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Playing God Or Playing Scientist: A Constitutional Analysis of State Laws Banning Embryological Procedures

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**Playing God or Playing Scientist: A Constitutional Analysis
of State Laws Banning Embryological Procedures**

June Coleman*

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* B.A., California State University, Sacramento, 1989; J.D., University of the Pacific, McGeorge School of Law, to be conferred 1997. I owe sincere thanks to my family for their love and understanding, and my mom and dad who always encouraged me to do my best and, supported me in all my endeavors. Additionally, I appreciate the time that many friends spent proofreading this piece.

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A middle aged man anxiously awaits the results from the expensive in vitro fertilization¹ process with his wife, uncertain whether the procedure worked this time.² A young woman frets that she is a carrier of Tay-Sachs³ and will pass this disease to her unborn baby.⁴ A twelve year-old boy listens intently, displaying unusual maturity, as his doctor explains a new treatment for his terminal heart disease to his parents.⁵ A newborn fills her lungs, preparing to issue her first cry, unaware of the congenital defect which will shorten her life.⁶ Each of these people could benefit from embryological research.⁷ Embryological research may

1. See NAT'L INST. OF HEALTH, REPORT OF THE HUMAN EMBRYO RESEARCH PANEL D-6 (Sept. 1994) [hereinafter NIH REPORT] (defining "in vitro fertilization" as a reproductive procedure which assists parents in reproduction through fertilization outside of the womb); *infra* notes 28-34 and accompanying text (describing the in vitro fertilization process); see also Richard P. Dickey, *The Medical Status of the Embryo*, 32 LOY. L. REV. 317, 323-24 (1986) (discussing the history of in vitro fertilization). The first child born through in vitro fertilization occurred in England during 1978, and the first successful use of in vitro fertilization in the United States occurred in 1981. *Id.*

2. In vitro fertilization is an uncertain, risky and costly procedure. See Bonnie Steinbock, *Ethical Issues in Human Embryo Research*, in 2 PAPERS COMMISSIONED FOR THE HUM. EMBRYO RES. PANEL, NAT'L INST. OF HEALTH 27 (1994) (stating that success rates may creep as high as the mid-30% range, though the average success rate is between 12% and 20%); *id.* at 33 (discussing the expense of in vitro fertilization, from \$5000 to \$12,000 per attempt); Kim Schaefer, Comment, *In-vitro Fertilization, Frozen Embryos and the Right to Privacy—Are Mandatory Donation Laws Constitutional*, 22 PAC. L.J. 87, 91 (1990) (noting that, according to the Office of Technological Assessment's infertility report to Congress in 1988, in vitro fertilization procedures have resulted in pregnancies only 17% of the time and in live births only 11% of the time); Kathryn Doré Perkins, *More Infertile Couples Placing Hope in Clinics*, SACRAMENTO BEE, Jan. 1, 1996, at A1 (stating that in vitro fertilization results in childbirth only 18% of the time, but that clients are increasingly willing to pay \$10,000 to \$60,000 for a chance at giving birth as evidenced by a 133% increase in the number of infertility clinics). See generally Dickey, *supra* note 1, at 330-32 (discussing more fully the success rates as of 1986).

3. See RICHARD SLOANE, THE SLOANE-DORLAND ANNOTATED MEDICAL LEGAL DICTIONARY 216 (1987) [hereinafter SLOANE] (defining "Tay-Sachs" as an infantile form of cerebral sphingolipidosis resulting from defective lipid metabolism, a recessive genetic trait which typically manifests itself in people of Ashkenazic Jewish decent and is characterized by degeneration of the brain cells, progressive dementia, progressive vision loss which leads to blindness, paralysis, and death).

4. Albert Gore, Jr. & Steve Owens, *The Challenge of Biotechnology*, 3 YALE L. & POL'Y REV. 336, 352 (1985); see *id.* (noting that gene therapy can provide a cure for this genetic disease).

5. John C. Fletcher & Kenneth J. Ryan, *Federal Regulations for Fetal Research: A Case for Reform*, 15 LAW, MED. & HEALTH CARE 126, 131-32 (1987); see *id.* (suggesting that fetal organ transplantation shows promise of saving infants and children who are dying from heart, liver, or kidney disease, but noting that more experimentation is needed).

6. *Id.* at 132; Larry Thompson, *Cell Test Before Implant Helps Ensure Healthy "Test Tube" Baby*, WASH. POST, Apr. 27, 1992, at A3; see *id.* (noting that further research with embryos would enable diagnosis of genetic defects at the earliest possible stage).

7. Jonathan Van Blerkom, *The History, Current Status and Future Direction of Research Involving Human Embryos*, in 2 PAPERS COMMISSIONED FOR THE HUM. EMBRYO RES. PANEL, NAT'L INST. OF HEALTH 1, 2-6 (1994); see *id.* at 13-20 (discussing the implications of embryological research in a variety of areas, including reproduction, discovery of genetic disorders, and cell line development); see also NAT'L INST. OF HEALTH, DEVELOPMENT OF NIH GUIDELINES GOVERNING RESEARCH INVOLVING HUMAN IN VITRO FERTILIZATION AND THE PREIMPLANTATION EMBRYO (1995) [hereinafter NIH GUIDELINES] (noting that the National Institute of Health's (NIH's) Embryo Research Panel discussed benefits of embryological research, including advances in the treatment of infertility, pregnancy loss, birth defects, and cancer; development of

lead to better in vitro fertilization techniques, cures for fatal diseases, prevention of congenital defects, or allow parents to make reproductive decisions regarding abortion.⁸

Embryological research is conducted in many countries worldwide,⁹ but using embryos for research in the United States is restricted in several states.¹⁰ However President Clinton supports changes in federal policy regarding the use of embryos in research projects.¹¹ While changes in the political climate surrounding embryo-

preimplantation diagnosis of genetic and chromosomal abnormalities; contraception innovations; and research on embryonic stem cells which could lead to therapeutic treatments of degenerative diseases of nervous and muscular systems); NAT'L INST. OF HEALTH, HUMAN IN VITRO FERTILIZATION AND PREIMPLANTATION EMBRYO RESEARCH 3-4 (1995) [hereinafter NIH RESEARCH] (listing various areas which could benefit from research with embryos, including fertility and the tremendous costs of alternative infertility treatments; birth defects; repeated miscarriages; contraception; cell growth, particularly as it relates to cancer research; preimplantation diagnosis; and transplantation methods); NIH REPORT, *supra* note 1, at D-4 (defining an "embryo" as the early developing organism from the time of fertilization until the eighth week of gestation, at which time the organism becomes a fetus); *infra* note 15 and accompanying text (defining the term "embryological research"); *infra* notes 136-93 and accompanying text (describing the various embryological research procedures which are regulated under state laws). See generally NIH REPORT, *supra*, at 7-30 (providing a detailed analysis of areas where embryological research would be useful). This Comment will use the terms "embryo," "preembryo," and "preimplantation embryo" interchangeably. See RICHARD SLOANE, THE SLOANE-DORLAND ANNOTATED MEDICAL LEGAL DICTIONARY 213 (Supp. 1992) [hereinafter SLOANE SUPP.] (defining "embryo" as the cluster of cells after the second week of embryonic development after fertilization, until the end of the seventh or eighth week); see also NIH REPORT, *supra*, at D-6 (describing the "preimplantation embryo" as the very early, free-floating embryo prior to implantation in the mother's womb, within 12 to 14 days of fertilization); *id.* (equating the "preembryo" to the "preimplantation embryo"). Many courts recognize fertilization as the moment an embryo exists. See, e.g., *Renslow v. Mennonite Hosp.*, 367 N.E.2d 1250, 1254 (Ill. 1977); *Sinkler v. Kneale*, 164 A.2d 93, 96 (Pa. 1960). "Conceptus" will be used to denote both the embryonic and fetal stages of development. SLOANE, *supra* note 3, at 159 (describing "conceptus" as a fertilized egg, from the moment of fertilization through birth).

8. *Human Embryo Transfer: Hearings Before the Subcomm. on Investigations and Oversight of the House Comm. on Science and Technology*, 98th Cong., 2d Sess. 58 (1984) (statement of G. Hodgen, Ph.D.); NIH RESEARCH, *supra* note 7, at 3-4; Martin L. Lagod & Patricia A. Martin, *The Human Preembryo, the Progenitors, and the State: Toward a Dynamic Theory of Status, Rights, and Research Policy*, 5 HIGH TECH. L.J. 257, 292 (1990); see John A. Robertson, *Embryos, Families, and Procreative Liberty: The Legal Structure of the New Reproduction*, 59 S. CAL. L. REV. 939, 951 (1986) (suggesting that the "window of opportunity" for examination and alteration of the embryo provided by external conception is of great importance); Barbara Gregoratos, Note, *Tempest in the Laboratory: Medical Research on Spare Embryos from In Vitro Fertilization*, 37 HASTINGS L.J. 977, 978-79 (1986) (listing current and possible embryological research projects). See generally NAT'L INST. OF HEALTH, HUMAN IN VITRO FERTILIZATION AND PREIMPLANTATION EMBRYO RESEARCH (1995) (providing a list of various people who might benefit from embryological research).

9. Embryological research is conducted and supported in the United Kingdom, Canada, Spain, and Sweden, while Australia, Austria, Denmark, France, Switzerland, and Germany permit limited research. NIH RESEARCH, *supra* note 7, at 5; Lori B. Andrews & Nanette Elster, *Cross-Cultural Analysis of Policies Regarding Embryo Research*, in 2 PAPERS COMMISSIONED FOR THE HUM. EMBRYO RES. PANEL, NAT'L INST. OF HEALTH 51, 53 (1994). Norway prohibits all research involving embryos. NIH RESEARCH, *supra* note 7, at 5; Andrews & Elster, *supra*, at 53. See generally Andrews & Elster, *supra*, at 51-296 (examining the scientific policies of various countries and how these policies relate to embryological research).

10. See *infra* notes 118-93 and accompanying text (listing state laws which regulate or prohibit embryological procedures).

11. See *infra* note 51 and accompanying text (describing a press release that discussed the President's endorsement of embryological research).

logical research in the United States has not affected the lack of federal funding at this point, the shifting focus on embryological research warrants an examination of state laws.¹² As society begins to accept procedures that use human embryos for research and reproductive purposes, leading to a greater need for these procedures, particular attention should be directed toward the constitutionality of restrictive state laws. Constitutional issues which affect embryological research include the Fourteenth Amendment's right to privacy and the First Amendment's guarantee of free speech as expanded to ensure the right to gather knowledge through research.¹³

This Comment will examine the constitutionality of state bans on embryological research.¹⁴ This Comment advocates embryological procedures¹⁵ on eggs fertilized outside the uterus, prior to the appearance of the primitive streak¹⁶—within fourteen days of embryonic development after fertilization—often termed preimplantation embryos.¹⁷ The primitive streak is a potent indicator because cell division, until the primitive streak appears, is devoted to the production of the embryonic sac, the umbilical cord, and the placenta.¹⁸ Additionally, without the embryonic disc, axis, and primitive streak, the embryo cannot experience pain, is not sentient, and has no brain activity.¹⁹

12. Notwithstanding the presence of public funding, analyzing state laws is important given the significant amount of private research. See Michael D. Davidson, Note, *First Amendment Protection for Biomedical Research*, 19 ARIZ. L. REV. 893, 909 n.120 (1977) (noting that 44% of all research in 1971 was funded privately).

