and blood and thus become replacements for diseased or dysfunctional body tissue [1].

Stem cells are now being collected from human embryos. In most cases, the embryos that are used have been aborted or left over from in vitro fertilization procedures. Although not technically feasible at this time, researchers expect that it is possible to clone stem cells from a patient's own somatic cells. If they could do so, and grow replacement tissue, that tissue would be compatible with the patient's own tissue and would not be rejected. Here's how the process would work. The nucleus of a patent's somatic cells would be placed into an enucleated human ovum, technically creating an embryo. Stem cells would then be collected from the embryo at the blastocyst stage, and the remainder of the embryo, dissolved. The procedure, termed "therapeutic cloning," would provide genetically compatible stem cells and, eventually, genetically compatible tissue or organs for transplant back into the patient.

In "The Ethics of Embryonic Stem Cells: Now and Forever, Cells Without End," the authors consider technical, ethical, and social policy issues associated with therapeutic cloning. They argue that embryonic stem cell research has great potential, but that it also raises profound questions about respect for human life, the moral status of embryos, and policies for public funding. (Others have examined the ethical validity of therapeutic cloning for producing tissue for transplantation.) Simply banning embryonic research will not allow society to circumvent these ethical issues. As the authors point out, there is a moral cost to be paid for not conducting research on human embryonic stem cells. Presently, many patients die because of organ rejection and a lack of transplantable organs. Many others suffer the anguish of Alzheimer's or Parkinson's disease that tissue grown from stem cells could ameliorate. Research on human embryonic stem cells could eventually change this. (See AMA opinions on fetal research: Opinion 2.10, Opinion 2.161, and on human cloning 2.147.)

Questions for Discussion

1. Do you think that research on human embryonic stem cells collected from aborted embryos or embryos created in vitro is ethical? Should research on these human embryonic stem cells be federally funded?
2. Should embryos be created (therapeutic cloning) as a source of stem cells for research? Should creation of stem cells in this way be federally funded?
3. Does therapeutic cloning show less respect for human life than engendering a child (as has been done) to provide bone marrow for the child-to-be's sibling who has leukemia?

References

1. Lanza RP, Caplan AL, Silver LM, Cibelli JB, West MD, Green RM. The Ethical Validity of Using Nuclear Transfer in Human Transplantation. *JAMA*. 2000;284(24):3175-3179.

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