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# STEM CELLS: POTENTIAL CURES OR ABORTION LURES?

*Valerie J. Janosky*[*]

## INTRODUCTION

The controversy over whether scientists should use aborted fetal tissue for pioneering medical research is heavily debated, and generally centers on the ethical and moral dilemma of the tissue source versus the benefits of possible antidotes for many debilitating diseases. Hence, the question then becomes, "Does stem cell research result in the destruction of life, or is it the harbinger of a lifesaving scientific tool?"[1] Opponents argue that fetal stem cell research is immoral, lures women to have abortions and should therefore be stopped. Advocates, on the other hand, contend that this "argument threatens to undermine stem cell studies just at the moment when the promising technology is making rapid gains."[2] They defend the acquisition of stem cells from aborted fetuses or from the fertilization of a human egg in a test tube, because of the cells' unique ability to repair tissue,[3] which holds much promise for new treatments and potential cures.

Essentially, this article will explore the scientific and moral debate enveloped in the use of fetal stem cells in medical research, the angst felt amongst both a heavily divided medical community and the reasons

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[1] WebMd, reviewed by Dr. Michael W. Smith, *Abortion Debate Clouds Future of Stem Cell Research* (Jan. 26, 2001), *at* http://my.webmd.com/content/article/1691.51004.

[2] *Id.*

[3] Dan Ferber, Ph.D., *Ethicists Divided Over Human Embryo Research – Existing Cells OK to Use, but Don't Make New Ones, Some Say* (Feb. 22, 2000), *at* http://my.webmd.com/content/article/178.55182.

why fetal stem cell research is a vital avenue that should be continued and supported by health law legislation. Additionally, this paper will provide a scientific background of the use of stem cells, along with the most recent technological advances, the distinctive nature of these cells, treatments derived from this new medical option, legislative and political entanglements resulting from this issue, arguments surrounding the sources that supply fetal stem cells and the viability of suggested alternatives.

Fetal tissue research includes numerous studies on the cutting edge of medical discovery, such as treatments for Parkinson's Disease, diabetes, Alzheimer's disease, leukemia, AIDS,[4] strokes, spinal cord injury,[5] Huntington's chorea, hemophilia, leukemia, sickle cell anemia, muscular dystrophy,[6] Tay-Sachs,[7] and cancer among other conditions where stem cells are being used to replace damaged or dead cells in humans.[8] Moreover, in May of 2000, "researchers showed that brain stem cells could be used to form cells that could treat multiple sclerosis and a variety of serious nerve diseases."[9] In June of that same year, "they turned brain stem cells into heart, gut, and liver cells."[10] Researchers are also trying to use stem cells for bone and cartilage formation, in addition to therapies targeting heart and kidney conditions.[11] Currently, clinical trials are "already underway using bone marrow stem cells to regrow and replace bone that had to be removed from bone cancer patients."[12] Using fetal tissue in AIDS studies "gives researchers a working model of the human immune system for studying viruses,"[13] which may eventually be instrumental in a cure for AIDS.

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[4] Don Colburn, *The Fetus: Medicine, Law and Morality,* WASH. POST HEALTH, Oct. 18, 1988, at 17.

[5] Dan Ferber, Ph.D., reviewed by Dr. Aman Shah, *Stem-Cell Therapies Inch Their Way Closer to the Clinic – But First Treatments Still Several Years Away* (Aug. 18, 2000), *at* http://my.webmd.com/content/article/1728.60509.

[6] Planned Parenthood Federation of America, Inc., *Donating Fetal Tissue for Medical Treatment and Research,* (Feb. 2000)., *at* http://www.plannedparenthood.org/library/facts/fetaltis_010600.html.

[7] National Tay-Sachs & Allied Disease Association of Delaware Valley, *What is Tay-Sachs Disease?*, *at* http://www.tay-sachs.org/whatista.htm (last visited Jan. 10, 2003).

[8] Sean Martin, reviewed by Dr. Michael W. Smith, *Stem Cell Controversy Draws Celebs to Capitol Hill* (Sept. 14, 2000) *at* http://my.webmd.com/printing/article/1728.61328.

[9] *See* Ferber, *supra* note 5.

[10] *Id.*

[11] *Id.*

[12] *Id.*

[13] *See* Colburn, *supra* note 4.

## TOPICS CONCERNING FETAL TISSUE AND STEM CELLS

### Background on Fetal Tissue Research and Use

Historically, fetal tissue research and use reaches as far back as to the 1920s.[14] Researchers began transplanting fetal tissue into patients suffering with diabetes as early as 1928.[15] Even though some first experiments were unsuccessful, the "importance and curative potential of fetal tissue" became apparent to both the scientific and medical communities.[16] Since the 1930s, human fetal tissue research and transplantation have been commonly used in U.S. medical research.[17] In fact, human cell lines have been used to examine the "biochemical and physiologic processes in normal human development, investigate disease causing viruses and study the cancer induction."[18] During the 1950s and 1960s, vaccines for poliomyelitis and rubella, Rh incompatibility treatment, and prenatal diagnosis of genetic diseases were developed through fetal tissue research.[19]

From a scientific perspective, as the human embryo grows, the early cells start dividing and forming different kinds of cells, *i.e.,* heart cells, bone cells, muscle cells, etc., and are called stem cells.[20] Doctors could use these early cells to repair "diseased cells virtually anywhere in the body."[21] "Starting with human embryos the size of a pencil dot on a piece of paper, scientists have extracted primitive stem cells, . . . [and] [t]hen have been able to cultivate and multiply these building-block cells as they develop into more specialized cells."[22] As a result, a physician would augment a patient's damaged cells with new, healthy ones.[23]

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[14] Paul Likoudis, *At Home in the Culture of Death...Dead Baby Parts Business Booming* (Oct. 28, 1999), *available at* http://www.freerepublic.com/formula/a37f3c9b331a1.htm, *citing* Judie Brown, *Recycling Babies: The Practice of Fetal Tissue Research* (1996).

[15] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 6, *citing* Mary Carrington Coutts, *Fetal Tissue Research*, 3 KENNEDY INST. ETHICS J., 81-101 (1993).

[16] *Id.*

[17] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview*, CAN. MED. ASS'N J., 1261-68 (1994).

[18] *Id.*

[19] *See* Schrock, *supra* note 17, *citing* Lee Sanders et al., *Ethics of Fetal Tissue Transplantation*, W. J. MED. 401 , (1993).

[20] *See* Ferber, *supra* note 5.

[21] *Id.*

[22] *See* Martin, *supra* note 8.

[23] Gregory Pence, Ph.D., *The Lifesaving Promise of Cloning Technology* (Sept. 29, 2000) *at* http://my.webmd.com/content/article/1691.50913.

## Current Technology

In the last twenty years, substantial progress in fetal tissue transplantation (FTT) as a means of medical therapy has improved because of better laboratory techniques and an increased understanding of the practice.[24] Subsequently, women and men worldwide have received transplanted fetal tissue, and "research has been conducted in Australia, Canada, China, Cuba, the former Czechoslovakia, Finland, France, Germany, the United Kingdom, Hungary, India, Italy, Mexico, Norway, Russia, Spain, Sweden, and Yugoslavia."[25]

Recently, the biomedical pioneer, Geron Corporation of Menlo Park, California, acquired the company created by Scotland's Roslin Institute, which cloned "Dolly", the first genetically engineered sheep.[26] This acquisition by Geron combines three new technologies: "somatic cell nuclear transfer (used to clone Dolly), derivation of cells called human *pluripotent* stem cells," (used to regenerate diseased tissues because of a "natural ability to transform into any type of cell in the body and to multiply"), and telomerase (keeps cells alive and dividing beyond their normal life span).[27] Within five years, these technologies could make it possible for humans to replace diseased cells by cloning themselves and obtaining stem cells from their own pre-embryos.[28] Basically, the pre-embryo consists of a blastocyst, a ball of tiny cells, and does not have any distinguishing features such as organs, limbs, or a nervous system.[29] Based upon one's religious affiliation, this pre-embryo may or may not be considered human life, thus creating a significant ethical dilemma. However, Judie Brown, president of the American Life League (ALL), says, "The word pre-embryo is a false term . . . an embryo is an embryo at fertilization - period."[30]

Nonetheless, researchers funded by Geron became the first to acquire the human pluripotent stem cells from donated embryos and

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[24] *See* Schrock, *supra* note 17, *citing* Daniel Garry et al., *Sounding Board: Are There Really Alternatives to the Use of Fetal Tissue from elective Abortions in Transplantation Research?*, NEW ENG. J. MED., 1592 (1992); Charles Baron, *Fetal Research: The Questions in the States*, HASTINGS CTR. REP. 12-13 (1985).

[25] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 6.

[26] Tim Friend, *Gov't Oks Fetal Tissue Research* (May 23, 1999) *at* http://www.lougehrigsdisease.net/als_news/990524govt_oks_fetal_tissue_research.htm.

[27] *Id.*

[28] *Id.*

[29] *See* Friend, *supra* note 26.

[30] *Id.*

fetal tissue.[31] However, two main obstacles must be overcome before these cells can become a useful therapy:

> "First, researchers must learn to coax these cells down different paths toward becoming heart cells, brain cells or whatever cell is desired. Geron-funded researchers have been able to coax their cells into two different types so far - heart and brain. Second, if these cells are derived from donated embryos and fetal tissue, they will be rejected by the patient's immune system just like donated organs. To make these sources viable for treatment, scientists must learn to make the cells compatible."[32]

Additionally, Ronald Eastman, president of Geron in 1999, said that because of ethical concerns, the company researchers would first explore other methods of creating these cells from a patient's own DNA, and would compensate the Roslin Institute $20 million dollars over the next six years to research ways to develop therapeutic cells without creating pre-embryos.[33] "That research will focus on a cloning phenomenon called reprogramming, which refers to the mysterious ability of an egg cell to reprogram the DNA taken from an adult cell so that it behaves as if it were at an embryonic stage."[34] If the researchers are successful at recognizing the signals involved in reprogramming, "then it may become possible to reprogram the DNA of any cell and apply that knowledge to creating therapeutic cells without creating an embryo."[35] If they are not successful, then the next possible jump is for patients to clone themselves in order for technicians to extract stem cells from the pre-embryo, or blastocyst.[36] Basically, scientists would "remove that cell's nucleus and insert it into a donated egg that has had its nucleus removed, creating an entirely new embryo."[37] This procedure is called *therapeutic* cloning, and is different from *reproductive* cloning, which would involve implanting a pre-embryo into a womb in order to produce a child.[38]

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[31] *Id.*
[32] *Id.*
[33] *Id.*
[34] *See* Friend, *supra* note 26.
[35] *Id.*
[36] *See* Friend, *supra* note 26.
[37] *See* Pence, *supra* note 23.
[38] *See* Friend, *supra* note 26.

**Uniqueness of Fetal Tissue**

At the onset, it is crucial to note two points: first, the terms *fetus* and *fetal* are the proper scientific and legal categorizations of an embryo at Week 8 of the gestation period,[39] and second, "fetal tissue has several properties that make it particularly useful and unique for transplantation, and superior to adult (mature) tissues:

> - Fetal cells are capable of proliferating faster and more often than mature, fully differentiated cells; [therefore], these donor cells are able to quickly reverse the lost function of the host.
> - Fetal cells can often differentiate in response to the environmental cues around them, [and] because of their location, they can grow, elongate, migrate and establish functional connections with other cells around them in the host.
> - Fetal tissue is not as easily rejected [(as adult cells are)] by the recipient due to the low levels of histocompatibility antigens, . . . [and] at the same time, angiogenic and neurotrophic factors are at high levels, enhancing their ability to grow once they are transplanted.
> - Early fetal hematopoietic tissue lacks lymphocytes; [therefore,] "graft vs. host" reactions are minimized.
> - Fetal cells tend to survive excision, dissection and grafting better because they generally do not have long extensions or strong intercellular connections.
> - Fetal tissues can survive at lower oxygen levels than mature cells [making them] more resistant to the ischemic conditions found during transplantation or *in vitro* situations."[40]

Furthermore, since these fetal cells are extremely adaptable and less likely to be rejected by a transplant recipient, the need to locate difficult exact tissue matches is significantly reduced.[41] Additionally, "fetal

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[39] *See* Jeremy Manier, *U.S. Quietly OKs Fetal Stem Cell Work: Bush Allows Funding Despite Federal Limits On Embryo Use*, CHI. TRIB., July 7, 2002, §1 at 1.