13. See *infra* notes 212-462 and accompanying text (arguing that the Fourteenth Amendment and the First Amendment protect the right to perform certain embryological procedures).

14. See *infra* notes 194-462 and accompanying text (proposing that total bans against embryological procedures are unconstitutional based on the First Amendment's freedom of speech and the Fourteenth Amendment's right to privacy, and noting that many of the state laws are unconstitutionally vague).

15. See *infra* notes 136-93 and accompanying text (describing the six procedures discussed in this Comment—cryopreservation, preimplantation screening, gene therapy, cell line development, twinning, and basic research). This Comment defines "embryological research" narrowly as research on eggs fertilized outside the uterus, prior to the appearance of the primitive streak.

16. See WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1801 (Philip B. Drove ed., 1980) [hereinafter WEBSTER'S] (defining the "primitive streak" as an opaque band which appears in a newly fertilized egg in the axial line of the embryo which represents the beginning of neural development for the embryo—the beginning of the embryo's ability to sense even primitive sensations such as pain).

17. This limitation is based on the recommendations of the NIH's Human Embryo Research Panel. See *infra* notes 60-70 and accompanying text. This Comment does not discuss research using fetal tissue, which is defined by federal law as human tissue made available by way of a still birth or an abortion, or embryos which resulted from fertilization within the womb.

18. Robertson, *supra* note 8, at 969-70.

19. *Id.* Robertson also tentatively argues that the time frame can be extended to twenty to twenty-five days since the appearance of the embryonic streak is many days from the beginning formation of the brain and the capacity to experience feelings. *Id.* See generally NIH REPORT, *supra* note 1, at 45-51 (discussing time limitation alternatives for embryological research and the factors which lead to the conclusion that the appearance of the primitive streak should be the definitive point).

The arguments which define the rights of a fetus in the abortion context will influence this discussion.²⁰ While these issues have been explored as they relate to other procedures, like fetal tissue research and organ donations, embryological research raises unique questions requiring independent analysis due to physiological and locational differences.²¹ Such differences include the location of the unimplanted embryo outside of the mother, the lack of cell differentiation in an embryo, and the development of the neural system in the fetus.²² Section I will briefly discuss how embryos become available for research and the recent legislative history surrounding federal funding of embryological research, including the proposed guidelines for receipt of such funding.²³ Section II will identify and analyze state laws that restrict embryological research.²⁴ Finally, Section III will analyze the constitutionality of such restrictions based on the right to privacy as it relates to embryological research and the freedom of speech as it relates to the right to gather knowledge through research.²⁵

I. BACKGROUND

A. Embryo Creation

In vitro fertilization provides a means to produce embryos in addition to those actually necessary to fertilize a woman.²⁶ In vitro fertilization is utilized throughout the world as a method of treating infertility.²⁷ The process begins by

20. See *infra* notes 229-69, 290-342 and accompanying text (discussing the impact of the abortion cases on the constitutionality of state laws which completely prohibit various procedures which use human embryos).

21. Robertson, *supra* note 8, at 971.

22. See *supra* notes 18-19 and accompanying text (discussing the significance of the appearance of the primitive streak).

23. See *infra* notes 26-117 and accompanying text.

24. See *infra* notes 118-93 and accompanying text.

25. See *infra* notes 194-462 and accompanying text.

26. Dickey, *supra* note 1, at 332; Steinbock, *supra* note 2, at 33-34. The scope of this Comment is limited to discussing embryos which are available for research, but which are not produced solely for research purposes. While this Comment will briefly touch on the ethical issues surrounding embryological research, a full discussion would necessarily include embryos produced solely for research. See generally NIH REPORT, *supra* note 1, at 53-63 (discussing ethical issues surrounding the source of embryos for research and presenting the conclusions of the Human Embryo Research Panel); Robertson, *supra* note 8, at 984-85 (noting the arguments for and against producing embryos solely for research); Mark W. Danis, Note, *Fetal Tissue Transplants: Restricting Recipient Designation*, 39 HASTINGS L.J. 1079 (1988) (arguing for the enactment of anonymous donation laws as a means of decreasing procreation for donation purposes, because the creation of life for such purposes degrades women and the reproductive process).

27. Fletcher & Ryan, *supra* note 5, at 132; see Helen Bequaert Holmes, *And in the Netherlands, Guidelines for IVF*, 15 HASTINGS CENTER REP. 6, 6 (Aug. 1985) (discussing guidelines for in vitro fertilization in the Netherlands); Peter Singer, *Making Laws on Making Babies*, 15 HASTINGS CENTER REP. 4, 5 (Aug. 1985) (noting the history of Australian in vitro fertilization regulation); Steinbock, *supra* note 2, at 27 (quoting 1988 statistics that show thousands of babies have been born worldwide through in vitro fertilization and its variations). For a more detailed description of the in vitro fertilization process, see generally HUMAN IN VITRO

stimulating a woman's ovaries to increase egg production.²⁸ One of two removal procedures is then used to surgically aspirate²⁹ the ovarian follicles³⁰ and remove seven or more eggs from the ovary.³¹ The removal of excess eggs reduces the risk of harm to the mother brought about by the hormonal therapy and the removal procedure if repeat implantation is necessary or desired.³² After the eggs have matured for approximately six hours, the eggs are combined with sperm and incubated for approximately twelve hours in a blood serum with sustaining nutrients.³³ The woman, who has been given hormones that prepare her uterus for the embryo, is then implanted with two to four of the fertilized eggs; the size of each egg now ranges from two to eight cells.³⁴ The remaining eggs are typically

FERTILIZATION AND EMBRYO TRANSFER (D. Wolf & M. Quigley eds., 1984) [hereinafter Wolf & Quigley].

28. Schaefer, *supra* note 2, at 90; *see id.* (describing a process called superovulation, which increases the number of eggs surgically retrieved as well as the number of eggs which can be implanted into the mother); *see also* Dickey, *supra* note 1, at 323-24 (identifying the drugs used as clomiphene citrate and human menopausal gonadotropin); Robertson, *supra* note 8, at 948 (1986) (explaining that one drug is given to stimulate ova production and another is given to assure maturation).

29. *See* WEBSTER'S, *supra* note 16, at 130 (defining "aspirate" as a procedure which uses suction to remove the eggs).

30. *See* HENRY GRAY, ANATOMY OF THE HUMAN BODY 1568-69 (Carmine D. Clemente ed., 30th ed. 1985) (describing "ovarian follicle" as a small sac which contains eggs as they mature).

31. Jean M. Eggen, *The "Orwellian Nightmare" Reconsidered: A Proposed Regulatory Framework for the Advanced Reproductive Technologies*, 25 GA. L. REV. 625, 633-34 (1991); Lagod & Martin, *supra* note 8, at 265; Schaefer, *supra* note 2, at 90; *see* Eugene B. Brody, *Reproduction Without Sex—But with the Doctor*, 15 LAW, MED. & HEALTH CARE 152, 153 (1987) (noting that egg removal is done by puncturing the ovarian follicles); Robertson, *supra* note 8, at 977 (explaining that many in vitro fertilization programs will not fertilize the excess eggs or will not remove more eggs than required for a single implantation in order to bypass the controversy of discarding embryos). *See generally* Joseph Saltarelli, Note, *Genesis Retold: Legal Issues Raised by the Cryopreservation of Preimplantation Human Embryos*, 36 SYRACUSE L. REV. 1021, 1026-29 (1985) (describing the in vitro fertilization process in more detail).

32. Steinbock, *supra* note 2, at 33-34; *see id.* (discussing various risks involved with the hormone therapy, the retrieval process, and the implantation procedure); Dickey, *supra* note 1, at 332 (citing multiple instances where excess egg retrieval was a necessity); *supra* note 2 (providing information regarding expense and rate of conception).

33. Wolf & Quigley, *supra* note 27, at 287-89; Schaefer, *supra* note 2, at 90; *see* Van Blerkom, *supra* note 7, at 9-11 (discussing the medium in which the embryo is cultured).

34. Robertson, *supra* note 8, at 968; Schaefer, *supra* note 2, at 90-91; *see* Dickey, *supra* note 1, at 326 (identifying the hormones used to prepare the uterus for the embryo as progesterone hormones); Vicki G. Norton, Comment, *Unnatural Selection: Nontherapeutic Preimplantation Genetic Screening and Proposed Regulation*, 41 UCLA L. REV. 1581, 1594-96 (1994). Multiple egg implantation raises the probability of success. Saltarelli, *supra* note 31, at 1027 n.32; *see id.* (citing one study which found the probability increased from 13% in single implantation procedures to 31% in multiple implantation procedures); *cf. id.* (citing other studies which indicate that supra ovulation leads to a higher rate of chromosomal abnormalities in the embryos). Additionally, multiple implantation raises the probability of multiple pregnancies leading to risks of complications during pregnancy, cesarean procedures, premature births and higher neonatal mortality rate. Robertson, *supra*, at 977 n.127; *see* Lyons, *Father Says Multiple Births Were Not Aim of Treatment*, N.Y. TIMES, May 24, 1985, at A12 (illustrating these risks through the birth of septuplets in California). *But see* Van Blerkom, *supra* note 7, at 11 (suggesting that the hormones used to hyperstimulate egg production may also inhibit the uterine from accepting a transferred embryo).

frozen by cryopreservation³⁵ in case the first implantation does not result in a live birth or future pregnancies are desired.³⁶ The fertilized eggs may remain frozen for two to three years without degradation.³⁷ This results in the production of excess eggs that can be used for research, although they are also frequently transferred to other women.³⁸

B. Legislative History

Since 1980, researchers have essentially been banned from receiving federal funding for embryological research.³⁹ In 1980, a law was passed that allowed federal funding of embryological research projects after a favorable review by a Department of Health and Human Services Ethical Advisory Board regarding the ethical issues for a specific scientific project.⁴⁰ The only board appointed concluded that in vitro fertilization research was ethically acceptable in the abstract provided certain guidelines were followed.⁴¹ However, since no action was taken by the National Institutes of Health (NIH) on a specific project subsequent to that approval and no other boards were ever appointed, the NIH never funded any research involving embryos.⁴² In 1993, Congress nullified the regulation so that embryo research could receive funding unless an ethical advisory committee made findings contrary to such a grant.⁴³

35. See NIH REPORT, *supra* note 1, at D-4 (defining "cryopreservation" as a method of storage through freezing); *infra* notes 136-38 and accompanying text (describing the cryopreservation process).

