

Human Embryo and Fetal Research: Medical Support and Political Controversy

By Heather Boonstra

Scientists have long recognized the promise of research involving human embryos and fetuses for the advancement of basic science as well as for the development of lifesaving vaccines and therapies. Such research continues to this day as scientists seek new treatments for a variety of diseases, such as Alzheimer's disease, Parkinson's disease, diabetes, heart disease and kidney failure. But government funding for human embryo and fetal research is another matter altogether, one that as a political issue is inextricably linked to the controversy over abortion. This political linkage has resulted in a confusing patchwork of federal policies that ban federal support for some types of research but endorses it for others (see table).

Already, President George W. Bush has plunged into this issue, over the question of federal funding for research involving human stem cells. While Bush has passed on the opportunity—at least for now—to issue an executive order banning the use of federal funds for stem cell research, he has said he will stand behind his campaign promise to oppose it. Researchers and patient advocacy groups worry that the federal government, as it has at times in the past, will succumb to pressure from the most extreme elements of the antiabortion lobby and step back from its involvement in this area, leaving morally complex research to the unregulated private sector and likely slowing major scientific and medical breakthroughs.

History of Federal Policy

Fetal Research

Soon after the U.S. Supreme Court's *Roe v. Wade* decision in 1973 legalizing abortion nationwide, right-to-life leaders seized upon research involving human fetuses about to be aborted or following an abortion as a weapon in the war against the right to choose, arguing that such research "dehumanizes unborn children" and gives abortion an aura of legitimacy. The timing of events could not have been more ideal for abortion opponents, for at that time, debate was beginning to rage in Congress—largely as the result of revelations concerning the infamous Tuskegee syphilis experiments—over the protection of human subjects in research. The 1974 National Research Act joined the two issues; among its provisions was a temporary moratorium on federally funded fetal research, "before or after abortion." The moratorium remained until 1975, when the Department of Health, Education and Welfare (now the Department of Health and Human Services, or DHHS) issued regulations governing federally funded fetal research. The centerpiece of the regulations is the principle that all fetuses in utero should be treated equally, with no distinction between those intended to be carried to term and those intended to be aborted; in either case, funding for research that poses more than a "minimal risk" to a fetus is almost never permitted.

Although the first so-called test-tube baby, Louise Brown, was not born until 1978, the regulations also addressed the issue of in vitro fertilization (IVF) research. Noting the

mounting political controversy over IVF—in which embryos are fertilized outside a woman's body—the regulations required that each research application be individually reviewed and approved by an Ethical Advisory Board (EAB). Although the EAB in 1979 approved IVF research as a permissible use of federal funds, the board itself was disbanded in 1980 without approving any specific applications, thereby creating a de facto moratorium on federal funding for IVF research and other studies of early human embryos that remains in effect even today. IVF research continued and, in fact, blossomed in the private sector, although without the federal oversight or ethical review that is required when research is funded with public dollars.

Fetal Tissue Transplantation Research

In contrast to the protracted debate over research on fetuses and embryos, research involving fetal tissue has been a mainstay of modern medicine, funded in large part with federal dollars without controversy. Dating back to the 1930s, scientists have used tissue from aborted fetuses as a means of understanding cell biology and as an important tool in the development of vaccines. The 1954 Nobel Prize for Medicine, for example, was awarded to American immunologists who developed the polio vaccine based on cultures of human fetal kidney cells.

The political environment changed dramatically in 1988, when scientists began experimenting with a new technique involving the transplantation of fetal cells and tissue into the brains of adults with Parkinson's disease. This new development—in which fetal tissue is not used simply as a research tool but as a source for cells and tissue for transplantation—prompted the Reagan administration to declare a temporary moratorium on all federal funding for fetal tissue transplantation research. Despite the recommendation of a specially created National Institutes of Health (NIH) review panel to support federal