[40] *See* Schrock, *supra* note 17, *citing* Robert Hurd, *Ethical Issues Surrounding the Transplantation of Human Fetal Tissue*, CLINICAL RESEARCH 661 (1992), and Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview*, CAN. MED. ASS'N., 1261 (1994).

[41] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 6, *citing* Mary Carrington Coutts, *Fetal Tissue Research*, 3 KENNEDY INST. ETHICS J. 81-101 (1993), and Rick Weiss, *Stem Cell Discovery Grows Into A Debate*, WASH. POST, Oct. 9, 1999, A1.

tissue is easier to culture in the laboratory and in greater supply than adult tissue."[42]

### Fetal Research for Specific Diseases

The unique characteristics of fetal tissue have led to "FTT experiments for the treatment of several human diseases that were once thought to be irreversible or incurable."[43] Fetal tissue transplants have been promising for patients suffering from Alzheimer's disease, spinal cord and other neural tissue injuries, diabetes, some forms of blindness, and are used to treat blood-clotting disorders, such as sickle cell anemia, thalassemia, and hemophilia,[44] just to name a few. Moreover, fetal liver cells may be useful in treating leukemia and aplastic anemia.[45]

#### *Parkinson's Disease*

Considered one of the most common crippling diseases in the country, Parkinson's Disease is a chronic nervous disease exemplified by a slow tremor, rigidity, and muscular weakness.[46] Primarily, these symptoms are caused by the decrease production of dopamine, a neurotransmitter, by cells in the *substantia nigra* area of the brain.[47] While the disease affects men more than women, it can afflict young people, and is found in 1 in every 100 persons over the age of 60.[48] Generally, a person suffering from Parkinson's will continue to deteriorate for an average of 10 years, and then will commonly die from aspiration pneumonia or some other infection.[49]

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[42] *Id.*

[43] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri. edu/ ~shrp/ radsci/fetal/fetal1.html, *citing* Stanley Loeb, DISEASES AND DISORDERS HANDBOOK 550 (Springhouse Corp. 1988).

[44] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 6.

[45] *Id.*

[46] *See* Schrock, *supra* note 43.

[47] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview*, CAN. MED. ASS'N., 1264-65 (1994); Olle Lindvall, *Clinical Applications of Neural Grafts in Parkinson's Disease*, J. NEUROLOGY 554-56 (1994); J. Lopez et al., *Long Term Follow-Up in 10 Parkinson's disease Patients Subjected to Fetal Brain Grafting into a Cavity in the Caudate Nucleus: The Clinica Puerta de Hierro Experience*, TRANSPLANTATION PROCEEDINGS 1395-1400 (1995).

[48] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Stanley Loeb, DISEASES AND DISORDERS HANDBOOK 550 (Springhouse Corp. 1988).

[49] *Id.*

While it is still in the experimental stages, the use of fetal tissue shows great promise in many treatment areas.[50] One of these procedures involves the transplantation of human fetal brain cells into patients suffering with Parkinson's Disease in order to restore their motor function.[51] This might be done surgically by injecting a liquid containing the cells[52] thereby transplanting the newly developed tissue into a patient's brain.[53] These implanted fetal neurons can replace "dead host neurons, form effective synapses with host neurons, and produce the necessary neurotransmitters."[54] In fact, "[t]he number of implanted dopaminergic cells needed for recovery of movement represents only about one-tenth of a million of the total number of nerve cells in the brain."[55]

While the clinical teams that perform these procedures differ in both their success and transplantation methods,[56] promising results from FTT studies in humans with Parkinson's Disease have shown improved symptoms with the utilization of all implantation techniques.[57] These studies reported that "fetal tissue transplantation does improve self-assessed quality of life; it decreases the frequency and intensity of 'freezing spells' - a characteristically disabling feature of the disease - and decreases the required dosage of levodopa."[58]

However, another study by Dr. Curt Freed, the principal researcher in the University of Colorado Health Sciences Center,

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[50] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 6, *citing* Mary Carrington Coutts, *Fetal Tissue Research*, 3 KENNEDY INST. ETHICS J., 81-101 (1993), and Rick Weiss, *Stem Cell Discovery Grows Into a Debate*, WASH. POST, Oct. 9, 1999, at A1, and National Institutes of Health, *Withdrawal of Interim NIH Guidelines for the Support and Conduct of Therapeutic Human Fetal Tissue Transplantation Research in Light of Superseding provisions of Public Law.*

[51] *Id.*

[52] Ole Isacson, M.D., Ph.D., *On the Brain: Fetal Nerve Cell Transplantation: Advances in the Treatment of Parkinson's Disease*, (The Harvard Mahoney Neuroscience Institute Letter) (1994), *available at* http://neurosurgery.mgh.harvard.edu/oisacson.htm.

[53] *See* Pence, *supra* note 23.

[54] *See* Isacson, *supra* note 52.

[55] *Id.*

[56] *Id.*

[57] *See* Schrock, *supra* note 47.

[58] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Lee Sanders et al., *Ethics of Fetal Tissue Transplantation*, W. J. MED., 401 (1993); J. Lopez, et al, *Long Term follow-up in 10 Parkinson's Disease Patients Subjected to Fetal Brain Grafting into a Cavity in the Caudate Nucleus: The Clinica Puerta de Hierro Experience*, TRANSPLANTATION PROCEEDINGS 1395-1400 (1995); and Olle Lindvall, *Clinical Applications of Neural Grafts in Parkinson's Disease*, J. OF NEUROLOGY 555 (1994).

concluded that people who were less than 60 years old and suffering from Parkinson's significantly improved when they received a transplant of brain cells from aborted fetuses that developed to their seventh or eighth week. These cells began to produce dopamine, a vital neurochemical that is grossly deficient in Parkinson's Disease sufferers.[59] However, in patients over 60, the treatment was not very effective.[60]

Dr. Gerald Fischback, the Director of the National Institute of Neurological Disorders and Stroke, which funded the study said, "I think the findings are extremely promising. My view is that the surgery worked. The cells took. They survived, they were manufacturing the transmitter dopamine."[61] While it is true that the tissue used in the research for Parkinson's Disease does not survive for very long in its new host, symptoms decrease or even reverse themselves for a short time after the transplantation.[62]

### *Diabetes*

Diabetes mellitus, a chronic disease of insulin deficiency or resistance, is a leading cause of death in the United States, according to the Diseases and Disorders Handbook.[63] This disease is also the leading cause of new blindness, and contributes to about 50 % of myocardial infarctions and approximately 75 % of strokes.[64] Moreover, it is the seventh leading cause of death in the U.S.[65] In fact, one in every twenty Americans, which translates into about 16 million people, suffer from a blood sugar imbalance.[66] "Diabetes is a prime target for FTT,

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[59] Daniel Kennelly, *Fed Funded Fetal Tissue Research Rekindles Controversy,* (Apr. 29, 1999) *at* http://www.cnsnews.org/InDepth/archive/199904/IND19990429d.html.

[60] *Id.*

[61] *Id.*

[62] Emma Kirby-Glatkowski, *Use of Fetal Tissue Research to Cure/Treat Neurological Disorder,* (Apr. 29, 1999) *at* http://www.conservativenews.net/InDepth/archive/199904/IND19990429d.html.

[63] Patricia Schrock, *Fetal Tissue Transplantation*, at 225 (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[64] *Id.*.

[65] Michael Gonzalez, D.Sc., Ph.D., FACN, *Blood Sugar Levels: Are Stem Cells the Answer to Blood Sugar Problems?*, 7 J. LONGEVITY 21-23, (2001), *citing* American Diabetes Association, *Diabetes Facts and Figures* (2000) *at* http://www.diabetes.org/main/info/facts/facts.jsp (last visited Jan. 13, 2003).

[66] *See* Gonzalez, D.Sc., Ph.D., FACN, *Blood Sugar Levels: Are Stem Cells the Answer to Blood Sugar Problems?*, 7 J. LONGEVITY 21-23, (2001), *citing* R. Eisner, R., *A breath of fresh insulin: Inhaled insulin lowers blood sugar in a small study of diabetics* (2001) http://more.abcnews.go.com/sections/living/dailynews/insulininhaler010201.html.

because it is thought that stem cells could be readily converted to cells that produce insulin."[67] Since standard insulin therapy generally cannot prevent these complications, early investigators suggested using fetal pancreatic tissue for the treatment of this disease in order to more accurately regulate a diabetic's glucose levels.[68] In a study comparing the two treatments, researchers found that a partial cure of diabetes resulted from the FTT, and in the long term, retinopathy either stopped or improved, and renal function remained normal; which is significant because patients that receive intensive human insulin therapy are inclined to increased retinopathy and renal dysfunction.[69]

### *Tay-Sachs*

Tay-Sachs is a genetic disease that is transmitted when both parents are Tay-Sachs gene carriers, giving the defective gene to their child.[70] Children develop Tay-Sachs by inheriting two Tay-Sachs genes (one from each parent), and as a result, lack the hexosaminidase A (Hex-A) enzyme.[71] Hex-A is vital for the body to "break down a fatty waste substance found in brain cells; without this enzyme, the waste accumulates abnormally and causes progressive damage until the nervous system can no longer sustain life."[72]

> "A baby with Tay-Sachs disease appears healthy at birth, and seems to be developing normally for a few months. Symptoms generally appear by six months of age. While symptoms vary from one child to the next, there is always a slowing down of development. Gradually, Tay-Sachs

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[67] *Abortion Debate Clouds Future of Stem Cell Research, supra* note 1.

[68] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview*, CAN. MED. ASS' J. 1262-63 (1994); G. Farkas et al., *Long Term Effects of Fetal Islet Transplantation on Complication of Diabetes, as Compared with Effects of Intensive Insulin Therapy*, TRANSPLANTATION PROCEEDINGS 3145 (1995).

[69] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* G. Farkas et al., *Long Term Effects of Fetal Islet Transplantation on Complication of Diabetes, as Compared with Effects of Intensive Insulin Therapy*, TRANSPLANTATION PROCEEDINGS 3145 (1995); K.J.. Lafferty § L. Hao, *Fetal Pancreas Transplantation for Treatment of IDDM Patients*, DIABETES CARE 33-86 (1993); P.B. Dordevic et al., *Human Fetal Islet Transplantation in IDDM Patients: An 8-year Experience*, TRANSPLANTATION PROCEEDINGS, 3146-47 (1995).

[70] National Tay-Sachs & Allied Disease Association of Delaware Valley, *What is Tay-Sachs Disease?*, http://www.tay-sachs.org/whatista.htm (last visited Jan. 10, 2003).

[71] *Id.*

[72] *Id.*

> children lose motor skills and mental functions. Over time, the child becomes blind, deaf, mentally retarded, paralyzed and non responsive to the environment. Tay-Sachs children usually die by age five."[73]

By using a cloning method, Harvard University researchers have derived some very significant results for treating Tay-Sach's disease.[74] Essentially, they have been able to stop the progression of the disease and even reverse it by genetically engineering cells to produce the missing protein that causes this disease by introducing it to the deficient Tay-Sach's cells."[75]

### *Spinal Cord Injury*

Traditionally, human fetal spinal cord cells are grafted into the cystic cavity of a patient suffering with syryngomyelia, or expanding cysts.[76] Currently, the outcome is not to cure spinal cord injury, but to impede the loss of sensory and motor function from these cysts.[77] The cavity is drained and the liquid is replaced with tissue.[78] There have been numerous animal experiments with fetal tissue, and the results indicated that "some paralyzed cats recovered function after fetal tissue treatment, without harm to the animals."[79] Scientists are hopeful they can achieve similar results with humans.

### *Other Diseases*

Huntington's Disease, Alzheimer's Disease, Friedreich's Ataxia, intractable epilepsy and stroke sufferers may benefit from fetal tissue transplantation, as indicated by some animal experiments.[80] Additionally, blood disorders such as aplastic anemia, hemophilia and leukemia, immunodeficiency caused by congenital absence of thymus and parathyroid tissue (Di George Syndrome) and blindness (age

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[73] *Id.*

[74] Kirby-Glatkowski, *supra* note 62.

[75] *Id.*

[76] *Scientists to Treat SCI with Fetal Tissue,* NEW MOBILITY MAG., Jan. 1997.