36. Jennifer P. Brown, Comment, "Unwanted, Anonymous, Biological Descendants": Mandatory Donation Laws and Laws Prohibiting Preembryo Discard Violate the Constitutional Right to Privacy, 28 U.S.F.L. REV. 183, 188 (1993).

37. *Id.* at 189; *see id.* (noting successful births have been achieved when the embryo was implanted after being cryopreserved for 38 months, although the success rate for live births is less than 10%); *see also* Davis v. Davis, 842 S.W. 2d 588, 598 (Tenn. 1992) (noting that expert testimony estimated that the viability of cryopreserved embryos was limited to two years but that law review articles have reported various time limits from two years to ten years).

38. Perkins, *supra* note 2, at A1; *see id.* (explaining that donating eggs is on the rise as more women postpone childbearing until an age when they produce fewer eggs, thus decreasing the odds of pregnancy). *See generally* Margaret J. Radin, *What, If Anything, Is Wrong with Baby Selling*, 26 PAC. L.J. 135 (1995). This Comment does not address embryo donation and issues which may be implicated.

39. NIH GUIDELINES, *supra* note 7, at 1.

40. Health and Human Services Policy for Protection of Human Subjects Research, 59 Fed. Reg. 28,276 (1994) (deleting 46 C.F.R. § 46.204(d)); NIH GUIDELINES, *supra* note 7, at 1.

41. NIH GUIDELINES, *supra* note 7, at 1.

42. *Id.*

43. Health and Human Services Policy for Protection of Human Subjects Research, 59 Fed. Reg. 28,276 (1994); *see id.* (noting that the National Institutes of Health Revitalization Act of 1993, Public Law No. 103-43, § 121(c) nullified the requirement for an ethical review board as mandated by 46 CFR 46.204(d)). The House Report regarding this act clarified that Congress believed this area of research to be promising, especially in the treatment of infertility, and stated that the previous regulation hobbled embryological research and left the private sector to perform embryological research without clear ethical and medical standards. H. REP. NO. 103-28, 104th Cong., 1st Sess. 80 (1993) (cited in NAT'L INS. OF HEALTH, *Executive Summary* to REPORT OF THE HUMAN EMBRYO RESEARCH PANEL 1-2 (1994) [hereinafter *Executive Summary*]); *see* H. Rep. No. 103-28,

Prior to allocating funds to research involving embryos, the NIH established the Human Embryo Research Panel to consider the moral and ethical issues raised by such research, and to develop guidelines for reviewing funding requests and for conducting such projects.⁴⁴ The panel was composed of nineteen individuals from various backgrounds, contributing expertise in the fields of basic and clinical research, ethics, law, social science, public health, and public policy.⁴⁵

This panel met six times and produced a report for the Advisory Committee to the Director of the NIH.⁴⁶ The meetings were open to the public and the NIH solicited public comment regarding research on embryos.⁴⁷ On September 26, 1994, the panel advocated proceeding with embryological research and presented proposed guidelines.⁴⁸ These recommendations were formally accepted by the Advisory Committee to Dr. Harold Varmus,⁴⁹ the NIH Director, on December 1-2, 1994.⁵⁰ Then, on December 2, 1994, President Clinton clarified an earlier endorsement of embryological research by directing the NIH to forego funding on research projects that involved creating embryos solely for the purpose of research.⁵¹ The approval of federal embryological research funding has since been put on hold because Congress prohibited the NIH from using federal funding for embryological research as part of the budget compromise in 1996.⁵²

104th Cong. 1st Sess. 80 (1993) (reflecting the congressional intent underlying the enactment of the National Institutes of Health Revitalization Act of 1993, Public Law 103-43 § 121(c) which nullified 46 CFR 46.204(d), a provision requiring an ethical advisory board review of in vitro fertilization research proposals prior to funding).

44. NIH GUIDELINES, *supra* note 7, at 1.

45. *Id.*

46. *Id.* at 2.

47. *Id.* at 2-3; *see id.* (stating that the NIH mailed solicitations to over 200 organizations and collected over 55,000 written opinions).

48. *Id.*

49. Dr. Varmus received a Nobel Prize in medicine in 1989 for his cancer research at the University of California, San Francisco. *RTC Nominee Tate Withdraws; Other Administration News*, FACTS ON FILE WORLD NEWS DIGEST, Dec. 9, 1993, at 911 G2; *The MacNeil/Lehrer News Hour* (Educational Broadcasting & GWETA television broadcast, Nov. 30, 1993) (copy on file with the *Pacific Law Journal*).

50. NIH GUIDELINES, *supra* note 7, at 3.

51. *Press Release by President Bill Clinton* (Dec. 2, 1994) (copy on file with the *Pacific Law Journal*); NIH GUIDELINES, *supra* note 7, at 3.

52. Act of Jan. 26, 1996, Pub. L. No. 104-99, 110 Stat. 26 § 128; *see id.* (preventing the use of any funds made available by Public Law 104-91 for the creation of human research embryos or embryo research in which the embryo is destroyed, discarded or knowingly subjected to risk of injury or death greater than an embryo would naturally be subjected); Charles Krauthammer, *Petty Measures Aren't Victories for Republicans*, DALLAS MORNING NEWS, Feb. 10, 1996, at 31A (noting that budget negotiations, which included no funding for embryological research, resulted in a consensus which kept the government operational until March 15, 1996).

C. Proposed Guidelines

The guidelines proposed by the Human Embryo Research Panel tried to detail acceptable policies based on generally held public views—including when life begins—which could be used to determine the proper guidelines for accepting and denying embryological research funding requests.⁵³ After gathering a multitude of public opinion and scientific data, the panel found that embryological research should be permitted based on three primary considerations.⁵⁴ First, they found that there is a great likelihood of benefit from embryological research, particularly in the areas of infertility, genetic defects, and therapeutic procedures for diseases.⁵⁵ Second, while recognizing that an embryo has a status deserving of some respect, they found that its status is not equivalent to that of a child, because of the lack of developmental individualism and sentience,⁵⁶ as well as the extremely high natural mortality rate of an embryo.⁵⁷ Lastly, they concluded that without federal funding, embryological research will continue in the private sector and throughout the world.⁵⁸ However, the panel believed that this private research would continue to lack the consistent ethical and scientific review that accompanies federally funded research.⁵⁹

After weighing the necessity of research using preimplantation embryos against the moral status of the embryo, the panel concluded that embryological research is permissible, as it is critical to the field of reproductive medicine and the health needs of women, men, and children.⁶⁰ Specific guidelines included the use of standard scientific methods and qualified researchers, informed consent from male and female donors, and independent review of protocols and consent

53. *Executive Summary*, *supra* note 43, at ix.

54. *Id.* at x.

55. *Id.*

56. See NIH REPORT, *supra* note 1, at D-8 (describing "sentience" as the ability to sense or feel things, especially pain).

57. *Executive Summary*, *supra* note 43, at x; see Robertson, *supra* note 8, at 968-70 (stating that the embryo is not able to experience pain, is not sentient, and has no brain activity until the primitive streak, embryonic disc, and axis appear and that an embryo is not individualized because twinning could still occur). But see Tamara L. Davis, Comment, *Protecting the Cryopreserved Embryo*, 57 TENN. L. REV. 507, 529-30 (1990) (discussing Dr. Jerome Lejeune's alternate theory that the embryo, at the moment of conception, is individualistic because the embryo has a unique set of genetic instructions to produce a unique person).

58. *Executive Summary*, *supra* note 43, at x.

59. *Id.*; see Robertson, *supra* note 8, at 1035 (arguing that lack of national guidelines leaves in vitro fertilization patients open to the risk of incompetent services); see also Fletcher & Ryan, *supra* note 5, at 130-32 (suggesting that current research involving fetal tissue, including embryological research, which is being performed outside the scope of minimal federal regulations and guidelines, is detrimental to the fetus and the mother). But see Dickey, *supra* note 1, at 328-30 (noting that the American College of Obstetrics and Gynecology and the American Fertility Society has guidelines regarding facilities and personnel requirements for providing optimum in vitro fertilization results). Examples of detriments include lack of efficacy and relatively low success rates with in vitro fertilization and inability to inform the parents regarding risks associated with fetal diagnosis and alternative approaches to infertility. Fletcher & Ryan, *supra*, at 130-32.

60. *Executive Summary*, *supra* note 43, at xi-xii.

forms.⁶¹ Additionally, the NIH panel dictated that embryos be used minimally, supporting only those projects that cannot be accomplished in some other way and in which prior animal studies have been performed if applicable.⁶² Furthermore, selection of embryos must be fairly distributed throughout population groups.⁶³ Research on embryos is to be limited to the time prior to the appearance of the primitive streak.⁶⁴ Compensation will be limited to that which is reasonably in accord with general compensation practices for experimental protocols.⁶⁵ Clearly, the panel gave much thought to ethical concerns regarding the sale of embryos for profit, lack of respect for life due to the indiscriminate use of embryos when the research could be conducted in another manner, equitable selection of embryos, and consent issues.⁶⁶ Furthermore, the panel was uncomfortable with transferring research embryos to a uterus if the resulting newborn would suffer harm as a result of the research.⁶⁷ Lastly, the panel found that research using parthenotes⁶⁸ was acceptable with one caveat, even though this type of research is not possible at this time.⁶⁹ According to the NIH panel, the parthenote, an egg which can be activated to begin cleavage and development without fertilization, must not be transferred to a uterus, so as to prevent an egg from developing into a fetus without a paternal progenitor.⁷⁰

The panel provided examples of embryological research projects. Based on the panel's ethical concerns and the merits of the various research projects, these examples were ranked as acceptable for federal funding, requiring more review

61. NIH REPORT, *supra* note 1, at 65-67, 74-76.

62. *Id.* at 64-67. Prior animal studies may not be applicable if the research related to an aspect of humans which was not physiologically comparable to another animal.

63. *Id.* at 67.

64. *Id.*

65. *Id.* at 67. See generally *id.* at 54-55 (examining the embryological research and commercialization); Joel N. Ephross, Technote, *In Vitro Fertilization: Perspectives on Current Issues*, 32 JURIMETRICS J. 447, 461-62 (1992) (discussing the concerns regarding commercialization of a reproductive technology).

66. NIH REPORT, *supra* note 1, at 53-56, 66.

67. *Id.* at 40-41.