RESEARCH INVOLVING HUMAN EMBRYOS AND FETUSES

| | <i>DEFINITION</i> | <i>USE</i> | <i>STATUS OF FEDERAL FUNDING</i> |
|---------------------------------------|---|---|---|
| FETAL RESEARCH | An umbrella term encompassing the study of fetuses (<i>in utero</i> or <i>ex utero</i>) or the use of fetal cells and tissues generally obtained from induced abortions. | Used in the development of vaccines and to study aspects of cell physiology and human development. | Allowed in accordance with 1974 law and subsequent regulations, which prohibit researchers from having any involvement in the decision to terminate a pregnancy or assessing fetal viability and forbid altering the timing or method of abortion for the sake of research and the payment of any inducements that might encourage a woman to have an abortion. |
| FETAL TISSUE TRANSPLANTATION RESEARCH | Research involving transplantation of multipotent cells (differentiated cells that give rise to more specialized cells) and tissues generally obtained from aborted fetuses. | Used to develop potential treatments for a variety of conditions, such as diabetes and Parkinson's disease. | Allowed in accordance with 1993 law, which ensures informed consent, forbids the woman providing the tissue from being paid or knowing the identity of the recipient, forbids altering the timing or method of abortion for the sake of research and attempts to avoid the commercialization of fetal tissue. |
| IN VITRO FERTILIZATION RESEARCH | Research on reproduction in which sperm and egg are combined in a laboratory dish, where fertilization occurs. | Used to understand and develop treatments for infertility; IVF also used for deriving stem cells (see below). | Effectively prohibited by 1995 law, which blocks funding for any research in which human embryos are destroyed, discarded or knowingly subjected to serious risk. |
| STEM CELL RESEARCH | The study of "undifferentiated," or "pluripotent," stem cells, which are able to divide and form into many different cell types. Stem cells can be derived from aborted fetuses, from embryos created through IVF for the sole purpose of research, from embryos created through IVF but not implanted in women being treated for infertility and through a cloning technique called somatic cell nuclear transfer. | Used to understand factors in abnormal human development. Considered potentially useful in treating genetic disorders or organ failure and, through transplantation, Parkinson's disease, Alzheimer's disease, spinal cord injury, stroke, burns, heart disease and diabetes. | Allowed in some cases in accordance with 1993 law. Strict National Institutes of Health guidelines permit the use only of cells derived from the excess embryos that had been created for fertility treatments and otherwise would be discarded; research involving stem cells derived by cloning may not be funded. Funding for the actual derivation of stem cells from embryos is prohibited by 1995 law (see In vitro fertilization research, above). |

funding for fetal tissue transplantation research, the moratorium remained in place until 1993, when it was lifted by executive order of the newly elected President William J. Clinton. Later that year, Congress enacted the NIH Revitalization Act, which permits federal funding of fetal tissue transplantation research, but only under certain conditions.

Stem Cell Research

The NIH Revitalization Act of 1993 also cleared the way for federal funding of research involving embryos,

created through IVF, at the earliest stages of development. Little more than a year later, however, Congress retreated from that position and imposed a new ban on federal funding for research in which human embryos are destroyed, discarded or knowingly subjected to serious risk—a ban that effectively blocks funds for IVF research once again.

That ban also quickly collided with a long sought-after scientific breakthrough in stem cell research. In 1998, two groups of scientists announced that they had success-

fully isolated and cultivated stem cells, which are widely considered to hold enormous promise in treating a range of human diseases. According to former NIH Director Harold Varmus, these breakthroughs in stem cell research could very well bring medical research to the edge of a new frontier.

Armed with an opinion from the DHHS general counsel that the congressional ban applied to embryos themselves but not to the material derived from embryos, NIH has cautiously moved toward funding research involving stem cells. However, while standards have been promulgated and applications accepted, no projects have yet been funded.

Medical and Political Opportunities

The long history of research involving human embryos and fetal tissue shows that major scientific advancements, rather than leading to greater government involvement in this area, have often prompted the government to cut off federal research dollars. But critics argue that government "neutrality" has its shortcomings and that federal withdrawal can have grave implications, not only slowing scientific progress but also depriving privately funded research of government oversight.

In the absence of government oversight, for example, there is concern that infertile persons or couples may be vulnerable to exploitation or that embryos may be used without consent or sold for profit. Funding advocates contend that government involvement creates a more open research environment, ensures that complex research is carried out in an ethically acceptable way and enables the government to respond to situations in which federal regulation is neglected or lacking.

These advocates worry that history is about to repeat itself, and, indeed, it would appear that society once

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again may be standing on the same horizon it has in the past, this time with stem cell research. Understanding the scientific and therapeutic promise, NIH has cleared the way for federal funding. And a coalition of 70 patients' advocacy and research groups in a 1999 letter to Congress said, "The Federal government has an important role in funding and in overseeing the conduct of this research so that the talent and

creativity of the nation's scientists...can be applied to this valuable line of research."

But the significance of this research has failed to sway the staunchest opponents of abortion. These advocates believe that embryo and fetal tissue research—in the words of Ken Connor, president of the Family Research Council—are tantamount to "taking a human being and sacrificing it to benefit others" and that "people should not be discriminated against based on age or location in

the petri dish." President Bush has rhetorically sided with that view, but it appears that as a matter of public policy, he may not yet be ready to jump with both feet onto this polarizing terrain. In his first days in office, Bush, through his spokesman, Ari Fleischer, declined to clarify what policy changes, if any, the president intends to make. Research and medical groups, advocates on both sides of the abortion issue, and afflicted individuals and their families across the country will be watching closely for his decision. ☩