[77] *Id.*

[78] *Id.*

[79] *Id.*

[80] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview,* CAN. MED. ASS'N., 1264-65 (1994); Y.J. Li et al., *Transplantation of Cholinergic-rich Spinal Tissue from Spontaneously Aborted Human Fetuses Into a Rodent Model of Alzheimer's Disease,* TRANSPLANTATION PROCEEDINGS 3336-67 (1994).

related macular degeneration) are other areas where FTT may be an effective treatment.[81]

### *AIDS Research From Fetal Tissue*

Notably, much of the fetal tissue available for research is used for HIV/AIDS studies involving SCID-hu mice,[82] and this research continues to receive support from the AIDS community. "The AIDS interest in human fetal transplantation stems largely from a paper on thymic transplantation published in 1987 by researchers at the Yale University School of Medicine," even though the tissue came from young children who had to have part of their thymus removed during a heart operation.[83]

> "It was transplanted into 15 volunteers with advanced AIDS; the transplanted tissue survived, for several months at least, in eight of them. Remarkable clinical improvements occurred in some cases, although as expected the benefit appeared to be temporary. Nine patients showed clinical improvement two months after the operation (including one in whom live transplanted cells were not found). The most dramatic case was one patient in which cytomegalovirus retinitis appeared to resolve spontaneously with no other treatment.
>
> T8 cells (a kind of T-cell, different from T-helper cells, which also may be important in controlling the AIDS virus) showed substantial increases in all eight of the patients in whom the transplant was successful, more than doubling in every case, and often increasing several fold. T-helper increases, however, were small."[84]

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[81] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* P.V. Algvere et al, *Transplantation of Fetal Retinal Pigment Epithelium in Age-related Macular Degeneration with Subfoveal Neovascularization*, GRAEFS ARCHIVE FOR CLINICAL AND EXPERIMENTAL OPHTHALMOLOGY 707-716 (1994); Lee Sanders et al., *Ethics of Fetal Tissue Transplantation*, W. J. MED. 400-1 (1993); Alan Fine, *Transplantation of Fetal Cells and Tissues: An Overview*, CAN. MED. ASS'N J.., 1261-65 (1994).

[82] Paul Likoudis, *At Home in the Culture of Death...Dead Baby Parts Business Booming*, (Oct. 14, 1999) *at* http://www.freerepublic.com/formula/a37f3c9b331a1.htm.

[83] John S. James, *Fetal Tissue Research Background*, AIDS TREATMENT NEWS, Dec. 4, 1992, at 7.

[84] *Id.*

The SCID-hu Mouse: Mice with Transplanted Immune Systems

Subsequently, researches began to feel that "gene therapy of human T-lymphocyte disorders, especially acquired immunodeficiency syndrome (AIDS), would be greatly facilitated by the development of an *in vivo system* in which transduced human hematopoietic stem cells are used to reconstitute the T-lymphoid compartment,"[85] by using a SCID-hu mouse. These mice are born with severe combined immune deficiency (SCID), due to a genetic defect, then are successfully given a human immune system by transplantation of human fetal thymus and liver tissue.[86] "Briefly, a SCID mouse is engrafted with either a human bone marrow fragment, thymus/liver graft, or a lymph node."[87] As a result, these mice can be infected with HIV,[88] and are used to study hemoglobinopatheis.[89] Proponents for this type of research contend that this will blaze the trail for thymus transplants that could strengthen the AIDS patient's immune systems.[90]

Since the medical community discovered that the "transplantation of fetal liver hematopoietic stem cells (HSCs) in utero had the potential to treat a variety of hematologic, immunologic, and metabolic diseases,"[91] a few of their contemporaries developed methods for "processing fetal liver free of known human pathogens while maximizing HSC activity after cryopreservation," (a method of long term storage of cells or tissues by freezing them in such a way as to minimize ice crystal formation).[92] They used human fetal livers from aborted specimens that gestated about 12 to 14 weeks and isolated the hematopoietic cells.[93] Additionally, these researchers developed a protocol that separated the abortion decision from the donation decision, preserving the confidentiality between the donor and

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[85] Ramesh K. Akkina et al., *Modeling Human Lymphoid Precursor Cell Gene Therapy in the SCID-hu Mouse*, 84 BLOOD 1393 (1994).

[86] Nancy Solomon, *AIDS: Of Mice and Men*, ADVOCATE (CDC HIV/AIDS, STD, TB: PREVENTION NEWS UPDATE), Dec. 29, 1992, at 70.

[87] Likoudis, *supra* note 82.

[88] *See* Solomon, *supra* note 86.

[89] Likoudis, *supra* note 82.

[90] *See* Solomon, *supra* note 86.

[91] George B. Mychaliska et al., *The Biology and Ethics of Banking Fetal Liver Hematopoietic Stem Cells for in Utero Transplantation*, 33 J. PEDIATRIC SURGERY 394-99 (1998).

[92] Robin Geller, *Re: How Does Cryopreservation Work?* (October 1998), *at* http://www.madsci.org/posts/archives/oct98/908221290.Cb.r.html (last visited Jan. 13, 2003).

[93] *See* Mychaliska et al., *supra* note 91.

recipient.[94] Consequently, they concluded that their research demonstrated human fetal liver cells (HSCs) can be ethically obtained and "processed to ensure a graft with a small number of T-cells and a high yield of progenitors after cryopreservation," and they stated that a bank of fetal liver HSC would treat various genetic diseases before birth by in utero transplantation.[95]

## Organ Transplants

"All 50 states and the District of Columbia have adopted some form of the Uniform Anatomical Gift Act (UAGA), which gives people the right to control the disposition of their bodily remains after death, and is usually interpreted to permit fetal tissue donation."[96] Donees must give written consent for their donation, entire body or body parts, to be used for any type of research, education, therapy, or transplantation.[97] Most states permit fetal tissue and organ donations; however, there are some state legislatures that single out fetuses and exclude them from the UAGA legal provisions.[98]

"In 1997, the United Network of Organ Sharing reported 3,565 children and 76,526 adults were waiting for organ transplants."[99] In fact, more than 4,000 people die each year waiting for one.[100] Cloning could possibly produce whole organs, *i.e.*, hearts, lungs, livers, kidneys, etc., giving hope to these people and a new lease on life, but only if human cloning and related technologies are allowed to proceed.[101]

Gregory Pence, Ph.D., a professor of philosophy in the medical school at the University of Alabama in Birmingham, and author of *Re-Creating Medicine: Ethical Issues at the Frontiers of Medicine* (Rowman & Littlefield), believes that embryonic stem cell research has created many new possibilities, and that in the future, embryo cloning could be used to replace damaged or diseased organs without having the recipients undergo the risk of organ rejection (because the organs

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[94] *Id.*

[95] *Id.*

[96] Planned Parenthood Federation of America, Inc., *Donating Fetal Tissue for Medical Treatment and Research* (Feb. 2000), *at* http://www.plannedparenthood.org/library/facts/fetaltis_010600.html, *citing* Vawter et al, *The Use of Human Fetal Tissue: Scientific, Ethical, and Policy Concerns*, U. MINN. CTR. FOR BIOMEDICAL ETHICS (1990).

[97] *Id.*

[98] *Id.*

[99] *See* Pence, *supra* note 23.

[100] *Id.*

[101] *Id.*

would be created from their own genetic material), and the prolonged use of anti-rejection drugs that accompany most standard organ transplants.[102]

## Legislative History

"In 1973 the U.S. Supreme Court legalized first and second trimester abortions in *Roe v. Wade*.[103] This landmark decision spurred the legal controversy and public concern regarding fetal tissue research within American society, "primarily due to the fact that much of the fetal tissue used in research and transplantation was from elective abortions."[104] But by this time, most states had enacted various forms of legislation to regulate fetal research and transplantation within their respective jurisdictions, and all 50 states had enacted the UACA governing the donation and use of all or part of the human body of adults, children, and fetuses.[105]

In 1974, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was established within HEW, the former U.S. Department of Health, Education, and Welfare (now the Department of Health and Human Services, or DHHS)"[106] in order to scrutinize fetal research.[107] After its review, HEW stipulated that the research in question be permitted in accord with state law, and subsequently, issued regulations on the matter.[108] Fetal research progressed for the next 10 years, until "the New England Journal of Medicine reported the successful transplantation of fetal neural tissue into the brains of two young patients with Parkinson's Disease,"[109] and researchers began to request federal funding for further fetal tissue projects.[110]

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[102] *See id.*

[103] *See* Schrock, *supra* note 24.

[104] *Id.*

[105] Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Charles Baron, *Fetal Research: The Question in the States*, HASTINGS CTR. REP. 12-13 (1985); Mary Mahowald et al., *The Ethical Options in Transplanting Fetal Tissue*, HASTINGS CTR. REP. 10 (1987); Henry Greely et al, *Special Report: The Ethical Use of Human Fetal Tissue in Medicine*, NEW ENG. J. MED. 1093 (1989).

[106] *Donating Fetal Tissue for Medical Treatment and Research, supra* note 15.

[107] *Id.*

[108] *Id.*

[109] *Id.*

[110] *Id.*

Soon after, anti-abortion activists created inflammatory and alarming misinformation, campaigning for a ban on "all federally funded research involving the transplantation of tissue from induced abortions into humans."[111] Moreover, during the Reagan-Bush administration, the president and his supporters argued that advances in this area of treatment would create new incentives for having an abortion, and might actually lead to more abortions.[112] While leading experts on the 1988 National Institutes of Health (NIH) Fetal Tissue Transplantation Research Panel objected,[113] the DHHS placed a moratorium upon federally funded fetal tissue research[114] even though the specimens were obtained from elective abortions. These experts consisted of members assembled by the NIH which, in turn, recommended that the moratorium be lifted,[115] "supporting fetal tissue transplantation research as 'acceptable public policy.'"[116] They argued that "sufficient separation could be made between a woman's decision to abort and the use of the tissue for research."[117] Essentially, the panel agreed upon standards which prevented the medical use of fetal tissue from causing any pressure on women to have an abortion by forbidding any payment for the tissue, and any directed donation to a particular patient, *i.e.*, one who might be a friend of the donor or have arranged for payment on the side.[118]

However, opponents of fetal tissue research contended that "the NIH director, who appointed the panel, was publicly predisposed in favor of fetal tissue research,"[119] thereby influencing the outcome of the panel's recommendation. They also claimed that another NIH panel, which declared that fetal research should only be done on embryos up to 20 days old, comprised a majority of people directly involved in the proposed research.[120] Additionally, anti-abortion groups argued that a woman's decision to have an abortion could be influenced by another person possibly benefiting from the use of the fetal tissue,[121] even

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[111] *Donating Fetal Tissue for Medical Treatment and Research, supra* note 15.

[112] Right to Life of Michigan, *Fetal Tissue & Embryo Research, at* http://www.rtl.org/html/fetal_tissue___embryo_research.html (last visited Jan. 13, 2003).

[113] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15.

[114] *Id.*

[115] Right to Life of Michigan, *supra* note 112.

[116] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15.

[117] Right to Life of Michigan, *supra* note 112.

[118] James, *supra* note 83.

[119] Right to Life of Michigan, *supra* note 112.

[120] *Id.*

[121] *See* James, *supra* note 83.

though the panel accordingly suggested that "procedural safeguards were needed to insure that the prospect of abortion being socially beneficent would not influence a woman's decision to abort."[122]

"Technically, the fetal-tissue ban only prevented *Federal* funding of research on transplanting fetal tissue into humans;"[123] and "privately funded research was being done, as well as federally-funded research using tissue from spontaneous abortions (miscarriages) and abortions needed to save the mother's life."[124] This ban did not include other work with the tissue, such as laboratory studies, but it did "cast a stigma of federal disfavor over the whole area of fetal tissue research, causing scientists to avoid promising studies they otherwise would have conducted"[125] had the moratorium never been put into place. It is important to note that "science is a highly politicized area, mainly because it is heavily dependent on federal funding, permissions, and other decisions."[126] Thus, some scientists and researchers were "reluctant to even discuss the issue, because they did not want to become involved in the politics surrounding it."[127]

Unsurprisingly, the administration under George H. Bush overruled the expert panel set up to examine this issue, as well as an advisory committee to the director of the NIH.[128] While Congress tried to overturn the ban through an NIH Reauthorization Act provision, President Bush vetoed that bill.[129] Bush argued the bill was, "inconsistent with our nation's deeply held beliefs."[130] As an aside, President Reagan's moratorium was only a temporary one,[131] and when President Bush took office, he extended the moratorium indefinitely.[132]

Christopher Scott, Associate Director of the Arnold and Mabel Beckman Center for Molecular and Genetic Medicine at Stanford, opposed President Bush's actions and contended:

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[122] Right to Life of Michigan, *supra* note 112.
[123] James, *supra* note 83.
[124] Right to Life of Michigan, *supra* note 112.
[125] *See* James, *supra* note 83.
[126] *Id.*
[127] *Id.*
[128] *Id.*
[129] *Id.*
[130] Christopher Scott, *Fetal Tissue Research*, 6 THE SCIENTIST (1992).
[131] Right to Life of Michigan, *supra* note 112.
[132] *See Donating Fetal Tissue for Medical Treatment and Research*, *supra* note 15.