68. See WEBSTER'S, *supra* note 16, at 1646 (defining "parthenote" as an individual created without fertilization); *Executive Summary*, *supra* note 43, at xv (establishing that "parthenotes" are oocytes, or eggs, which have been activated to begin cleavage and development without fertilization). These cells rarely reach the implantation stage of in vitro fertilization and the few which do reach that stage fail shortly thereafter due to the lack of fertilization. *Id.* Because of the lack of viability, parthenotes do not represent a form of asexual reproduction. *Id.*

69. NIH REPORT, *supra* note 1, at 61-62, 70-71; see *Executive Summary*, *supra* note 43, at xv (noting that the development of a fetus from a parthenote was an impossibility because of the mortality rate).

70. NIH REPORT, *supra* note 1, at 61-62, 70-71; see *Executive Summary*, *supra* note 43, at xv (recognizing that concerns over the lack of a paternal progenitor are baseless because of the mortality rate).

prior to funding, or unacceptable for federal funding.⁷¹ Many other countries and commentators have suggested similar guidelines.⁷²

D. Ethical Considerations

As the Human Embryo Research Panel discovered, ethical considerations play a role in determining the proper role embryo usage should have in science and reproduction. The major ethical dilemma—the moral status of the embryo—is presented in the age-old question asked by scholars and philosophers—when does life begin?⁷³ Three views exist regarding the moral and legal status of an embryo.⁷⁴ The first viewpoint is that the fertilization of an egg creates an obligation to provide that newly created embryo with an opportunity for life.⁷⁵ This theory is based upon the belief that the embryo is a new “genotype”⁷⁶ and that the

71. Examples of studies which would be acceptable for federal funding, provided the guidelines are followed, include the following: (1) Studies aimed at increasing the probability of a successful pregnancy; (2) experiments related to the fertilization process, oocyte activation, the relative role of paternal and maternal genetic material, egg maturation, freezing prior to fertilization, and development of embryonic stem cells; and (3) research projects designed to perfect preimplantation genetic diagnosis and nuclear transplantation without transfer to a uterus. NIH REPORT, *supra* note 1, at 75-77. Examples of research which would be particularly sensitive and would require further review prior to federal funding includes research after the appearance of the primitive streak and prior to the neural tube closure, cloning without transfer to a uterus, and nuclear transplantation which is then transferred to a uterus. *Id.* at 77-80. These studies would be reviewed if they showed extraordinary scientific or therapeutic merit. *Id.* at 77. Projects which the panel found unacceptable for federal funding include the following: (1) Cloning resulting in the implantation of the embryo into a uterus, (2) using of embryos beyond the closure of the neural tube, (3) preimplantation genetic diagnosing solely for sex selection without regard for sex-linked genetic diseases, (4) cross-species fertilization when not done for the sole purpose of testing the ability of sperm to penetrate eggs, (5) parthenogenesis experimentation which results in the transferring of a parthenote to a womb, and (6) research which would result in a human embryo being implanted in another species or outside a human uterus. *Id.* at 80-83.

72. Gregoratos, *supra* note 8, at 997-1006; *see id.* at 997-99 (citing Australia's guidelines for research using spare embryos); *id.* at 999-1000 (noting the United Kingdom's recommendations for embryological research); *id.* at 1001-06 (proposing guidelines for regulating embryological research, including not creating embryos solely for research, consent requirements, limiting research to the 14 day window prior to the appearance of the primitive streak, and prohibiting research which involves subsequent embryo transfer).

73. *See generally* Daniel Wikler, *Concepts of Personhood: A Philosophical Perspective*, in *DEFINING HUMAN LIFE: MEDICAL, LEGAL, AND ETHICAL IMPLICATIONS* 12, 12-23 (Margery W. Shaw & A. Edward Doudera eds., 1983).

74. Steinbock, *supra* note 2, at 29-32. *See generally* Stephen C. Hicks, *The Right to Life in Law: The Embryo and Fetus, the Body and Soul, The Family and Society*, 19 FLA. ST. U. L. REV. 805 (1992).

75. Robertson, *supra* note 8, at 971; Steinbock, *supra* note 2, at 29-31. This view is held by anti-abortion activists and the Catholic church. John A. Robertson, *In the Beginning: The Legal Status of Early Embryos*, 76 VA. L. REV. 437, 440 (1990). *See Davis v. Davis*, No., E-14496, 1989 Tenn. App. LEXIS 641, *34-35 (Tenn. Cir. Ct. Sept. 21, 1989) [hereinafter *Davis I*] (holding that decisions regarding the disposition of the embryos must take the *best interests* of the embryos, as children, into consideration); Brown, *supra* note 36, at 222 (noting that the *Davis I* trial court is the only court which has recognized this viewpoint).

76. *See* WEBSTER'S, *supra* note 16, at 947 (defining a “genotype” as the fundamental genetic constitution of an organism).

preembryo has the potential to become a "person."⁷⁷ According to this theory, this potentiality should be afforded every protection that can be given to a living person. On the opposite end of the spectrum is the theory that the embryo, prior to viability, is equivalent to any other human tissue. This theory eliminates the objectionability of embryological research as long as proper consent is given.⁷⁸ This theory has been rejected by the Tennessee Supreme Court in *Davis v. Davis*.⁷⁹ Lastly, the most neutral argument is that an embryo has less status than a person, but should be afforded greater respect than other tissues due to the potentiality of life.⁸⁰ This theory represents the majority opinion, held by various courts and a variety of ethical committees.⁸¹ The primitive streak limitation suggested by the Human Embryo Research Panel acknowledges the respect for life that should be afforded an embryo by permitting research only prior to the appearance of the primitive streak: the point before which the embryo does not experience pain and has no brain activity.⁸²

While the moral status of embryos continues to trouble society, the courts have remained steadfast in their interpretations of an embryo's legal status. Except for laws restricting abortions, the law has almost never recognized the legal status of a non-viable fetus or embryo prior to birth.⁸³ The Supreme Court

77. Steinbock, *supra* note 2, at 29-31; Brown, *supra* note 36, at 193-94 (citing the Ethics Committee of the American Fertility Society's *Ethical Considerations of the New Reproductive Technologies*, 53 FERTILITY & STERILITY 1S, 17S (Supp. 2 1990)).

78. Robertson, *supra* note 8, at 972. The American Fertility Society advocates this position. Brown, *supra* note 36, at 194 n.90.

79. *Davis v. Davis*, 842 S.W.2d 588, 596-97 (Tenn. 1992) [hereinafter *Davis II*], *cert. denied sub nom. Stowe v. Davis*, 507 U.S. 911 (1993); *see id.* (discussing the three theories of the moral and legal status of an embryo and rejecting the two extreme theories). *But see* York v. Jones, 717 F. Supp. 421, 424-25 (E.D. Va. 1989) (assuming that the subject matter of a dispute between a fertility clinic and a couple who wished to transfer their preembryo to another clinic was "property").

80. Robertson, *supra* note 8, at 972; Steinbock, *supra* note 2, at 31-32. *See generally* Lisa S. Cahill, *In Vitro Fertilization: Ethical Issues in Judeo-Christian Perspective*, 32 LOY. L. REV. 337, 340-54 (1986) (discussing different religious views regarding the moral status of the conceptus and reaching the conclusion that embryological research with excess embryos from the in vitro fertilization process is morally sound due to the decreased status of the embryo).

81. The various commissions include the United States Ethics Advisory Board, the Warnock Committee in Great Britain, the Waller Committee in Australia and the Ontario Law Reform Commission in Canada. Brown, *supra* note 36, at 197-98; *see also* Hecht v. Superior Court (Kane), 16 Cal. App. 4th 836, 850, 20 Cal. Rptr. 2d 275, 283 (1993) (holding that a man has sufficient property rights over his sperm in the nature of decision-making authority to determine the use of his sperm after his death); *Davis II*, 842 S.W.2d at 596-97 (holding that a preembryo deserves special respect, greater than body organs, but not as great as a "person").

82. Robertson, *supra* note 8, at 984.

83. *See, e.g.,* Burns v. Alcala, 420 U.S. 575 (1975) (holding that the state does not need to make Aid to Families of Dependent Children payments for an unborn child); Bonbrest v. Kotz, 65 F. Supp. 138 (D.D.C. 1946) (permitting, for the first time, a tort claim to be brought on behalf of a viable fetus). Keeler v. Superior Court of Amador County, 2 Cal. 3d 619, 633-34, 470 P.2d 617, 626, 87 Cal. Rptr. 481, 490 (1970) (declining to find a man guilty of murder when he beat a pregnant woman to such an extent that the fetus was stillborn with a cracked skull and cerebral hemorrhaging); Reyes v. Superior Court In & For San Bernadino County, 75 Cal. App. 3d 214, 216, 141 Cal. Rptr. 912, 913 (1977) (acquitting a mother of criminal child endangerment when she used heroin throughout pregnancy and failed to seek prenatal care despite warning of fetal

affirmed the lesser legal status of a nonviable fetus or embryo by holding that its status is not equivalent to a viable fetus or person.⁸⁴ The courts have used the point of viability⁸⁵ to delineate when state interests override the mother's interest and this line of demarcation can easily be used to classify embryos.⁸⁶

While the central ethical issue in embryological research is the moral status of the embryo, other related issues are troubling as well. For instance, the exploitive sale of embryos is a concern—one that is also recognized by the Human Embryo Research Panel⁸⁷—and an argument can be made that their sale is analogous to the sale of human beings.⁸⁸ Thus, it has been argued that sanctifying embryo compensation would be tantamount to sanctifying slavery, and would devalue society's respect for human life.⁸⁹ However, society's respect for human life is not devalued if the bigger picture of promoting health and procreation through reproductive technologies is kept in view.⁹⁰

endangerment, which resulted in the birth of twins addicted to heroin); *People v. Chavez*, 77 Cal. App. 2d 621, 626-27, 176 P.2d 92, 94-95 (1947) (holding that legal status is afforded a fetus which has been born alive and exists separately from the mother). *But see* *People v. Carlson*, 37 Cal. App. 3d 349, 355-56, 112 Cal. Rptr. 321, 324-25 (1974) (noting that the legislature revised the definition of manslaughter to include the killing of a viable fetus, while leaving the definition of murder as the killing of a human being unchanged); *Del Zio v. Presbyterian Hospital*, No. 74 Civ. 3588 (S.D.N.Y. Nov. 14, 1978) (LEXIS, Ny Library, Nymega File), reprinted in 2 BIOETHICS REP. 7, 14-15 (1985) (awarding a couple \$5000 damages for intentional infliction of emotional distress when a physician, who objected to the couple's efforts at in vitro fertilization, destroyed the couple's preembryo). *See generally* Lori B. Andrews, *The Legal Status of the Embryo*, 32 LOY. L. REV. 357, 362-95 (1989) [hereinafter *Legal Status*] (taking a historical look at the legal status of the fetus); Gregoratos, *supra* note 8, at 988 (discussing the property rights afforded the unborn, but noting that live birth is a condition precedent to enforcement of those rights in most cases).

