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Defining Embryo Death Would Permit Important Research

By FREDERICK GRINNELL

In the often acrimonious debate about research on human stem cells, the opposing sides have argued over what should be done with the hundreds of thousands of human embryos that have been created through in vitro fertilization but never used. Neither side, however, has asked what might be done with embryos that have died.

President Bush and many other opponents of using human embryos created by cloning or in vitro fertilization to produce stem cells for research hold an essentialist view: They think that a person's life begins as soon as the potential for a human being exists; thus, an embryo is simply a person who hasn't yet been born. Many proponents of using embryos for research take a more existential view: They believe that personhood emerges as the embryo develops. That difference is crucial because, as most ethicists would agree, if embryos were persons, research that necessarily resulted in their death -- which would be the case with cloning -- would be unethical regardless of the eventual benefit to science or medicine.

The arguments that have been raised against research with human embryos are not new. They were put forth 30 years ago when human embryos were first created by in vitro fertilization. The discovery that human eggs could be fertilized outside the body coincided more or less with the 1973 Supreme Court decision in *Roe v. Wade* that made abortion legal. Abortion and in vitro fertilization have been linked indirectly ever since, with those who oppose abortion arguing that research that leads to the destruction of embryos is equivalent to abortion. As a result of the political strength of the anti-abortion lobby, federal funds have been unavailable for research on human embryos, even after in vitro fertilization became the standard treatment for many types of infertility.

Ironically, widespread use of the technique, coupled with the lack of a robust program for research on human embryos, has led to the development of procedures that are remarkably wasteful of embryos. In 2000, for instance, statistics from the Centers for Disease Control and Prevention showed that the success rate for assisted reproduction using fresh eggs or embryos was only about 30 percent, and with embryos that had been frozen the rate was even lower. In addition, because spare embryos are often prepared but not implanted, hundreds of thousands of human embryos -- nobody knows for sure how many or, in many cases, how to contact the donors -- have accumulated over the years in the freezers of fertility clinics around the United States.

Whether you consider those embryos to be living persons or clumps of cells that could be used in research to improve human health, you should be troubled by the current situation. Notably, the lack of research on embryos not only keeps current techniques of assisted reproduction wasteful of embryos, it also makes the techniques more dangerous -- by increasing the chances of multiple birth and thus putting mothers and infants at greater risk.

The lack of federal funds for research has also meant little scientific attention to embryo loss during natural reproduction. Physicians and scientists studying human reproduction estimate that a fertile, healthy couple has only a 20 to 30 percent chance of conceiving during each of the woman's menstrual cycles. The low frequency of

detectable pregnancies has been attributed in large part to the failure of embryos to attach themselves successfully to the surface of the uterus. Moreover, once a pregnancy begins, as many as 30 to 40 percent fail during the first few weeks. Some of the failures are the result of genetic and chromosomal abnormalities of the embryos; others occur because the uterus is not properly receptive. Only with more research will we be able to decrease embryo loss. In any case, between in vitro fertilization and normal reproduction, we can say that human embryos are dying in epidemic proportions.

Does it make sense to speak of embryos dying? People die; fetuses die; individual cells removed from the body and grown in laboratories die; surely embryos do, too. That is not an unimportant theoretical point. Richard M. Doerflinger, one of the leading spokesmen for the Catholic perspective on research on embryonic stem cells, wrote in the *Kennedy Institute of Ethics Journal* that "Catholic teaching requires that 'the corpses of human embryos and fetuses ... be respected just as the remains of other human beings.' Use of such material [e.g., for research] is not rejected in principle, but must meet 'moral requirements.'" It may be that supporters and opponents of cloning could agree on the point at which we should consider an embryo to be dead. If that were the case, the ethical considerations and regulatory strategies that now make it possible to use cells and tissues derived from aborted fetuses to study human development and seek new medical therapies should also be applicable to dead embryos and their cells.

Remarkably, in the more than 30 years since in vitro fertilization was first achieved in humans, it seems that no national scientific body or government agency, including the national advisory committees, has tried to define embryo death, or even discussed the implications of such a definition. There might be multiple ways of defining embryo death. For instance, at a very practical level, death might be defined as the failure of an embryo to implant itself successfully in a uterus. More theoretically, one might begin with the July 2002 report of the President's Council on Bioethics, in which council members who opposed research cloning characterized the embryo as "an integrated, self-developing whole, capable (if all goes well) of the continued organic development characteristic of human beings." That could lead to a definition of embryo death as the loss of integration or the inability to develop. Certainly, embryos with obvious abnormalities that would prevent normal integration and development, like the presence of genetic material from two sperm cells, would never be used in in vitro fertilization and might be considered dead, according to that definition, and therefore available for research.

Defining embryo death would be the first step toward an intensive research program, eligible for federal funds, designed to improve our understanding of the development and loss of human embryos. We would also need a new oversight mechanism to regulate embryos in vitro. One possibility would be to establish in the United States a process analogous to that used in England, which requires the appropriate licensing of all in vitro production and use of human embryos in the public and private sectors. The new commission or other entity charged with licensing the production and use of in vitro embryos would, of course, have to confront the problem of how to treat human embryos that have been frozen in the past or will be frozen in the future.

As an aside, it is worth noting that under such an arrangement, it would be impossible to license human reproductive cloning -- which would thus be illegal -- because experiments with animals have shown that the procedure is unsafe. By contrast, researchers safely used in vitro fertilization in animals before they tried the procedure in humans.

In summary, rather than arguing about whether embryos are persons, we should try to reach a consensus about what defines embryo death. That would enable us not to exploit one human life for the benefit of another, but, under appropriate ethical and regulatory guidance, to use dead embryos and their cells for research to advance scientific knowledge and medical treatment. And that would be would respecting human life.

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