> "In 1987, the National Institutes of Health spent more than $11 million on fetal tissue research and continued to spend millions on non-therapeutic research using tissue obtained legally from either spontaneous or elective abortions, according to the 'Report of the NIH Ad Hoc Panel on Human Fetal Tissue Research,' submitted Dec. 14, 1988, to the NIH director's advisory committee. If, as Bush claims, the issue is an ethical and philosophical one, why does his administration permit, even encourage, research using tissue from elective abortions on one hand and deny it on the other? The contradiction shows the Bush administration has no high moral agenda, only a political one."[133]

When Bill Clinton took office as president in 1992, his administration and the NIH Director, Harold Varmus, announced that, "Stem cells, or master cells, are not covered by the ban on federal funding of human embryo research, because they are not human embryos capable of developing into a person."[134] Pro-life advocates heavily chastised this declaration as science using another human being in order to obtain stem cells.[135] Nonetheless, in 1993, Congress lifted the DHHS moratorium on projects that involved transplanting tissue from selectively aborted children,[136] and restored their federal funding by approving the 1993 NIH Revitalization Act.[137] Clinton's administration made sure that federal research dollars were no longer prohibited from going to fetal tissue research projects.[138]

On December 1, 1994, another NIH committee declared that various research projects involving the intentional creation of human embryos for genetic and other research purposes are ethically acceptable, and indicated that projects which fell within their outlined parameters should be eligible to receive federal grants.[139] While Clinton issued a directive prohibiting federal funding to projects creating new embryos, in essence, the directive did not prohibit the derivation of embryos created in the *in vitro* fertilization process.[140] Therefore, embryos fertilized with the intent to create a functioning

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[133] *See* Scott, *supra* note 130.
[134] Right to Life of Michigan, *supra* note 112.
[135] *Id.*
[136] *Id.*
[137] *See* Schrock, *supra* note 24.
[138] Right to Life of Michigan, *supra* note 112.
[139] *Id.*
[140] *Id.*

human being, but as a result could not be viably used, were fair game for stem cell research.

In 1996, Congress overrode Clinton by passing a bill that prohibited federal funding of *any* research on live human embryos.[141] But the tides really began to turn in 1998, when "scientists around the nation were announcing huge advancements in the area of stem cell research, which could someday lead to the culturing of new organs"[142] and the curing of diseases that were once thought untreatable. Soon after, there was a surge of support against the ban on federally funded human embryo research because it was "slowing down potentially life saving advancements in the area of stem cell research."[143] In fact, "after consulting with scientists and a variety of religious representatives, the National Bioethics Advisory Committee (NBAC) recommended that Congress ease its prohibition, primarily because research funded solely by private companies would not necessarily generate the knowledge and potential therapies that the public could otherwise gain."[144]

> "Some states have enacted laws that ban the use of fetal tissue for 'experimentation.' Such laws have been struck down as unconstitutional by federal courts in Illinois, Louisiana, Utah, and most recently, Arizona. However, laws that ban or somehow restrict fetal tissue research remain on the books in several states, including: Indiana, Kentucky, Missouri, New Mexico, North Dakota, South Dakota, and Tennessee."[145]

### Current Presidential Administration

The Clinton administration allowed stem cell experiments to proceed under tight guidelines, but scientists and ethicists alike were unclear how George W. Bush would proceed with the issue.[146] Mary Hendrix, Ph.D., President of the Federation of American Societies for

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[141] *Id.*

[142] *Id.*

[143] Right to Life of Michigan, *supra* note 112.

[144] Ferber, *supra* note 3.

[145] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* Margaret S. v. Edwards, 597 F. Supp. 636 (E.D. La. 1984), *aff'd*, 794 F. 2d 994 (5th Cir. 1986); Lifchez v. Hartigan, 735 F. Supp. 1361 (N.D. Ill. 1990); Jane L. v Bangerter, 794 F. Supp. 1537 (D. Utah 1994), *reversed*, 61 F. 3d 1493 (10th Cir. 1995); and Forbes v. Woods, No. CV 96-288 TUC WDB (D. Az., filed April 29, 1996).

[146] *See* WebMd, reviewed by Dr. Michael W. Smith, *Abortion Debate Clouds Future of Stem Cell Research* (Jan. 26, 2001), *at* http://my.webmd.com/content/article/1691.51004.

Experimental Biology, said that Bush transition team officials told her organization "precipitous action on the stem cell research was unlikely." [147] Hendrix responded by saying that if any policy reform occurs, she hoped to persuade President George W. Bush and his administration that "stem cell experiments hold great promise and can proceed in an ethical manner."[148] Not surprising, "a group of 60,000 scientists pushed hard to hold the line on stem cell studies."[149]

Recently, a White House press secretary said, "You're familiar with the President's position on the issue. If there are any other regulations or any other changes, you'll be notified," when commenting on Bush's presidential campaign in support of existing federal policy that prohibits research involving the destruction of an embryo.[150] "However, since the new president had already rolled back funding for international family planning programs that counsel or offer abortion services, the question [became] will Bush take a hard look at stem cells?"[151]

In August of 2001, President George W. Bush answered that question by announcing that his administration would back partial stem cell funding.[152] He stated that the federal government would pay for a limited amount of research from human embryos, and that while federal grants may not be used for stem cell studies where the source of the cells involved the creation or destruction of additional embryos, funding of projects would be provided for research that involved left over embryos from fertility clinics, *i.e.*, existing colonies of stem cells. [153] He pointed out that 60 of these colonies, or lines, already exist, and that he would create a presidential committee to oversee this type of research.[154]

President George W. Bush said that since he is an opponent of abortion, this decision placed him at a "difficult moral intersection."[155] However, he noted that he made his decision by asking whether frozen

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[147] *Id.*

[148] *Abortion Debate Clouds Future of Stem Cell Research*, *supra* note 146.

[149] *Id.*

[150] *Id.*

[151] *Id.*

[152] Amy Goldstein & Mike Allen, *Bush Backs Partial Stem Cell Funding*, WASH. POST, Aug. 10, 2001, *available at* http://www.washingtonpost.com/ac2/wpdyn?pagename=article&node=&contentId=A56170-2001Aug9.

[153] *Id.*

[154] *Id.*

[155] *Id.*

embryos are life and should they be protected, and if they are going to be discarded anyway, should they be used to possibly save or improve other lives. He concluded that stem cell research "offers both great promise and great peril,"[156] and therefore knew he had to proceed with great care. "At its core," Bush said, "this issue forces us to confront fundamental questions about the beginning of life and the ends of science."[157]

As expected, President George W. Bush's decision did not go without criticism whereby some congressional Democrats and coalitions criticized him for not allowing enough funding. "Once again, the President has done the bare minimum in order to try and publicly posture himself with the majority of the Americans...But Americans know this is not the decision that the science community needs to go forward full force,"[158] said House Minority Leader Richard A. Gephardt (D-Mo.). Similarly, Dan Perry of the Alliance for Aging Research stated, "We are saddened that President Bush failed the leadership test and cast a shadow on the hopes of patients and the promise of science."[159]

Some critics of Bush even come from his own party, as is the case of Senator Arlen Specter, (R-Pa.), who is co-sponsoring a bill along with Senator Tom Harkin, (D-Iowa), allowing federal funding to extract stem cells for research from frozen embryos that are discarded every year by the thousands. Supporters of this bill are concerned that the existing stem cell lines would not be enough to meet the needs for research. Specter intends to press for an early Senate vote on the bill, but it is not likely he will capture the votes needed to overturn a veto.[160] This fear comes from the president's threat that he would do just that if there was a push for broader stem cell research funding, *i.e.*, extending funding to embryos that fall outside of the existing 60 lines.[161] To add to the pendulum's swing, Congress could erratically overturn Bush's policy on stem cell funding, illustrating that the American government is not without its check and balances, and that this issue is far from being settled in the legislative branch.

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[156] *Id.*

[157] *Bush Backs Partial Stem Cell Funding*, *supra* note 152.

[158] *Id.*

[159] *Id.*

[160] MSNBC News, *Specter Urges Broader Funding*, (August 13, 2001), *at* http://stacks.msnbc.com/news/610311.asp.

[161] MSNBC News, *Bush Says He'd Veto Broader Stem Cell Funding* (August 13, 2001), *at* http://stacks.msnbc.com/news/610311.asp.

In respect to related legislation, a question was posed to the U.S. House of Representatives in the form of a bill asking whether a fetus is a human being for the purposes of The Unborn Victims of Violence Act.[162] Apparently so, as the measure passed by a vote of 252-172, making it a federal crime to harm a fetus (a member of the species *homo sapiens*, at any stage of development who is carried in the womb) during an attack on a pregnant woman.[163] This bill does not affect abortions performed with the woman's consent, and "only deals with women who have already chosen to carry a pregnancy to term,"[164] essentially exempting abortion doctors.[165] Had this bill affected abortions across the board, it may have applied to some forms of tissue specimens used for fetal tissue research. Currently, as legislative safeguards, "federal law already states that it is illegal to sell fetal tissue, providing fines, imprisonment, or both for violations."[166]

**British Legislation for Fetal Tissue Research**

The controversy surrounding stem cell research is not limited to the confines of the United States, but has found its way to the medical, governmental, and societal communities of other countries. In particular, England is facing similar scientific and ethical debates, and has progressed more proactively with legislation to foster research, in comparison to the conservative approach taken by America. After researchers turned human brain stem cells into heart, gut, and liver cells, and bone marrow stem cells into nerve cells, England's government proposed changing the ban on human cloning in order to allow scientific research on embryonic stem cells.[167] "Currently, these cells are derived from either very early embryos discarded at *in vitro*

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[162] Scott Shuger, *Fetus Don't Fail Us Now* (April 27, 2001), *at* http://politics.slate.msn.com/id/1007587.

[163] Kaiser Daily Reproductive Health Report, *House Passes Unborn Victims of Violence Act 252-172, Rejects Lofgren Amendment* (April 27, 2001), *at* http://report.kff.org/archive/repro/2001/4/kr010427.1.htm.

[164] Deborah Zabarenko, *House Passes Bill Defining Fetuses As People,* REUTERS (April 26, 2001), *available at* http://dailynews.yahoo.com/h/nm/20020426/ts/congress/_abortion_dc_2. html.

[165] Tom Curry, MSNBC, *House Approves Fetal Protection Bill,* (April 26, 2001), *at* http://www.msnbc.com/msn/564855.asp.

[166] Gloria Feldt, *Fetal Tissue Research Benefits Society, HR350 is Harassment, Not Law,* (November 9, 1999), *at* http://www.freerepublic.com/forum/a384ebd243304.htm.

[167] *See* Dan Ferber, Ph.D., reviewed by Dr. Aman Shah, *Stem-Cell Therapies Inch Their Way Closer to the Clinic – But First Treatments Still Several Years Away* (Aug. 18, 2000), *at* http://my.webmd.com/content/article/1728.60509.

fertilization clinics or from tissue from aborted fetuses."[168] Both Great Britain's chief medical officer and Prime Minister recommended "Parliament go one step farther and allow its scientists to actually clone human embryos for medical research."[169] Consequently, the House of Lords voted to allow "limited cloning of human embryos to produce stem cells, in spite of vigorous objections from religious leaders,"[170] following the House of Commons approval the year before.[171]

There were various vehement reactions to this decision. Some opponents seemingly contend that it has "set the human race on the path to a deeply troubling future: one where discarded human embryos are used, like so many spare parts, to devise medical treatments using their stem cells; or where embryos are created for the sole purpose of being destroyed in order to develop stem cells that match a certain person's genetic makeup."[172] Yet, on the other side of the coin, some supporters take the view that, "Now England can move ahead in this competitive technology."[173] But is America really moving ahead with stem cell research with its stricter legislation in force? Regardless of the answer, the NIH had to develop guidelines for scientists and researchers to adhere to a set protocol and procedural standards.