84. *Roe v. Wade*, 410 U.S. 113 (1973); *see also* *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 860 (1992) (stating that the state does have an interest in the fetus prior to viability, though it does not outweigh the mother's interest such that abortions may be prohibited); *York v. Jones*, 717 F. Supp. 421, 425 (E.D.Va. 1989) (stating that the embryos of a couple should be treated as property, such that if the couple were to divorce, embryo disposition would be negotiated as part of a property settlement); *Davis II*, 842 S.W.2d at 595-97 (rejecting the lower court's opinion that embryos should be treated as a person by holding that the embryos had less status than a person, but greater significance than bodily organs). *But see infra* notes 364-81 and accompanying text (discussing court decisions which infringed upon this right by allowing state regulation of certain aspects, like funding and consent). *See generally Legal Status, supra* note 83 (analyzing the legal status of the embryo); Schaefer, *supra* note 2, at 92-98 (examining the legal and moral status of an embryo).

85. *See Roe*, 410 U.S. at 163 (defining "viability" as the point at which a fetus is capable of meaningful life outside of the mother's womb).

86. Robertson, *supra* note 8, at 973-74; *see id.* (noting that even philosophers who believe abortion is morally wrong usually do not grant an embryo the same status and right to life as they would grant a viable fetus or person unless there is some nervous system development and implantation has occurred).

87. *See supra* note 65 and accompanying text (indicating that the panel proposed restrictions on the compensation received for embryos used in medical and scientific procedures).

88. Robertson, *supra* note 8, at 1020.

89. *Id.* at 1020-23.

90. *Id.*; cf. Danis, *supra* note 26, at 1091-92 (discussing the degradation of the reproductive process by creating life for use by a designated organ recipient).

Based on society's broad recognition and respect of the embryo as a symbol of life, further ethical issues arise beyond the debate over where life begins, such as issues involving the disposal of the dead, interference with the natural order, and eugenics.⁹¹ Disposing of excess embryos could be troubling to some because of the reverence of sacred rituals for the disposal of the dead.⁹² These rituals are intertwined with personal beliefs and are often religious in nature.⁹³ These personal beliefs are derived from a respect of the dead and a need to maintain a connection to past generations.⁹⁴ However, the donation of spare, "dead" embryos for research is a personal, private decision by the gamete providers akin to those surrounding the funeral ritual. Additionally, the decision to donate is identical to a next-of-kin's decision to donate the deceased's body for medical research—a charitable act which is applauded in our culture. This personal decision regarding the method of a dead embryo's disposal should be given the same respect as the personal decision of another to participate in a different funeral ritual. In light of the personal nature of these convictions, the personal and private decision by the gamete providers to donate spare, "dead" embryos should not offend society's ethical concerns, thus permitting the gamete providers the privacy to observe their own rituals.

Additionally, embryological research could be viewed as undermining human dignity by objectifying and manipulating the intimacies of procreation, which interrupts the natural order.⁹⁵ This argument criticizes genetic research as leading to the view of children as mere commodities—an especially odious view in a world where many children await adoption and numerous countries suffer from overpopulation.⁹⁶ Such a devaluation of human dignity paves the road for more nefarious uses, such as those portrayed in Aldous Huxley's *Brave New World*.⁹⁷ Huxley portrayed a world which had lost all respect for life and dignity, producing humans with characteristics appropriate for their stations in life and who lived their lives in a drug-induced haze. Many fear that embryological research is the first step toward that world where personal freedom is a subconscious dream that never breaks through the drug-induced fog.

91. See SLOANE SUPP., *supra* note 7, at 229 (defining "eugenics" as the study of controlling procreation to eliminate undesirable traits by discouraging or prohibiting reproduction between certain individuals, called negative eugenics, or promoting desirable traits by encouraging reproduction between certain individuals, called positive eugenics).

92. Joel Feinberg, *The Mistreatment of Dead Bodies*, 15 HASTINGS CENTER REP. 31, 32-33 (1985); Leon R. Kass, *Thinking About the Body*, 15 HASTINGS CENTER REP. 20, 29-30 (1985); *see id.* (discussing the importance of funeral rituals to various cultures).

93. Kass, *supra* note 92, at 29-30.

94. *Id.*

95. Robertson, *supra* note 8, at 1024.

96. *Id.* at 1025; *see id.* (noting that surrogate mothers are being paid to produce the "right" children when there are many children throughout the world who could be adopted).

97. ALDOUS HUXLEY, *BRAVE NEW WORLD* (1946); *see id.* (describing a world where state hatcheries create babies with predetermined characteristics appropriate for their predetermined social position).

While concerns regarding the improper use of technology may be justified, preserving the natural order by using technology to aid natural processes, such as reproduction, should not exclude the possibility of embryological research. The natural order is disrupted daily in the medical arena by combating disease and death.⁹⁸ Merely examining the field of obstetrics yields evidence of advancements in medicine that could be disruptive to the natural order.⁹⁹ If procreation may be facilitated through drugs or organ reconstruction, then embryological research, which facilitates procreation and increases longevity, becomes indistinguishable.¹⁰⁰ However, while the medical profession constantly disrupts the natural order through various medical procedures, there are examples where medical practices have possibly had negative consequences. For instance, the prolonging of life may have social, political, and psychological consequences which negatively affect society in its present form.¹⁰¹ Even in today's society, increased longevity has raised questions of how to adequately care for the elderly, and how to economically support a large, growing retired population, as well as ethical issues regarding assisted suicide.

Other ethical issues include genetic concerns, such as the increasing risk of producing abnormal children due to genetic manipulation at the embryonic stage, the dilemma regarding the disposition of spare embryos, the process of cloning, the use of preimplantation genetic testing in the decision to terminate a pregnancy, the implantation of non-parental genetic material, the possibility of genetic engineering to enhance beneficial characteristics, and the creation of life solely for research.¹⁰² Genetic research is suspect among many who fear the unknown effects of newly acquired knowledge.¹⁰³ Such newly acquired knowledge can fundamentally change the moral and ethical beliefs held by a society.¹⁰⁴ However, fears based on these changes, such as the fear of genetic engineering and technical control of humans as portrayed in Huxley's *Brave New World*, should be lessened by realizing that embryological research is merely one element of this picture and

98. Robertson, *supra* note 8, at 1024.

99. *Id.* at 1024 n.294; *see id.* (noting that labor induction and postponement drugs, infertility workups requiring stimulated cycles, and microsurgical tubal reconstruction are examples of medicine objectifying the human body).

100. *Id.* at 1024.

101. James R. Ferguson, *Scientific Inquiry and The First Amendment*, 64 CORNELL L. REV. 639, 643 (1979).

102. Steinbock, *supra* note 2, at 32-44; *see* Norton, *supra* note 34, at 1583-87 (noting concerns over eugenics when preimplantation genetic screening is used for nontherapeutic purposes). *See generally* Gore & Owens, *supra* note 4, at 353-55 (describing concerns regarding genetic research); Joseph Fletcher, *Ethics and Recombinant DNA Research*, 51 S. CAL. L. REV. 1131 (1978) (discussing the ethical implications of research which results in changing bacteria).

103. *See generally* PHILIP KITCHER, *THE LIVES TO COME: THE GENETIC REVOLUTION AND HUMAN POSSIBILITIES* (1996) (describing the major ethical and social concerns surrounding genetic technology).

104. Ferguson, *supra* note 101, at 641; *see id.* (citing examples of such alterations in societal concepts, such as the works of Copernicus, Galileo, and Darwin).

would not necessarily lead to the world foretold in Huxley's fictional prophecy.¹⁰⁵ The small steps taken through embryological research do not inherently lead to the apocalyptic steps necessary to travel down the slippery slope towards controlling the "wisdom of evolution."¹⁰⁶ Governmental control was a major factor in the "brave new world" created by Huxley. In fact, governmental control over a parent's right to dispose of her own genetic material is more analogous to governmental eugenic decisions and represents a more likely step down that slippery slope.¹⁰⁷

Additionally, consent to donation becomes an issue since informed consent is impossible to receive from the embryo.¹⁰⁸ However, Richard A. McCormick, a prolific writer in the field of ethics,¹⁰⁹ has argued that this issue may be resolved through the concept of "proxy" consent.¹¹⁰ According to McCormick, humans generally desire to save other human lives only when there is no known risk and

105. Harlyn O. Halvorson, *DNA and the Law*, 51 S. CAL. L. REV. 1167, 1168-71 (1978); Robertson, *supra* note 8, at 1023; Steinbock, *supra* note 2, at 43; *see* Davis, *supra* note 57, at 533-34 (proposing that *commercialization*, in addition to permitting embryological research, would lead to embryo banks filled with embryos created solely for the purpose of "harvesting"); Halvorson, *supra*, at 1168-71 (noting factors which can lead to disastrous results from research, including misuse of research results, overstatement of the results or not fully informing the public of the results).

106. Robertson, *supra* note 8, at 1026 n.299 (citing the PRESIDENT'S COMMISSION FOR THE STUDY OF ETHICAL PROBLEMS IN MEDICINE AND BIOMEDICAL AND BEHAVIORAL RESEARCH, *SPlicing LIFE* 62-64 (1982)); Steinbock, *supra* note 2, at 43; *see* Douglas A. Levy, *Experts Call for Genetic Privacy Legislation*, U.P.I., Oct. 18, 1991 available in LEXIS, News Library, Arcnws File (copy on file with the *Pacific Law Journal*) (quoting Dr. Bernadine Healy, who was Director of the NIH at that time, as stating that "[like fire,] . . . all powerful tools can be dangerous if misused or abused, and biomedicine's new molecular tools are no exception"). *See generally* Carl Cohen, *Restriction of Research with Recombinant DNA: The Dangers of Inquiry and the Burden of Proof*, 51 S. CAL. L. REV. 1081 (1978) (discussing various arguments concerning the fear of DNA research); Ephross, *supra* note 65, at 463-65.

107. Lisa Hemphill, *American Abortion Law Applied to New Reproductive Technology*, 32 JURIMETRICS J. 361, 375 (1992); Lagod & Martin, *supra* note 8, at 287; *see* Davis v. Davis, No. 180, 1990 Tenn. App. LEXIS 642 at *6 n.7 (1989) (quoting FREDERICK L. SCHUMAN, *THE NAZI DICTATORSHIP* 382 (2d ed. 1939)) (suggesting that the forcing of gamete providers to become parents against their will is analogous to the state control of reproduction in Nazi Germany).

108. Fletcher & Ryan, *supra* note 5, at 127; Steinbock, *supra* note 2, at 29; *see* Fletcher & Ryan, *supra*, at 127 (arguing that fetal research is analogous to research using condemned prisoners which involves coercion, cruelty and injury, except worse because prisoners deserve punishment).

109. Richard A. McCormick's writings were used by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research when determining guideline recommendations in 1974. Fletcher & Ryan, *supra* note 5, at 128. Richard A. McCormick, has authored 14 books in the field of ethics. David S. Toolan, *Of Many Things; Richard McCormick Receives the Champion Award from the Catholic Book Club*, AMERICA, Dec. 2, 1995, at 2. McCormick is currently the John A. O'Brien Professor of Christian Ethics at the University of Notre Dame. *Id.* He has also been the President of the Catholic Theological Society of America and a Director of the American Society of Christian Ethics. *Id.* This Jesuit friar is the 1995 recipient of the Champion Award due to his eminence as a scholar, writer and defender of the faith as presented by the Catholic Book Club. *Id.*

110. Richard A. McCormick, *Proxy Consent in the Experimentation Situation*, in PERSPECTIVES IN BIOLOGY AND MEDICINE 2-20 (1974).

minimal discomfort.¹¹¹ Thus, if embryos will not be implanted, but merely discarded, parents should be able to give consent by proxy to research when the embryo itself would give consent to such research.¹¹² Because the risk is only to an embryo that has no potential for life and that is being discarded without suffering any discomfort (since the research was performed prior to the formation of the primitive streak), the parents should always be able to give consent.¹¹³

This is consistent with the analysis necessary to establish substituted judgment—a method of permissibly violating a person's right to bodily integrity when that person is incapable or unable to consent.¹¹⁴ Substituted judgment may be permitted to violate a person's right to bodily integrity if the person, who is unable to give consent, would have given the consent proposed by a family member or professional.¹¹⁵ Various factors are examined to determine the desire of the incompetent patient, including the extent of the risk, the necessity of the treatment or donation, and the benefit to the patient.¹¹⁶ The donated, spare embryo is not subjected to any additional risk since there is no opportunity for implantation, and therefore no opportunity for life. The research projects for which an embryo would be used would be absolutely necessary since the guidelines require

111. *Id.*; see Steinbock, *supra* note 2, at 29 (suggesting that if the embryo is not considered a human subject, banning or failing to fund embryological research may be considered immoral due to the benefits possible for the entire society).

112. McCormick, *supra* note 110, at 2-20.

113. *Id.* However, W. Walters, another writer which influenced the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, argued that these decisions should not consider the ultimate destination of the fetus, such as whether the fetus is aborted or discarded, contrary to McCormick's view. Fletcher & Ryan, *supra* note 5, at 128.

114. Hart v. Brown, 289 A.2d 386, 391 (Conn. 1972); Little v. Little, 576 S.W.2d 493, 499-500 (Tex. 1979); Strunk v. Strunk, 445 S.W.2d 145, 146-47 (Ky. 1969).

115. Cruzan v. Cruzan v. Director, Mo. Dept. of Health, 497 U.S. 261, 285-87 (1990); see *id.* (recognizing substituted judgment for an incompetent in order to disrupt the incompetent's bodily integrity to aid a close family member, but noting that the State is not required to accept substituted judgment of close family members absent clear and convincing evidence that the judgment reflects the patient's own views); Youngberg v. Romeo, 457 U.S. 307, 321 (1982) (defining the test for this lesser scrutiny as permissible if the judgment reflects the exercise of proper professional judgment).

116. Little, 576 S.W.2d at 499-500; see *id.* (affirming the trial court's decision to permit a minor to donate a kidney to a brother based on substituted judgment since the risk to the donor was minimal and there appeared to be no coercion associated with the donor's consent, though the donor's wishes were admittedly unknown due to the donor's mental condition); see also Hart, 289 A.2d at 391 (recognizing a parental right to consent to the donation of a twin's kidney to the other twin, when combined with the consent of the guardian ad litem, and when the risks were minimal, the donation was necessary, and the parent's motivation and reasoning was favorably reviewed by a community representation); Strunk, 445 S.W.2d at 146-47 (affirming the trial court's decision to remove an incompetent adult's kidney for transplant in an ailing brother based on substituted judgment when it was in the best interest of the incompetent because of the close relationship between the brothers and the minimal risk the operation posed); cf. Curran v. Bosze, 566 N.E.2d 1319, 1343-44 (Ill. 1990) (distinguishing this case for compelling a bone marrow test for a possible match and transplant from previous court decisions authorizing kidney transplants on the basis of the lack of a benefit to the donor twins, who were born out of wedlock, since the twins lacked a close relationship to the donee, a half-brother from the father's marriage). But see In re Guardianship of Pescinski, 226 N.W.2d 180, 181-82 (Wis. 1975) (declining to adopt "substituted judgment" even though the donor and donee were siblings).

other avenues to be explored first, such as computer simulation and animal experimentation. Because of the overwhelming nature of the first two elements, the beneficial aspect can be very tenuous. While there is no benefit to that particular embryo, many research projects would benefit close relatives. Additionally, altruism for the benefit of mankind should not be overlooked, because people need to experience a connection with others, which can be achieved through donations that benefit mankind.¹¹⁷ Based on these factors, we can rely on the substituted judgment of the gamete providers when they donate spare, "dead" embryos for use in a research or reproductive procedure.

There are many ethical concerns as evidenced by this short discussion, and the issues raised in this Comment have merely graze the surface. As noted previously, mankind has struggled with these dilemmas throughout the ages and will probably continue to struggle with them. However, some states have grappled with these same issues and promulgated legislation to promote their resolution.

II. STATE LAWS

While there are twenty-four states which regulate fetal tissue research, only ten states prohibit or restrict embryological research.¹¹⁸ There are varying degrees

117. See *infra* notes 279-80 and accompanying text (discussing the importance that gift-giving plays in society).

118. Contrast ARIZ. REV. STAT. ANN. § 36-2302 (1993) (abolishing experimentation with a conceptus from an induced abortion); ARK. CODE ANN. §§ 20-17-801, 20-17-802 (Michie 1991) (limiting the use of fetal tissue); CAL. HEALTH & SAFETY CODE §§ 25956, 25957 (West 1984) (regulating research using fetal tissue which is obtained prior to or subsequent to an abortion); FLA. STAT. ANN. § 390.001(6), (7) (West 1993) (prohibiting research on live fetuses and describing appropriate methods for disposal of fetal remains); IND. CODE ANN. § 16-34-2-6 (West Supp. 1995) (criminalizing experimentation on aborted fetuses); KY. REV. STAT. ANN. § 436.026 (Baldwin 1993) (banning experimentation on live or viable aborted children); MO. ANN. STAT. § 188.037 (Vernon 1983) (banning experimentation and research on fetuses prior to and subsequent to an abortion); MONT. CODE ANN. § 50-20-108(3) (1991) (preventing research or experimentation on any premature, live infant, except for therapeutic purposes); NEB. REV. STAT. §§ 28-342, 28-346 (1989) (restricting experimentation on aborted children); OHIO REV. CODE ANN. § 2919.14 (Anderson 1993) (restricting experimentation on aborted conceptus); OKLA. STAT. ANN. tit. 63, § 1-735 (West 1984) (prohibiting experimentation on aborted children); S.D. CODIFIED LAWS ANN. § 34-23A-17 (1994) (prohibiting fetal transplantation subsequent to an abortion); TENN. CODE ANN. § 39-15-208(a) (1991) (limiting experimentation or research on aborted fetuses without the consent from the mother); and WYO. STAT. § 35-6-115 (1994) (describing penalties for giving away an aborted fetus for experimentation) with LA. REV. STAT. ANN. §§ 9:121-133 (West 1991) (limiting the use of any product of conception); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992) (restricting the use of a conceptus created through in vitro fertilization from the embryonic stage through the fetal stage); MASS. ANN. LAWS ch. 112, § 12J (Law. Co-op. 1996) (regulating the use of a live conceptus and procedures which are not conducted to determine or preserve the life or health of the conceptus); MICH. COMP. LAWS ANN. §§ 333.2685-2692 (West 1992) (banning nontherapeutic embryological research, not to include diagnostic procedures which determine health, if the procedure substantially jeopardizes the health of the embryo or if the embryo is the subject of a planned abortion); MINN. STAT. ANN. §§ 145.421, 145.422 subd. 1, 2 (West 1992) (prohibiting research or experimentation on a conceptus when the research or experimentation is harmful to the conceptus); N.H. REV. STAT. ANN. § 168-b:15 (1994) (limiting the maintenance of a preembryo ex utero

of regulation, from the most permissive, which permits research using human embryos as long as the embryo is not subsequently transferred to a uterus, to others which approach the use of embryos for research from the viewpoint of the embryo or fetus by examining the level of risk to the embryo/fetus.¹¹⁹

A. Legislative Intent

In order to determine the constitutionality of procedures that use embryos particular attention must be paid to the state interests protected by the various state laws which regulate embryological research.¹²⁰ For instance, Louisiana's identified interest is in the protection of the life of the unborn child from the moment of conception, to the maximum extent allowable under the Constitution.¹²¹ Some state regulation of embryological and fetal research grew out of Supreme Court decisions regarding the right to privacy in making reproductive decisions.¹²² States were concerned that research involving fetuses

in a noncryopreserved state to under 15 days and prohibiting the transfer of a research embryo to a uterine cavity); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994) (banning research using fetuses or embryos unless the procedure is of no significant risk to the conceptus or minimally risky and benefits the conceptus); N.D. CENT. CODE §§ 14-02.2-01, 14-02.2-02 (1991) (prohibiting fetal experimentation); 18 PA. CONS. STAT. ANN. § 3216 (Supp. 1995) (banning nontherapeutic experimentation and medical procedures on any unborn child); and R.I. GEN. LAWS § 11-54-1 (1994) (limiting experimentation and research on embryos and fetuses).

119. Lori B. Andrews, *State Regulation of Embryo Research*, in 2 PAPERS COMMISSIONED FOR THE HUMAN EMBRYO RESEARCH PANEL, NAT'L INST. OF HEALTH, 297, 299 (1994) [hereinafter *State Regulation*]; see MICH. COMP. LAWS ANN. § 333.2685 (West 1992) (prohibiting embryological research which substantially endangers the health or life of the fetus); MINN. STAT. ANN. § 145.422 subd. 2 (West 1989) (permitting research which is harmless to the embryo); N.H. REV. STAT. ANN. § 168-B:15(II) (1994) (allowing embryological research as long as the embryo is not transferred to a uterus after the research); see also MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op. 1996) (permitting diagnostic or remedial procedures which could be characterized as research); MICH. COMP. LAWS ANN. § 333.2685 (West 1992) (banning research which utilizes embryos if the research is nontherapeutic); *id.* § 333.2686 (West 1992) (allowing diagnostic procedures which would determine or improve the health of the embryo); N.D. CENT. CODE § 14-02.2-01(3) (1991) (limiting regulation of embryological research by excluding diagnostic or remedial measures to determine or preserve the health of the embryo); 18 PA. CONS. STAT. ANN. § 3216(a) (Supp. 1995) (prohibiting embryological research which is not therapeutic to the embryo); *id.* § 3216(c) (Supp. 1995) (permitting in vitro fertilization techniques which would be considered experimental, or research); R.I. GEN. LAWS § 11-54-1(b) (1994) (excluding diagnostic and remedial measures designed to determine or preserve the embryo).