## NIH Guidelines

In order to establish rules helping to ensure that NIH-funded research on pluripotent stem cells were "conducted in an ethical and legal manner,"[174] the NIH published guidelines in 2000 called the National Institutes of Health Guidelines for Research Using Human Pluripotent Stem Cells under the Clinton administration. These guidelines instructed researchers on how to retrieve stem cells from discarded human embryos and establish standards for harvesting similar cells from fetal tissue following abortions.[175]

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[168] *Id.*

[169] Gina Shaw, reviewed by Dr. Craid H. Kliger, *Cloning: How Far Should We Go?*, (Sept. 29, 2000), *at* http://my.webmd.com/content/article/1691.50856.

[170] *See Abortion Debate Clouds Future of Stem Cell Research*, *supra* note 146.

[171] *Id.*

[172] Edmund Pellegrino, M.D., *Cloning and Stem Cell Research: Too High a Price* (Sept. 29, 2000), *at* http://my.webmd.com/content/article/1691.50914.

[173] *See Abortion Debate Clouds Future of Stem Cell Research*, *supra* note 146.

[174] *National Institutes of Health Guidelines for Research Using Human Pluripotent Stem Cells*, (Effective Aug. 25, 2000, 65 FR 51976, Corrected Nov. 21, 2000, 65 FR 69951), *available at* http://www.nih.gov.news/stemcell/stemcellguidelines.htm.

[175] *See* Gertrude Murphy, M.D., *Fetal Tissue and Embryo Research*, (visited on May 25, 2001), *at* http://www.prolife-mclf.org/refjrnl/fetaltissue.htm.

However, President George W. Bush's current policy would replace these guidelines that never really went into effect. While the old guidelines did not directly allow the use of federal subsidies to destroy human embryos, they would have provided government funding for research involving cells taken from embryos by privately financed researchers, and would require that the embryos be "slated for destruction at fertility clinics, frozen, and used in research with donors' consent."[176] The replacement guidelines would have to be changed to reflect President George W. Bush's stance on using only existing colonies of stem cells from fertility clinics in future studies and barring the use of federal grants on stem cells obtained from embryos after August 9, 2001.

Interestingly, there had been no applications for stem cell grants, even though the money was available.[177] However, the NIH did grant Artecel funds for research into using fat tissue as a source of adult stem cells for medical treatments.[178] "The speculation was that researchers were taking a wait-and-see attitude before committing to complex and controversial experiments that could be canceled."[179] John Gearhart, Ph.D., a Professor of Obstetrics and Gynecology and a pioneering stem cell researcher at The Johns Hopkins University in Baltimore, stated, "'Concerned' is a fair statement. I think that there's been a great deal of work and effort to position guidelines that are workable."[180] Additionally, Gearhart agreed that the technology should be overseen, but noted, "Some of the most egregious potential abuses, like selling embryos, are already outlawed."[181] Yet, Thomas Murray, chairman of the NBAC's genetics advisory subcommittee, stated, "There is a consensus forming that it is permissible to conduct this type of research on embryos left over from [*in vitro* fertilization] procedures where they would have been discarded in any event."[182] Essentially, the dilemma becomes, "Do you thaw and throw them away, or use them as a source of stem cells?"[183]

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[176] Goldstein et al., *supra* note 152.

[177] *See Abortion Debate Clouds Future of Stem Cell Research*, *supra* note 146.

[178] *Durham's Artecel Wins Grant for Stem Cell Research,* The Business Journal, July 24, 2001.

[179] *Abortion Debate Clouds Future of Stem Cell Research*, *supra* note 146.

[180] *Id.*

[181] *Id.*

[182] Tim Friend, *Gov't Oks Fetal Tissue Research* (May 23, 1999) *at* http://www.lougehrigsdisease.net/als_news/990524govt_oks_fetal_tissue_research.htm..

[183] *Id.*

There were no grants for fetal stem cells until late May of 2002, when the U.S. government quietly approved the first federally funded project using stem cells from fetuses aborted up to eight weeks after conception.[184] This was possible since President George W. Bush's restriction only applied to an embryo and not to a fetus, subjecting the stem cells taken from fetuses to different, broader rules.[185] According to NIH officials, stem cell taken from a fetus fall under the "less-restrictive Clinton-era rules"[186] since Bush never revised the guidelines. White House officials said that Bush did not modify the guidelines for fetal-derived cells because of the 1993 law that made it illegal for a president to ban funding on stem cell research.[187] As a result of not amending these rules, "days-old embryos have some protections that eight week old fetuses don't."[188] Essentially, this grant not only expanded the reach of federal funding of stem cell projects, it fueled the fire of the ethical debate surrounding this research.

While the guidelines will not allow embryos to be created through the practice of cloning, nor will they allow the use of embryos outside of the sanctioned 60 lines, opponents still argue that embryos are being destroyed to benefit another human being.[189] Edmund Pellegrino, M.D., a John Carroll Professor of Medicine and Medical Ethics at The Center for Clinical Bioethics at Georgetown University Medical Center, contends, "...no matter what the medical benefits of this research, you cannot kill one member of the human species so that good may come to another."[190] In reference to the stem cells benefiting others, Gregory Pence countered by stating:

> "...the NIH's decision to permit federally funded research using stem cells from human embryos, and the even farther-reaching recommendation by the British to permit cloning of embryos for research purposes, are so important ... if human cloning and related technologies are allowed to proceed ... conditions like Alzheimer's, Parkinson's, diabetes, heart

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[184] *See* Jeremy Manier, *U.S. Quietly OKs Fetal Stem Cell Work: Bush Allows Funding Despite Federal Limits On Embryo Use*, CHI. TRIB., July 7, 2002, §1 at 1.

[185] *See* Manier, *supra* note 184.

[186] *Id.*

[187] *Id.*

[188] *Id.*

[189] *See* Pellegrino, *supra* note 172.

[190] *Id.*

failure, degenerative joint disease, and other problems may be made not just treatable, but curable..."[191]

**Laws that Protect Women and Govern Fetal Tissue Donation**

In addition to many state laws that apply to the transplantation and research of fetal tissue, there are two principal federal laws, NOTA and the NIH Revitalization Act of 1993, which govern within this arena as well.[192] NOTA, or The National Organ Transplant Act provides for grants of organs and tissues in order to conduct research or be used for transplantation, (amended to include fetal organs and tissues) and The National Institutes of Health Revitalization Act of 1993 allows federal funding for fetal tissue research on transplantation for therapeutic purposes.[193]

More specifically, the Revitalization Act allows the fetal tissue specimen to be obtained from either a spontaneous or induced abortion, or a stillbirth, and requires the mother to give written consent to the abortion before discussing the possibility of donating the tissue.[194] It also requires that she be informed through a written and signed statement, *i.e.*, informed consent document, by her physician disclosing any possible interest that the physician may have in the fetal tissue research.[195] Furthermore, the Revitalization Act prohibits "the mother from knowing or restricting the identity of the recipient, and a researcher from taking part in any decision that would affect the timing, method, or procedure used to end a pregnancy made solely for the purposes of research."[196] Additionally, under the NIH Guidelines for Research Involving Human Pluripotent Stem Cells, the donor cannot be monetarily or otherwise induced for donations, and specific written policies and practices should be implemented to safeguard against any such inducements.[197] It is important to note that "penalties for violating this law include a fine - in an amount not less than twice the amount of

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[191] *See* Gregory Pence, Ph.D., *The Lifesaving Promise of Cloning Technology* (Sept. 29, 2000) *at* http://my.webmd.com/content/article/1691.50913.

[192] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* 42 U.S.C.A. § 274e (1988); 42 U.S.C.A. § 289(g)(1) (1993).

[193] *Id.*

[194] *Id.*

[195] *Id. See also* National Institutes of Health Revitalization Act of 1993, 42 U.S.C. § 289 (2002).

[196] *See Donating Fetal Tissue for Medical Treatment and Research, , supra* note 15, *citing* 42 U.S.C.A. § 274(e) (1988); 42 U.S.C.A. § 289(g)(1) (1993).

[197] National Institutes of Health, *Guidelines for Research Involving Human Pluripotent Stem Cells*, (Aug. 25, 2000, amended Nov. 21, 2000).

the valuable consideration - or up to 10 years in prison, or both."[198] Lastly, additional non-compliance with the terms of the NIH Guidelines may result in the imposition of special conditions on federal grants, increased oversight, monitoring, reporting requirements, withholding of funds, disallowance of all or part of the project costs, or suspension or termination of all or part of the grant.[199]

Some opponents to this research try to bolster their position by contending the companies that place their employees in facilities for the purpose of retrieving the delicate specimens are, in their view, *fetal tissue wholesalers*.[200] While both NOTA and the NIH Revitalization Act permit *reasonable payments*, *i.e.*, one that complies with 42 U.S.C. 289g-1 for the "removal, transportation, implantation, processing, preservation, quality control, and storage of the tissue,"[201] they each prohibit the sale of human organs and tissues for research or transplantation.[202] Thus, both Acts, as well as federal law, disallow the *sale* of fetal tissue, and *not* the collection of specimens in order to ensure their viability and prompt distribution. Hence, these companies cannot be considered sellers in any legal sense of the term.

**Distributive Sources of Fetal Tissue**

In the United States, three primary sources of fetal tissue, *i.e.*, hospitals, abortion clinics and obstetrical/gynecological physicians, obtain written consent and then send the fetal tissue to researchers associated with academic institutions, commercial companies, and other non-American institutions.[203] Because of the tissue's fragile nature, it must be "immediately transported by researchers to their laboratories or some

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[198] *See Donating Fetal Tissue for Medical Treatment and Research, , supra* note 15, *citing* 42 U.S.C.A. § 274(e) (1988); 42 U.S.C.A. § 289(g)(1) (1993). *See also* National Institutes of Health Revitalization Act of 1993, Title I – General Provisions Regarding Title IV of Public Health Service Act, Subtitle A – Research Freedom, Public Law 103-43; June 10, 1993; 42 U.S.C. 289, Section 498A, Research on Transplantation of Fetal Tissue.

[199] National Institutes of Health, *Guidelines for Research Involving Human Pluripotent Stem Cells*, (Aug. 25, 2000, amended Nov. 21, 2000).

[200] *See* Paul Likoudis, *At Home in the Culture of Death...Dead Baby Parts Business Booming*, (Oct. 14, 1999) *at* http://www.freerepublic.com/formula/a37f3c9b331a1.htm.

[201] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* 42 U.S.C.A. § 274(e) (1988), and 42 U.S.C.A. § 289(g)(1) (1993).

[202] *Id.*

[203] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* Vawter et al., *The Use of Human Fetal Tissue: Scientific, Ethical, and Policy Concerns*, UNIV. OF MINN., CTR. FOR BIOMEDICAL ETHICS (1990).

other location where it can be safely stored and kept from deteriorating."[204]

> "While solid organs are obtained and distributed through the national Organ Procurement and Transplantation Network, there is no formal, organized, national network for procuring and distributing fetal tissue. Instead, several nonprofit organizations -- including the National Disease Research Interchange, the Mid-America Transplant Association, the International Institute for the Advancement of Medicine, and the American Association of Tissue Banks -- are involved in obtaining and distributing fetal tissue. These organizations are generally responsible for examining and evaluating the tissue, providing storage facilities, and distributing tissue to the biomedical community. Some of these organizations interact directly with private laboratories or pharmaceutical companies that perform medical research with fetal tissue. In these cases, they are usually compensated for the efforts and costs associated with the transportation, storage, and evaluation of the tissue."[205]

Most recently, the Central Laboratory for Human Embryology at the University of Washington (which is supported by the NIH) supplies tissue from "normal or abnormal embryos and fetuses of desired gestational ages between 40 days and term."[206]

**Opposition to Using Donated Fetal Tissue for Medical Research**

Opponents of fetal tissue research usually consist of religious, pro-life and anti-abortionist groups, and other individuals or organizations with similar views. The arguments vary, ranging from fetal tissue research being a conspiracy with the abortion industry for donor benefit or financial gain, to the research being accused of taking a human life, even though it is being used to potentially save lives.

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[204] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* Dorothy E. Vawter, PERSONAL COMMUNICATION (1999).

[205] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 15, *citing* Maryon F. King, et al., *Touchy Subjects: Marketing a Controversial Product Such as Fetal Tissue Research Requires Sensitivity and Finesse*, J. HEALTH CARE MARKETING 16 (1995); 42 U.S.C.A § 274(e) (1988).

[206] *See* Likoudis, supra note 200.

"Some religious groups say using fetal tissue from aborted fetuses amounts to collaboration with the abortion industry."[207] Challengers argue that cooperation in future abortions occurs if the use of tissue influences a woman's decision to conceive for the sole purpose of donating the aborted tissue, especially to a family member, which will in turn increase the rate of elective abortions.[208] They feel these women may be influenced to abort since some 'good' may come from the use of cadaveric fetal tissue for therapy, thereby legitimizing FTT and the abortion industry. [209]

Summarily, the opposition believes:

> "Fetal tissue research cannot justify abortion by citing a benefit from it. The fact still remains that unborn babies are being killed and now what's left of their little bodies are being used in experiments in an attempt to preserve the lives of others. These babies don't get a say in either matter."[210]

Additionally, some non-advocates contend that abortions will increase as the supply and demand for fetal tissue is realized and necessary for further research.[211] Brian Clowes, author of the American Life League's Pro-Life Activist's Encyclopedia entry on fetal experimentation: Frankenstein Revisited, estimated that there would be an increase for organ and tissue harvested from aborted fetuses in order to meet the demand from aging and callous American baby-boomers. He predicted that the following would result: "Inflated prices . . ., a thriving black market; the growing and selling of pre-born babies for sale; the import of fetal tissue from poor and developing countries; and entrepreneurs encouraging women to abort as late as possible for a monetary reward,"[212] and wrote the following excerpt in ALL's Encyclopedia in 1995:

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[207] *See* Don Colburn, *The Fetus: Medicine, Law and Morality,* WASH. POST HEALTH, Oct. 18, 1988, at 17.

[208] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[209] Gertrude Murphy, M.D., *Fetal Tissue and Embryo Research* (May 25, 2001), *at* http://www.prolife-mclf.org/refjrnl/fetaltissue.htm. *See also* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[210] Professor Bill Dalton, *The News On Fetal Tissue Research, at* http://shrike.depaul.edu/~dmiller3/fetal.html (last visited on Jan. 13, 2003).

[211] *See* Murphy, *supra* note 209.

[212] *See* Likoudis, supra note 200.

> "It may be expected, that as many as five million people will make use of fetal tissue on a regular basis. This means that the total amount of fetal tissue required to satisfy the demands of these 'neo-vampires' will be measured in the tons every year. Since there are only about 120,000 second and third trimester abortions in the United States, this means that demand for fetal tissue will crushingly and inevitably overwhelm the available supply."[213]

These opponents sarcastically describe the research "in cold, clinical research terms, [as] the end product of the 'fetal tissue issue' - an economically important byproduct of the sexual revolution."[214] While they feel that this "marketability of fetal tissue may also encourage indirect ways of increasing the abortion rate,"[215] they also argue that there is some type of financial gain for "baby parts trafficking."[216] This trafficking is depicted by contentions of financial incentives to the woman, abortion clinics and researchers, often pointing out the possibility of a potential conflict of interests.[217] "Subsequently, the House of Representatives passed a resolution calling for congressional hearings to investigate so-called 'trafficking in baby body parts for profit.'"[218]

Much of the trafficking argument encompasses the way the tissue samples are collected and distributed to the research facilities. For the most part, these non-advocates contend:

> "Fetal tissue research exploits women by altering abortion techniques, because doctors need good tissue samples to use. When women consent to donate their fetuses to research, doctors modify the suction procedure, so it won't be hard to identify various tissues and so they will be able

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[213] *Id.*

[214] *Id.*

[215] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[216] *See* Murphy, *supra* note 209.

[217] *See Schrock, supra* note 215.

[218] *See Donating Fetal Tissue for Medical Treatment and Research, citing* H.R 350, 106th Cong., (1st Sess. 1999). Expressing the Sense of the House of Representatives with Respect to Private Companies Involved in the Trafficking of Baby Body Parts for Profit.

> to retrieve intact fetuses. 'The role of women in fetal tissue research is, after all, to provide the raw material.'"[219]

Furthermore, they bolster their argument by contending that "some pre-born babies are not dead when brain tissue is extracted because of the desirability to use only fresh living cells for some transplants,"[220] and that "the necessity to obtain fresh tissue requires close cooperation between the abortionist and the research team because methods of collection are important because orders go out for certain age and type of tissue, etc."[221]

Subsequently, "the anti-choice organization, Life Dynamics Incorporated accused abortion providers of performing abortions to profit from the sale of [fetal parts],"[222] and in 1999, supposedly "uncovered documented evidence of baby body parts trafficking."[223] The organization alleged that after a two-year under cover investigation, it obtained documented evidence that Opening Lines, a company in West Frankfort, Illinois "was procuring and selling fresh baby parts to fetal tissue researchers around the country."[224] In addition to printing that "one could buy a whole specimen (aborted baby) in 'un-processed condition' for seventy dollars,"[225] it also gave a price list for the various body parts including livers for $125-$150, spleens for $50-$75, pancreases for $75-$100, thymus for $75-$100, kidneys for $100-$125, limbs for $150, brains for $150-$999, spinal columns for $150, and spinal chords for $325.[226]

Furthermore, Life Dynamics chastised Opening Lines' promotional brochures for abortion clinics and researchers in the industry, which acknowledged the difficulty of the patient's decision and the chance to propose to the patient "a simple program that could help thousands of people."[227] Moreover, the literature denoted, "This is

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[219] *See* Dalton, *supra* note 210.

[220] *See* Murphy, *supra* note 209., *citing* Bernard Nathanson, *Fetal Tissue Research and Experimentation*, ALL ABOUT ISSUES (Mar-Apr 1992).

[221] *See* Murphy, *supra* note 209.

[222] *See* Planned Parenthood Federation of America, Inc., *Donating Fetal Tissue for Medical Treatment and Research* (Feb. 2000), *at* http://www.plannedparenthood.org/library/facts/fetaltis_010600.html.

[223] *Explosive News! Baby Body Parts For Sale, at* http://www.thekingsnetwork.com/stopftr/partsforsale.html, (last visited May 25, 2001).

[224] *Id.*

[225] *Id.*

[226] *Id.*

[227] *See* Likoudis, supra note 200.

an opportunity to make a difference . . . and it can be beneficial to your clinic,"[228] when referring to the leasing of space, offsetting a clinic's overhead, reimbursing employees' salaries and training competent personnel for this highly delicate procedure.[229] Life Dynamics also makes light of the company's reassurances that its specimens are high in quality, shipped promptly, affordable, and delivered in the specified quantities.[230]

Allegedly, an organ harvester, "Kelly," who supplied Life Dynamics with the controversial documents, stated:

> "Women are "coerced" into having abortions [and] would change their minds after entering the abortion mills, but they were sedated by staff into a 'Nyquil nap'. Women are encouraged to have late-term abortions to meet the demands of an industry that requires intact specimens and tissues."[231]

Consequently, Mark Crutcher, president of Life Dynamics at the time, added to this claim by saying, "This is about maximizing profits. First, you sell the woman an abortion. Then you turn around and sell the dead baby you take out of her. But you have to take it out whole or you don't have anything to sell."[232]

Many of these opponents, (some medical experts, along with Catholic activists and anti-abortion lawmakers) are concerned with the actual physical destruction of embryos, and "note that getting the stem cells requires destroying the embryos in which they grow, saying that 'it trades away life in the name of science,'"[233] and most do not subscribe to the idea of cloning for analogous reasons. Similarly, Edmund Pellegrino opposes the idea of cloning and argues that:

> "Beginning with basic medical ethics, the creation of human embryos for medical research is a violation of the very first principle of bioethics: We cannot use a human merely as a means to an end. Each person -- even an

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[228] *Id.*
[229] *Id.*
[230] *Id.*
[231] *Id.*
[232] *See* Likoudis, supra note 200.
[233] Sean Martin, reviewed by Dr. Michael W. Smith, *Stem Cell Controversy Draws Celebs to Capitol Hill* (Sept. 14, 2000) *at* http://my.webmd.com/printing/article/ 1728.61328.

> embryonic person of only a week's gestation -- is an end in him- or herself. But this research will require the destruction of the embryo. We would be creating life so that it may be killed."[234]

These opponents argue that life has already begun at the embryonic stage and that the fetus has rights. They feel that fetal research is "the denial of the personhood of unborn children, while acknowledging that their tissue is useful because it is human, [and] in short, says to the unborn, 'You can be useful to society, you just can't be a member of it.'"[235] Moreover, a Kansas City pastor, Russell Saltzman, rhetorically asked:

> "Does good ever derive from evil means? Is the human embryo human life, or is it a mere bit of research material? If it is mere research material, why should any human life at any stage of development -- yours or mine -- carry any special privilege?"[236]

The view is that, "Tissues from a deceased human fetus are entitled to the same respect and dignity as from a deceased adult or child, no more, no less."[237]

But even when it comes to the suffering of others with debilitating or incurable diseases, these non-advocates still find fetal tissue research undesirable. There are some who argue that not only is it an abominable practice and morally wrong, but it is unessential by advocating the use of "fetal cells from non-human fetuses or other biotechnology derived nerve cells [that] can likely be developed as safe and effective alternative cell sources for transplantation to patients with neurodegenerative diseases.[238] Not surprisingly, Pellegrino addressed this issue as well, and was quoted as stating:

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[234] *See* Pellegrino, supra note 172..

[235] *See* Gertrude Murphy, M.D., *Fetal Tissue and Embryo Research* (May 25, 2001), *at* http://www.prolife-mclf.org/refjrnl/fetaltissue.htm. *See also* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[236] *See* Martin, *supra* note 233.

[237] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Henry Greely et al., *Special Report: The Ethical Use of Human Fetal Tissue in Medicine*, N. ENG. J. MED 1094 (1989).

[238] *See* Ole Isacson, M.D., Ph.D., *On the Brain: Fetal Nerve Cell Transplantation: Advances in the Treatment of Parkinson's Disease*, (The Harvard Mahoney Neuroscience Institute Letter) (1994), *available at* http://neurosurgery.mgh.harvard.edu/oisacson.htm.

> "Still, you may say, what about people with Parkinson's or Alzheimer's? What about people who need organ transplants? Doesn't the extremity of their medical need justify such extreme steps if it can help them? In my view, the answer is no, since we must kill the embryo to obtain the cells in the first place. But even if one could justify this kind of research on moral and ethical grounds, creating human embryos -- or even using discarded ones -- is simply not necessary in order to obtain the needed stem cells."[239]

Furthermore, there are non-advocates that oppose the use of vaccines created from fetal cell lines because it involves taking cells from an aborted baby and growing them for many generations in a laboratory.[240] Therefore, they are against the inoculation of the following vaccines: MMR II (Rubella component), Measles/Mumps/Rubella (Priorix), Rubella (Ervevax), Rabies (HDCV) (Imovax), Hepatitis A (Havarix) and (Avaxim), Polio, and Chickenpox. These vaccinations are licensed by the FDA and commonly used in the United States.[241] The opponents claim to have found alternative vaccines derived from monkeys, chickens, and rabbits.[242] However, some countries supplying the alternative vaccines are trying to limit their liability, placing the integrity of the vaccinations in question. For example, the Kitasato Institute in Japan agreed to supply their rubella vaccine made from an animal cell line, but "have made it clear that no compensation is available outside Japan for any side effects as a result of the vaccine in line with Japanese law."[243] Moreover, the source supplying the alternative vaccine information warned of potential side effects, stipulated that the vaccine is for the sole use of the named patient (cannot be transferred to a third party), and specified that the patient's doctor must sign a paper accepting full liability for

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[239] *See* Pellegrino, supra note 172.

[240] Catherine Williams, *The Campaign for Ethical Vaccines: Alternatives to Vaccines Made from Aborted Babies,* (May 25, 2001), *at* http://www.dgsoft.co.uk/homepages/vaccines/alternatives.htm.