120. See *infra* notes 194-462 and accompanying text (proposing that the constitutionality of these laws will hinge on the right to privacy as guaranteed by the Fourteenth Amendment and the right to research as incorporated in the First Amendment's guarantee of free speech).

121. LA. REV. STAT. ANN. § 40:1299.35.0 (West 1992); Marilyn J. Clapp, Note, *State Prohibition of Fetal Experimentation and the Fundamental Right of Privacy*, 88 COLUM. L. REV. 1073, 1075 (1988).

122. *State Regulation*, *supra* note 119, at 297; Charles H. Baron, *Fetal Research: The Question in the States*, 15 HASTINGS CENTER REP. 12, 12-13 (Apr. 1985); Eggen, *supra* note 31, at 668; Gary L. Reback, *Fetal Experimentation: Moral, Legal, and Medical Implications*, 26 STAN. L. REV. 1191, 1191 n.2 (1974); Judith W. Munson, Note, *Fetal Research: A View from Right to Life to Wrongful Birth*, 52 CHI.-KENT L. REV. 133, 133 (1975); Paula L. Lehmann, Comment, *The Future of Fetal Research in California: A Proposal for Change*, 15 SAN DIEGO L. REV. 859, 863-65 (1978); see *State Regulation*, *supra*, at 297 (proposing that *Roe v. Wade*

or embryos would provide a social benefit for having an abortion, therefore increasing the number of abortions.¹²³ Thus, while the primary emphasis of state legislation was to restrict the use of aborted fetuses, the language of some states laws is broad enough to encompass prohibition of embryological research.¹²⁴ This has resulted in a governmental failure to consider the unique issues raised by advanced reproductive technologies.¹²⁵ However, some commentators have suggested that procedures associated with in vitro fertilization would be excluded from the prohibition, even if the specific language of the statute encompasses such procedures, because the focus of the regulation was directed at reducing abortions.¹²⁶

Another impetus for state regulation was the advent of in vitro fertilization procedures, though this impact is less substantial.¹²⁷ States appear to be concerned with fostering marriage and discouraging illegitimacy as related to in vitro fertilization.¹²⁸ Some have argued that societal problems result when the institution of marriage and family are overlooked by giving birth to children outside of marriage.¹²⁹ Some of these concerns would include increased welfare and poverty, as well as the degradation of society in general. Thus, the states may be concerned that in vitro fertilization promotes childbirth outside of wedlock, when childbirth outside of marriage is a common denominator in many of today's societal problems, such as criminal tendencies, drug use and poverty.

influenced state embryological research bans); Norton, *supra* note 34, at 1610 (proposing that abortion proponents support prohibition of embryological research due to a fear that ethically questionable embryo uses may have a backlash effect on the right to make reproductive decisions).

123. *State Regulation*, *supra* note 119, at 297; Baron, *supra* note 122, at 12-13; Eggen, *supra* note 31, at 668; Dennis M. Flannery et al., *Test Tube Babies: Legal Issues Raised by In Vitro Fertilization*, 67 GEO. L. J. 1295, 1299-1300 (1979); see, e.g., 18 PA. CONS. STAT. ANN. § 3213(e) (1983 & Supp. 1995). Out of the 25 states that regulate fetal research, 12 of these states only prohibit research prior to or subsequent to an elective abortion; most of the laws are connected to abortion legislation. ARIZ. REV. STAT. ANN. § 36-2302(A) (1993); ARK. CODE ANN. § 20-17-802 (Michie 1991); CAL. HEALTH & SAFETY CODE § 25956(a) (West 1984); FLA. STAT. ANN. § 390.001(6) (West 1993); IND. CODE ANN. § 35-1-58.5-6 (West 1986); KY. REV. STAT. § 436.026 (Baldwin 1993); MO. ANN. STAT. § 188.037 (Vernon 1983); NEB. REV. STAT. § 28-346 (1989); OHIO REV. CODE ANN. § 2919.14(A) (Anderson 1993); OKLA. STAT. ANN. tit. 63, § 1-735(A) (West 1994); TENN. CODE ANN. § 39-15-208(a) (1991); WYO. STAT. § 35-6-115 (1994).

124. Baron, *supra* note 122, at 13; Eggen, *supra* note 31, at 668.

125. Eggen, *supra* note 31, at 668-69.

126. Flannery et al., *supra* note 123, at 1299-1300; see *Smith v. Hartigan*, 556 F. Supp. 157, 162-64 (N.D. Ill. 1983) (deciding an infertile couple's challenge of a statute limiting embryological research, which would have prohibited in vitro fertilization, was moot because the Illinois prosecutor indicated that the State would not prosecute a couple seeking in vitro fertilization).

127. *State Regulation*, *supra* note 119, at 299.

128. Flannery et al., *supra* note 123, at 1315-16.

129. *Crossfire* (CNN television broadcast, May 20, 1992) (interviewing Vice-President Dan Quayle) (copy on file with the *Pacific Law Journal*); see *id.* (citing the glorification of single motherhood—for example, as seen on *Murphy Brown*—as a contributing factor to a lack of moral fiber in this nation, which in turn, leads to poverty).

Other fears relate to the misuse of the actual research procedures or the results. The Eastern District Court of Louisiana, in *Margaret S. v. Edwards* (*Margaret S. I*),¹³⁰ found that Louisiana had an interest in regulating experimentation on embryos to protect its citizens from the "dangers of abuse inherent in any rapidly developing field."¹³¹ Abuse is also a leading concern related to eugenics.¹³² While not specifically detailed in *Margaret S. I*, such abuses could include discrimination against minorities or impoverished persons. This concern encompasses not only attempts to create offspring by genetically engineered—thereby disadvantaging those not genetically created, but also the investiture of power over the selection decision in a small group of people who would, in effect, have the power to judge the value of various genetic traits.¹³³ This could very easily lead down that slippery slope, that could be likened to Germany's selection of superior traits for mankind—white, non-Jewish traits.

Based on these concerns, states tend to restrict procedures which could be defined as embryological research in six areas: cryopreservation, preimplantation screening, gene therapy, cell line development, twinning, and basic research.¹³⁴ There are also restrictions regarding commercialization of embryo research in nineteen states, and two others have statutes regarding commercialization which can be expanded by an administrative body to include embryos.¹³⁵

130. 488 F. Supp. 181 (E.D. La. 1980).

131. *Margaret S. v. Edwards*, 488 F. Supp. 181, 221 (E.D. La. 1980) [hereinafter *Margaret S. I*]. While the statute at issue in *Margaret S. I* prohibited experimentation on fetuses in utero, this same concern of abuse has applicability to embryological research.

132. Flannery et al., *supra* note 123, at 1316-17.

133. *Id.* at 1316; Gore & Owens, *supra* note 4, at 353-55.

134. *State Regulation*, *supra* note 119, at 297-302; *see supra* note 15 (clarifying the term "embryological research" as used in this Comment).

135. *State Regulation*, *supra* note 119, at 300. Eleven states and the District of Columbia completely ban payments for embryos. D.C. CODE ANN. § 6-2601(b) (1995); FLA. STAT. ANN. § 873.05(1)-(3) (West 1994); ILL. ANN. STAT. ch. 755 para. 50/8.1 (Smith-Hurd 1992); LA. REV. STAT. ANN. § 9:122 (West 1991); MINN. STAT. ANN. § 145.422 Subd. (3) (West 1989); 18 PA. CONS. STAT. ANN. § 3216(b)(3) (Supp. 1995); TEXAS PENAL CODE ANN. § 48.02 (West 1994); UTAH CODE ANN. § 76-7-311 (1993); VA. CODE ANN. § 32.1-289.1 (Michie 1992); *see* GA. CODE ANN. § 26-9957(a), (b) (1992) (permitting payments for embryos when used for health services education); MICH. COMP. LAWS ANN. § 333.2690 (West 1992) (banning payments for embryos which will be knowingly used illegally); R.I. GEN. LAWS § 11-54-1(f) (1994) (criminalizing the commercialization of embryo transfers when the transfers are not lawful). Four states exclude payments for embryos specifically used for research. ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12(J)(a)(IV) (Law. Co-op. 1996); MICH. COMP. LAWS ANN. § 333.10204(1) (West Supp. 1992); N.D. CENT. CODE § 14-02.2-02(4) (1991). Five states use broadly written language to prohibit payments for body parts which could be interpreted to include embryos. CAL. HEALTH & SAFETY CODE § 7155(a)-(c) (West Supp. 1995); CAL. PENAL CODE § 367f(a)-(g) (West 1988); CONN. GEN. STAT. ANN. § 19a-280a(a)-(c) (West Supp. 1995); DEL. CODE ANN. tit. 16, § 2713(f) (1995); NEV. REV. STAT. ANN. § 201.460 (Michie 1995); 35 PA. CONS. STAT. ANN. § 10025(a) (1993). Furthermore, three states ban payments for body parts contained on an enumerated list which at present does not contain embryos, but the statute permits the list to be expanded by agency decision, possibly to include embryos. N.Y. PUB. HEALTH LAW § 4307 (McKinney 1985); W. VA. CODE § 16-19-7a (1995); WIS. STAT. ANN. § 146.345 (West 1989).

B. Cryopreservation

Cryopreservation is the process of freezing embryos removed from the mother but not needed for the in vitro fertilization process at the time of fertilization.¹³⁶ The excess embryos are frozen at -196 degrees Centigrade in liquid nitrogen.¹³⁷ This process enables a woman to avoid repeating the egg retrieval process, thereby reducing emotional, physical and monetary costs should the first attempt at childbirth fail.¹³⁸ This procedure, due to its novel and possibly experimental nature, could be banned in five states if the vague wording of these states' statutes were strictly construed and enforced.¹³⁹ Other states regulate the procedure with reporting requirements and personnel or facility criteria.¹⁴⁰

Cryopreservation invokes state interests in the moral status of the embryo.¹⁴¹ Based on the enactment of this legislation immediately subsequent to court decisions striking anti-abortion laws, the overriding motivation for banning this type of embryological research seems to be the fear of abortions.¹⁴² By allowing the cryopreservation of excess embryos, a woman may abort implanted embryos

136. Brown, *supra* note 36, at 188. Cryopreservation, while typically used during the in vitro fertilization process, may also be used to store gametes prior to chemotherapy because chemotherapy often leads to sterility. Norton, *supra* note 34, at 1596 n.73.