[241] *Id.*

[242] *Id.*

[243] *Id.*

administering the vaccine, which also bars the physician from bringing suit against the supplier.[244]

Even some major organizations, such as The American Heart Association, do not support or fund scientific research that involves human fetal tissue. It made this decision after "careful and extensive examination of information from affiliates, councils and volunteers, as well as from scientists, ethicists, community leaders and church representatives,"[245] and declared that their research program funded no grants using this type of fetal tissue.[246] However, the AHA noted that it will, "continue to fund meritorious biomedical research that's consistent with our mission to reduce disability and death from cardiovascular diseases and stroke."[247]

However, there are some opponents, as well as proponents, to fetal tissue research who have views inconsistent with other stances comprising their belief systems. For example, Tommy Thompson, the Secretary of Health and Human Services, opposes abortion but he will supervise the federal research establishment.[248] He even commended both a University of Wisconsin scientist for the work he completed on stem cells and James Thomson, Ph.D., for innovative findings in stem cell research.[249] And surprisingly, there are people who are pro-abortion, yet anti-stem cell research. One feminist pro-abortion group advocates that abortion methods "may be changed or delayed in order to obtain the best tissue," which puts the woman more at risk, and in turn, exploits women.[250]

### Divided Ethicists View

Even ethicists disagree on a universal stance regarding "whether it is appropriate to create new cells from very early human embryos"[251] and

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[244] *Id.*

[245] *Fetal Tissue Research,* (May 25, 2001), *at* http://www.americanheart.org/Heart_and_Stroke_A_Z_Guide/fetaltissue.html.

[246] *Id.*

[247] *Id.*

[248] *See Abortion Debate Clouds Future of Stem Cell Research, supra* note 146.

[249] *Id.*

[250] Gertrude Murphy, M.D., *Fetal Tissue and Embryo Research,* (May 25, 2001), *at* http://www.prolife-mclf.org/refjrnl/fetaltissue.htm, *citing* Janice Raymond, Professor Women's Studies, U. MASS. & MIT, testimony subcommittee on Health, Apr. 1991.

[251] *See* Dan Ferber, Ph.D., *Ethicists Divided Over Human Embryo Research – Existing Cells OK to Use, but Don't Make New Ones, Some Say* (Feb. 22, 2000), *at* http://my.webmd.com/content/article/178.55182.

"whether the government should fund this type of research."[252] While representatives of some bioethics committees believe it is morally acceptable to use existing cultured human embryo cells for research purposes, others find it unacceptable to "destroy a living human embryo, even one with just a handful of cells, in order to create new cells."[253] Notably, embryonic stem cells are categorized into two groups by both ethicists and scientists: (1) stem cells derived from embryos fertilized in a test tube, and (2) those obtained from electively aborted fetuses.[254] The Director of the Ethics Institute at Dartmouth College, Ronald Green, Ph.D., said, "[F]or most ethicists, this is not a particularly troubling question...[t]hat's because such [existing stem] cells lack the ability to produce a living human embryo."[255] Yet, a panel of ethicists assembled at the annual meeting for the American Association for the Advancement of Science (AAAS) discussed the issue and "recommended that researchers be able to use existing cells, but declined to recommend the creation of new ones."[256] However, Thomas Murray, Ph.D., President of the Hastings Center and National Bioethics Advisory Commission (NBAC), stated that a panel of prominent NBAC ethicists concluded that research using the creation of new stem cells was acceptable under certain conditions.[257]

**Support for Using Donated Fetal Tissue for Medical Research**

Despite some propagandized allegations and the unclear stance of the bioethicist community, there is staunch support for fetal tissue research and its appropriate medical use. Since approximately 1.6 million legal abortions are performed in the U.S. each year,"[258] proponents generally advocate the use of electively aborted fetuses rather than discarding them. They feel that the wastage of fetal tissue from these abortions is a travesty as it is "too valuable not to use in a research or therapeutic setting because of the large number of persons suffering from various

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[252] *Id.*
[253] *Id.*
[254] *Id.*
[255] *Id.*
[256] *Id.*
[257] *Id.*
[258] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Robert Hurd, *Ethical Issues Surrounding the Transplantation of Human Fetal Tissue*, CLINICAL RESEARCH 661 (1992).

neurodegenerative conditions"[259] that can benefit from it or potentially be cured.[260] Some advocates feel we should "look to history to provide examples of moral uses of results that are obtained under questionable circumstances."[261]

> "For example, although many consider the American bombing of Nagasaki immoral, no one questions the morality of using the radiation exposure information obtained to benefit future victims. At least some good can be obtained from this bad situation. So even if one were morally opposed to abortion, fetal tissues could be used in medical research and transplantation in hopes of gaining positive results for society."[262]

Furthermore, proponents disagree with the contention that the salvaging and use of fetal tissue is being conducted to legitimize abortion, and that it will encourage more abortions. While opponents contend that this research will make it "less morally offensive and more easily tolerable both to the pregnant woman and society in general," advocates argue that these allegations are highly speculative and that the "primary motivation for elective abortion is the desire to avoid an unwanted pregnancy;"[263] not to benefit a potential fetal tissue donee. One might facetiously analogize the use of fetal tissue donation to the use of organs of homicide, suicide, and accident victims for transplantation purposes by stating that we should not have organ donation because:

> The willingness to use the organs might be seen to encourage or legitimate such deaths, or at least make it harder to lower speed limits, seatbelt, gun control, and drunk driving laws to prevent them. After all, the need to

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[259] *See* Schrock, *supra* note 258, *citing* Dennis Turner and Warren Kearney, "Scientific and Ethical Concerns in Neural Fetal Tissue Transplantation," Neurosurgery, Dec. 1993, p. 1034.

[260] *Id.*

[261] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* Mary B. Mahowald et al., *The Ethical Options in Transplanting Fetal Tissue*, HASTINGS CTR. REP. 14 (1987).

[262] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[263] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* John A. Robertson, *Rights, Symbolism, and Public Policy in Fetal Tissue transplants*, HASTINGS CTR. REP. 7 (1988).

> prevent murder, suicide, and fatal accidents becomes less pressing if some good to others might come from use of a victim's organs for transplant. In either case, the connection is too tenuous and speculative to ban organ or fetal tissue transplants.[264]

Others have paralleled this unfounded fear of choosing abortion in order to donate fetal tissue, as the "absurd suggestion "that a wife would withdraw life support from her dying husband in order to enjoy the satisfaction of donating his kidney."[265] Ethicist Dorothy Vawter stated, "The option to donate fetal tissue is at least equally irrelevant to a woman's decision to abort as the option to donate a hip bone is to a patient considering a hip replacement."[266] In the most simplest terms, "A woman's choice to donate to medical research [a fetus] she has aborted begins and ends with her."[267] Some advocates believe "the choice to donate [fetal tissue] often gives solace to [those] who may need to end their pregnancies,"[268] thus aiding in the emotional and mental recovery a woman may require after having an abortion.

But the truth is, "there is no evidence that the option to donate tissue to an anonymous recipient encourages a woman to terminate a pregnancy she would otherwise carry to term."[269] Additionally, "in 1993 the National Institute of Health Advisory Panel 'could find no evidence that legitimization or redemption would sway the complex and highly personal choice leading to an abortion procedure toward either an increased moral comfort with the decision on the part of the individual woman, or more abortions being performed overall.'"[270] Actually, "there is evidence of strong support for research using fetal tissue . . . among women in general."[271]

> "In a survey of more than 600 women in the United Kingdom — most of whom had never had an abortion —

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[264] *Id.*

[265] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

[266] *Id.*

[267] *Id.*

[268] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222, *citing* Anderson, Fionn, et al., *Attitudes of Women to Fetal Tissue Research*, 20 J. MED. ETHICS 36-40 (1994).

[269] *Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

[270] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[271] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

> 94 percent said they supported fetal tissue research. Although the women were not asked in the survey to donate their own fetus, most predicted that they would be willing to make such a donation."[272]

Foremost, proponents argue that fetal tissue research should not be equated as an 'immoral' act, thus "associates all the users with the initial immoral act."[273] Frequently used as a counter-argument to this assertion is the following comparison involving organ transplantation from a homicide victim:

> "Families of homicide victims are often asked to donate the organs/body for education, research, or therapy purposes. Upon consent, tissue procurement agencies retrieve and distribute the organ/body to recipients. The anatomy student studying the cadaver, the surgeon who transplants the victim's kidneys or heart, and the transplant recipient are not accomplices to the homicide. While they are beneficiaries of the homicide, they played no role in causing the homicide..."[274]

Essentially, one may benefit from another's act without having a part in or approving of the act.[275]

In defense of fetal tissue collection and distribution, proponents justify the necessity for the specimens to be of the utmost quality, shipped expediently and to comprise the exact specifications of the requesting scientists in order to produce successful and valid research results. These advocates explain that when tissue requests stipulate, "no anomalies" or "no congenital abnormalities", it is not evidence of "perfectly healthy babies being aborted for organ harvesting,"[276] instead, it is prevention against the use of abnormal tissue that may not be conducive for research purposes, or may produce fallacious results. In other words, "fetal tissue obtained through induced abortion--excluding those with fetal defects -- are highly suitable for research and

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[272] *Id.*

[273] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html, *citing* John A. Robertson, *Rights, Symbolism, and Public Policy in Fetal Tissue transplants*, HASTINGS CTR. REP. 1026 (1988).

[274] *Id.*

[275] *Id.*

[276] *See* Likoudis, *supra* note 200.

therapy because they are likely to be free of major genetic abnormalities and viral, fungal, or bacterial infections,[277] and are more apt to warrant the most authentic results.

Nonetheless, many proponents of fetal tissue research and transplantation encompass various professional communities. Some scientists that support the practice say, "it's important not to close off the possible roads to cures that the embryo cells may offer."[278] President and CEO of Geron Corporation in 2000, Thomas Okarma, acknowledged, "we are powerless to urge a diseased or damaged organ to repair itself...That's the excitement, and that's the potential of this technology."[279] Similarly, several advocate doctors are very vocal on the issue. In fact, "Swedish neurologist Lars Olson says some research has gotten to the point where he feels it would be ethically unacceptable not to try the procedures."[280] However, those outside of these professional circles observed "doctors, as well as the legal system in this country, have not yet decided how to deal with the concept of fetal rights.[281]

While that perception may be true, it does not dissuade advocates to support the research, even including some celebrities suffering with incurable diseases. "Actors Mary Tyler Moore and Michael J. Fox testified before Congress to urge federal funding for this type of research."[282] Moore, who has had diabetes for over 30 years and represents the Juvenile Diabetes Foundation, said real life people suffering from diseases should get priority over embryos. Fox, who suffers from Parkinson's, urged lawmakers to allow stem cell research to commence.[283] Even former President Ronald Reagan, who has Alzheimer's disease, (and opposed fetal tissue research) can be added to the list of celebrities that could benefit from further research, hopefully leading to "cure or even a treatment that's effective in the long term."[284]

Fortunately, some organizations, such as Planned Parenthood Federation of America, recognize the "important role . . . fetal tissue

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[277] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

[278] *See* Martin, *supra* note 233.

[279] *See* Dan Ferber, *Ph.D., Ethicists Divided Over Human Embryo Research – Existing Cells OK to Use, but Don't Make New Ones, Some Say* (Feb. 22, 2000), *at* http://my.webmd.com/content/article/178.55182.

[280] *See* Colburn, *supra* note 207.

[281] *Id.*

[282] *See* Martin, *supra* note 233.

[283] *Id.*

[284] *See* Pence, *supra* note 191.

can play in potentially lifesaving medical research."[285] Its policy is that:

> "The decision to donate-- like every other sexual and reproductive health decision-- belongs to each individual woman, and it is not ours to make. Our job is to offer a woman the information and support she needs to make her own informed decision, according to her own personal circumstances and the dictates of her conscience. It is always her choice."[286]

Additionally, representatives from the organization admonished that:

> "Planned Parenthood deplores the on-going attempts by extreme anti-choice politicians to curtail scientific research and medical advances for the sake of hyperbole and to demonize women who seek to control their own fertility. We support individuals' rights to consent to organ, cadaver, or fetal tissue donations for the purpose of medical research in the pursuit of saving lives and treating and curing diseases."[287]

Furthermore, Dan Perry and a number of other patient advocacy groups announced the formation of The Patients' Coalition for Urgent Research, (CURe) a group that backs federal funding of stem cell research using donated embryos and fetal tissue.[288] In addition to the AAR, coalition members include the following organizations: American Cancer Society, Glaucoma Research Council, Juvenile Diabetes Foundation International, Parkinson's Action Network, Resolve: The National Infertility Association, and the Spina Bifida Association, Inc.,[289] as well as the Christopher Reeve Paralysis Foundation and others that are fighting glaucoma and Huntington's Disease.[290]

Notably, Perry released an opinion poll that suggested three out of four Americans supported federally funded research that involves

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[285] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

[286] *Id.*

[287] *See* Gloria Feldt, *Fetal Tissue Research Benefits Society, HR350 is Harassment, Not Law, (*November 9, 1999), *at* http://www.freerepublic.com/forum/a384ebd243304.htm.

[288] *See* Friend, *supra* note 182.

[289] *See* Likoudis, *supra* note 200.

[290] *See* Friend, *supra* note 182.

extracting cells from embryonic sources.[291] Subsequently, CURe started lobbying in Washington, D.C. for federal taxpayer funding of stem cell research involving the use of human embryos, accompanied by evidence showing the benefits of fetal tissue research for many diseases.[292]

**Alternatives to Fetal Tissue**

Generally, most opponents advocate specimen sources that are free of ethical and moral dilemmas, and mainly use the counter argument that the tissue needed for research can be obtained from adult humans, such as bone marrow,[293] and from the stem cells of dead people.[294] However, some of these specimens may take the form of ectopic pregnancies, stillbirths, and spontaneous abortions,[295] and not all of these opponents agree with their use for experimentation purposes.

Researchers have turned human bone marrow stem cells into nerve cells,[296] and studies showed that adult cells presented more options than previously thought by the scientific community.[297] Astonishingly, "some kinds of stem cells already have been an accepted medical treatment for years."[298] Ira Black, M.D., and professor of neuroscience and cell biology at the Robert Wood Johnson Medical School in Piscataway, N.J. stated:

> "Physicians transplant bone marrow because it contains stem cells that can form blood cells to replenish depleted blood in patients with cancer and other diseases. Although researchers had known that bone marrow contained stem cells, until recently they thought that other adult cells could not alter their destinies . . . These cells are far more flexible than anyone suspected just a few short years ago."[299]

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[291] *Id.*

[292] *See* Likoudis, *supra* note 200..

[293] *See* Dan Ferber, Ph.D., *Ethicists Divided Over Human Embryo Research – Existing Cells OK to Use, but Don't Make New Ones, Some Say* (Feb. 22, 2000), *at* http://my.webmd.com/content/article/178.55182.

[294] *See Martin, supra* note 233.

[295] *See Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

[296] *See* Dan Ferber, Ph.D., reviewed by Dr. Aman Shah, *Stem-Cell Therapies Inch Their Way Closer to the Clinic – But First Treatments Still Several Years Away* (Aug. 18, 2000), *at* http://my.webmd.com/content/article/1728.60509.

[297] *Id.*

[298] *Id.*

[299] *Id.*

Furthermore, some scientists claim that adult bone marrow stem cells may have the same potential as fetal stem cells,[300] and the same great promise in treating diseases like muscular dystrophy, Parkinson's, and Alzheimer's.[301]

> "Studies conducted in England and the United States and published in a range of leading journals including *Science, Nature,* and *Hepatology* found that stem cells can be obtained from adult humans, using sources such as bone marrow cells. These cells would still have the all-important pluripotentiality of stem cells -- the ability to develop into heart, lung, or brain cells, or any cells that you desire, with the proper manipulation."[302]

The alleged advantage to using bone marrow stem cells is "the ability to make tissues using stem cells from the person afflicted with the disease."[303] These "familiar" cells would hopefully forego the problems associated with the body attacking the "foreign" fetal tissue cells. Consequently, some therapeutic companies are working on ways to make bone marrow stem cell use more effective.[304] In fact, another claimed source of stem cells that would possibly avoid the rejection of foreign tissue complications, uses a more accessible and available source - human fat.[305]

Regardless of the potential benefits and advancements made regarding bone marrow stem cells, potential tissue sources from ectopic pregnancies, stillbirths and spontaneous abortions are problematic because they are "neither plentiful nor reliable . . . [and] their quality and safety is questionable, making them less than optimal for research and therapy."[306] It should be noted that:

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[300] *See Fetal Tissue & Embryo Research,* (May 25, 2001), *at* http://www.rtl.org/html/fetal_tissue__embryo_research.html.

[301] *See* Daniel Kennelly, *Fed Funded Fetal Tissue Research Rekindles Controversy,* (Apr. 29, 1999) *at* http://www.cnsnews.org/InDepth/archive/199904/IND19990429d.html.

[302] *See* Pellegrino, supra note 172..

[303] *See Fetal Tissue & Embryo Research, supra* note 300.

[304] *See* Dan Ferber, Ph.D., reviewed by Dr. Aman Shah, *Stem-Cell Therapies Inch Their Way Closer to the Clinic – But First Treatments Still Several Years Away* (Aug. 18, 2000), at http://my.webmd.com/content/article/1728.60509.

[305] *See Fetal Tissue & Embryo Research, supra* note 300.

[306] See *Donating Fetal Tissue for Medical Treatment and Research, supra* note 222.

> "Spontaneous abortions generally occur in the first trimester of pregnancy. It is preceded by in utero fetal death and detachment from the uterine wall. Typically 2-3 weeks later the conceptus is expelled from the uterus. This long delay renders the tissue of most all spontaneous abortions unsuitable for transplantation, primarily due to the anoxic conditions the fetal tissues must endure. It should also be noted that the majority of spontaneous abortions occur outside a medical setting, making tissue retrieval extremely difficult at best."[307]

Therefore, science cannot rely on these avenues for the necessary tissue, and must look elsewhere for other sources and technologies for research specimens.

Consequently, the technological possibility of cloning becomes an alternative source of tissue; however, also attached are heavily debated ethical and moral considerations. "Many scientists believe that cloning stem cells from [human] embryos holds great promise as a way to develop treatments -- and possibly cures; '[s]ome people consider it tantamount to creating human life with the intention of killing it; [while] [o]thers fear this medical research will inevitably lead to the actual cloning of human beings,'"[308] "will lead us farther down the road to cloning people in the attempt to create 'perfect' babies."[309]

However, John Gearhart, Ph.D., and other panelists at the AAAS symposium "emphasized the need to clear up several public misconceptions about the technology."[310] They clarified that "[u]sing human stem cells for research is not human cloning because the cells can't generate a human being...[a]nd none of the technologies will enable humans to live forever."[311] While both therapeutic and reproductive cloning processes involve the extraction of living DNA cells from an original host and implantation of it within the nucleus of a donor cell, the cloning of a living, breathing person, *i.e.*, reproductive cloning, can only occur if the genetic material is transferred into a

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[307] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.

[308] *See* Gina Shaw, reviewed by Dr. Craid H. Kliger, *Cloning: How Far Should We Go?*, (Sept. 29, 2000), *at* http://my.webmd.com/content/article/1691.50856.

[309] *See* Pence, *supra* note 191.

[310] *See* Dan Ferber, Ph.D., *Ethicists Divided Over Human Embryo Research – Existing Cells OK to Use, but Don't Make New Ones, Some Say* (Feb. 22, 2000), *at* http://my.webmd.com/content/article/178.55182.

[311] *Id.*

surrogate mother where it would grow in a fully functioning human being. Ultimately, this transference of this material to a womb is not a component of the therapeutic cloning process, only involves the growing of human cells and tissues, and therefore is not considered human cloning.[312]

A "series of recent reports show that research into this area of medicine is moving at an incredible pace."[313] "However, experts say treatments derived from embryonic stem cells are at a much earlier stage of the game, and until then, studies on the much less disputed stem cells from adult humans have raised hopes of new treatments to regrow or replace diseased tissue."[314] Furthermore, patients will unlikely reap the benefits from these studies in the immediate future because much more work needs to be done.[315] Annemarie Mosely, M.D., Ph.D., and CEO of Osiris Therapeutics in Baltimore, agreed that medical treatments using stem cells from embryos had a long road ahead of them.[316] Yet, "other researchers say that the first stem cell derived therapies could show up in the clinic within five years."[317]

## CONCLUSION

Fetal tissue research and transplantation show great promise for potentially lifesaving treatments of many incurable, debilitating, and life threatening diseases known to mankind. Because the fetal stem cells can grow quickly and almost indefinitely in a laboratory setting, they can provide a virtually endless supply of cells. These cells are pluripotent and are self-replicating "so you can create many, many cells from a single source. For research purposes you don't need a new embryo for every experiment."[318] Both researchers and patients hope that fetal tissue transplants become as common and effective as the transplants of organs, which once seemed to only be a figment of a scientist's imagination. But in order to reach this goal, the unique properties of fetal tissue are needed, not only because of the ability of

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[312] *Ethical Implications of Cloning*, *at* http://ece.oregonstate.edu/~henderob/cloning.htm.

[313] *See* Dan Ferber, Ph.D., reviewed by Dr. Aman Shah, *Stem-Cell Therapies Inch Their Way Closer to the Clinic – But First Treatments Still Several Years Away* (Aug. 18, 2000), *at* http://my.webmd.com/content/article/1728.60509.

[314] *Id.*

[315] *Id.*

[316] *Id.*

[317] *Id.*

[318] *See* Friend, *supra* note 182.

the cells to grow fast, but because there is less of a chance of rejection than adult tissue specimens. Additionally, since alternative sources of tissue have not been fully developed, sufficiently studied or adequately tested, research using fetal tissue should be used to its fullest curative potential.

However, one cannot deny that discussion of the potential therapeutic uses of human fetal tissue arouses strong emotions and is the foreground for many ethical disputes. Although its use may have vocal detractors, it also has powerful and well known backers. Many scientists, doctors, organizations and even actors voice their opinions in the national debate for fetal tissue research and transplantation. There are also those who acknowledge that a woman's decision to donate human tissue is a complicated decision, but is one reflecting "generosity, courage, and the hope that some humanitarian good may come out of an unintended pregnancy."[319] Additionally, while some opponents portray the use and acquisition of specific tissue parts as cold, detached, and economically driven, it is important to invalidate this fallacious depiction by explaining the necessity for the tissue's itemization, and the standards for its collection and allocation. Even though these practices may appear to be very businesslike, certain protocol is essential to regulating its use and preventing fraud and abuse within the fetal tissue research and distribution community. Some proponents of fetal tissue research even argue:

> "The real question is not whether there is any danger of abuse, but instead, whether the risk of abuse is so great that millions of Americans with [incurable and untreatable] diseases should lose the chance of a potential cure. Is the risk of a slippery slope so great that it should hold hostage such an important area of medical research? Can we really afford to throw away the promise these techniques offer to treat ailments that have previously been untreatable? Do we have the right to?"[320]

The answer is no, especially since so many advances have been made and the potential for remedies and treatment is so imminent. It would be wonderfully advantageous to have the cures for Parkinson's Disease, Alzheimer's, Diabetes, Spinal Cord Injuries, and AIDS, just to name a

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[319] See Donating Fetal Tissue for Medical Treatment and Research, supra note 222.

[320] *See* Pence, *supra* note 191.

few, become readily available through this progressive research. One has to ask how ethical is it to deny these people who suffer day-in and day-out with their diseases, especially when the technology is at our fingertips?

> "The roadway traveled by those who make ethical decisions is unavoidably a slippery slope. To traverse it successfully requires placement of wedges at the right places, in order to restrict or stop travel at those points where one is most likely to fail...It would be morally wrong to forego the benefits of a promising treatment for fear of slipping on the slope."[321]

Currently, fetal tissue research is integral for *potential cures,* and there is no convincing evidence that it can be deemed an *abortion lure.* Therefore, let research continue on the road of revolutionary, scientific discovery, hopefully picking up along the way the technology to end the pain of so many suffering beyond that path of medical enlightenment. At present, it is their most promising hope for a healthy life.

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[321] *See* Patricia Schrock, *Fetal Tissue Transplantation* (Winter 1997), *at* http://www.hsc.missouri.edu/~shrp/ radsci/fetal/fetal1.html.