137. Brown, *supra* note 36, at 188.

138. Steinbock, *supra* note 2, at 33; *see supra* note 2 (outlining the expense of the in vitro fertilization process, made even more costly because the success rate is so low); Brown, *supra* note 36, at 188-89; *supra* notes 28-32 and accompanying text (describing the egg retrieval process, which includes ingesting hormones to alter the mother's chemistry). While successful pregnancies have resulted from embryos implanted in a woman after being cryopreserved for 38 months, the success rate for live births is less than 10%. Brown, *supra*, at 189.

139. ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op. 1996); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994); N.D. CENT. CODE §§ 14-02.2-01, 14-02.2-02 (1991); 18 PA. CONS. STAT. ANN. § 3216(a) (Supp. 1995); R.I. GEN. LAWS § 11-54-1(a)-(c) (1994); *see infra* notes 198-211 and accompanying text (discussing the court challenges to state embryological research bans based on vagueness).

140. *See, e.g.*, ARK. CODE ANN. § 23-86-118(d) (Michie 1992) (establishing the medical facility requirements for medical insurance reimbursement of in vitro fertilization procedures); HAW. REV. STAT. § 432:1-604(6) (1993) (requiring that medical insurance reimbursement be predicated on the in vitro fertilization facilities meeting the standards of either the American College of Obstetrics and Gynecology of the American Fertility Society); ILL. ANN. STAT. ch. 215, para. 5/356m(b)(1)(c) (Smith-Hurd 1993) (describing the medical facility requirements which must be met prior to medical insurance reimbursement of in vitro fertilization expenses); LA. REV. STAT. ANN. § 9:128 (West 1991) (codifying the in vitro fertilization facility and personnel standards established by the American College of Obstetricians and Gynecologists and the American Fertility Society); MD. CODE ANN. INS. art. 48a, §§ 477EE(6), 470W (1994) (establishing the medical facility qualifications necessary to receive medical insurance reimbursement for in vitro fertilization procedures); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994) (delineating the criteria of facilities used to perform in vitro fertilization so that the facilities may be reimbursed through medical insurance); 18 PA. CONS. STAT. ANN. § 3213(e) (1983 & Supp. 1995) (listing the reporting requirements).

141. Steinbock, *supra* note 2, at 34-37; *see id.* (discussing the implications of excess frozen embryo disposal and the moral issues involved with having excess embryos such that aborting an undesirable embryo and harvesting organs from an embryo become viable alternatives).

142. Norton, *supra* note 34, at 1599-1603.

in an attempt to give birth to exactly the child she wants.¹⁴³ Concern is also focused on the potential for disruption of the family unit since cryopreservation enables offspring to be born years later.¹⁴⁴ For instance, a cryopreserved embryo could be implanted in a great grandchild, resulting in the birth of the host mother's great aunt. This could lead to psychological problems for the children, as well as societal problems in such areas as probate.

C. Preimplantation Screening

Another reproductive procedure which utilizes embryos and is regulated by state law is preimplantation screening. Preimplantation screening involves the evaluation of preembryos for disease or birth defects.¹⁴⁵ After fertilization a one-celled zygote begins to divide, until there are eight cells.¹⁴⁶ At this point, because all cells have the potential to become any type of cell, scientists may remove a single cell through a vacuuming procedure which can then be genetically analyzed.¹⁴⁷ Screening is very costly and is not covered by insurance.¹⁴⁸ This procedure is currently feasible for many serious diseases, such as cystic fibrosis,¹⁴⁹ Duchenne muscular dystrophy,¹⁵⁰ and thalassemia.¹⁵¹

Six of the ten states that ban embryological research exempt preimplantation screening.¹⁵² The remaining four states prohibit screening unless it is shown to be beneficial or without risk to the embryo.¹⁵³ Additionally, there are two states which prohibit research on an embryo prior to an abortion or when the embryo

143. Steinbock, *supra* note 2, at 34-37; see Norton, *supra* note 34, at 1599-1603 (discussing the use of abortions and cryopreservation to select the "correct child" or provide for the availability of tissue matched donors).

144. Eggen, *supra* note 31, at 664; Steinbock, *supra* note 2, at 34-37.

145. *State Regulation*, *supra* note 119, at 301. See generally Norton, *supra* note 34, at 1592-97 (discussing preimplantation genetic screening).

146. Norton, *supra* note 34, at 1594.

147. *Id.*

148. *Id.* at 1597-98; see *id.* (noting that this results in a low demand, though the demand is anticipated to rise); *id.* at 1598 (quoting Joseph D. Schulman, Director of the Genetics and IVF Institute in Fairfax, Virginia, as reporting that although couples have inquired about preimplantation screening for cystic fibrosis and chromosomal disorders which result in retardation, no one has used the procedure because of the cost).

149. See SLOANE, *supra* note 3, at 285 (defining "cystic fibrosis" as an hereditary dysfunction of the exocrine glands which causes an obstruction of the pancreatic ducts, resulting in chronic pulmonary disease, pancreatic deficiencies, and abnormally high levels of electrolytes in the sweat).

150. See *id.* (describing "Duchenne muscular dystrophy" as a chronic progressive disease characterized by weakness of the muscles in the shoulder and pelvic girdles, causing a peculiar swaying gait and generally leading to death by respiratory weakness or heart failure).

151. Steinbock, *supra* note 2, at 28; see SLOANE, *supra* note 3, at 723 (defining "thalassemia" as a rare form of anemia that may result in skeletal deformation, cardiac enlargement, or splenomegaly).

152. MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op. 1996); MICH. COMP. LAWS ANN. § 333.2686 (West 1992); N.H. REV. STAT. ANN. § 168-B:15 (1994); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994); N.D. CENT. CODE § 14-02.2-01(3) (1991); R.I. GEN. LAWS § 11-54-1(b) (1994).

153. LA. REV. STAT. ANN. §§ 9:122, 9:129 (West 1991); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MINN. STAT. ANN. § 145.421 subd. 1, 2 (West 1989); 18 PA. CONS. STAT. ANN. § 3216(a) (Supp. 1995).

is intended to be aborted, even though these states have no general ban on embryological research.¹⁵⁴

Often, commentators argue against the practical use of screening for reproductive decision-making.¹⁵⁵ Some concerns center around using preimplantation screening to select superior traits, which raises questions regarding who should select these traits and what criteria should be used.¹⁵⁶ Other concerns relate to the frivolous use of the screening process which could greatly affect society, such as choosing male children which, if followed to its conclusion, would lead to the extinction of humanity.¹⁵⁷ However, the concerns in preventing preimplantation screening because of its impact on reproductive decision-making seems less compelling given the Supreme Court's decision to constitutionally protect a woman's right to choose an abortion.¹⁵⁸

Another issue is posed by the relationship between mandatory carrier screening for genetic material and discrimination.¹⁵⁹ For instance, some people might want to prohibit the birth of children with Sickle Cell anemia.¹⁶⁰ Coincidentally, this would curtail the births of Africans and their descendants who are the carriers of Sickle Cell anemia. There may be justifiable interests in maintaining the gene pool through nontherapeutic preimplantation genetic screening.¹⁶¹ For example, decreasing the gene pool may make humans less adaptable to our changing environment by culling genes which may be the very genes which would mutate to solve an evolutionary problem. Additionally, the state may have legitimate concerns related to the possibility of conducting

154. FLA. STAT. ANN. § 390.001 (West 1993); OKLA. STAT. ANN. tit. 63, § 1-735 (West 1984).

155. Ephross, *supra* note 65, at 465; Steinbock, *supra* note 2, at 38; see Norton, *supra* note 34, at 1583-89 (discussing the use of preimplantation screening for the purposes of eugenics, which would result in an abortion if an undesirable trait is present).

156. See *supra* notes 102-04 and accompanying text (describing the fears regarding eugenics).

157. See *infra* notes 159-63 and accompanying text (proposing another hypothetical situation which could occur if embryos were genetically screened for the purpose of selecting or avoiding certain traits, like Sickle Cell anemia).

158. Steinbock, *supra* note 2, at 38-39.

159. Ephross, *supra* note 65, at 465-67; see Norton, *supra* note 34, at 1589 (relating one situation where an insurer would not pay for genetic screening unless the couple agreed to abort the fetus if the fetus tested positive for cystic fibrosis); *id.* at 1603-10 (discussing the implications of genetic screening on discrimination through selection of certain types of embryos).

160. See SLOANE SUPP., *supra* note 7, at 18 (defining "Sickle Cell anemia" as a type of inherited anemia typically occurring in persons of African descent which is characterized by arthritic pain, acute attacks of abdominal pain, and ulcerations of the lower extremities and is distinguishable from other forms of anemia by sickle-shaped blood cells which impede the blood flow).

161. Norton, *supra* note 34, at 1612-13.

nontherapeutic¹⁶² screening for certain traits.¹⁶³ If the trait for which the embryo is screened is linked to a trait necessary to avoid some detrimental effect, the genetic screening process may create larger problems than it solves. For instance, the Sickle Cell anemia trait would be beneficial to eliminate if viewed independently, but this trait also provides a natural defense to malaria. Thus, eliminating Sickle Cell anemia by avoiding the birth of children with that trait could raise the incidence of malaria.

D. Gene Therapy

Another area which is regulated by state law is gene therapy.¹⁶⁴ Gene therapy is a process by which genetic material is added to an embryo in vitro in order to cure genetic defects.¹⁶⁵ Genes are the command center of each cell, governing their structure and functioning,¹⁶⁶ and faulty DNA within a gene may result in a faulty structure or a malfunction.¹⁶⁷ Gene therapy replaces a faulty gene with the hope of alleviating or curing the individual's genetic disease and of preventing the defective genes from being passed on to future generations.¹⁶⁸ While gene therapy has not yet been used on humans, the scientific community has paid increasing attention to that possibility.¹⁶⁹ Cystic fibrosis, Tay-Sachs, Sickle Cell anemia and

162. See *Lifchez v. Hartigan*, 735 F. Supp. 1361, 1374-75 (N.D. Ill. 1990) (discussing the meaning of "nontherapeutic" as including not trying to help an embryo or not designed to benefit an embryo), *cert. denied sub nom. Scholberg v. Lifchez*, 498 U.S. 1069 (1991); *Certified Blood Donor Serv., Inc. v. United States*, 377 F. Supp. 964, 966-67 (Cust. Ct. 1974) (defining "therapeutic" as a remedial treatment for disease or a substance or procedure that is healing, curative, or alleviative), *rev'd on other grounds*, 511 F.2d 572 (1975).

163. Norton, *supra* note 34, at 1612-13.

164. See *infra* note 172 and accompanying text (providing a list of state laws which restrict gene therapy).

165. Lagod & Martin, *supra* note 8, at 305-06; Steinbock, *supra* note 2, at 40; see John B. Attanasio, *The Constitutionality of Regulating Human Genetic Engineering: Where Procreative Liberty and Equal Opportunity Collide*, 53 U. CHI. L. REV. 1274, 1282 (1986) (describing the process of recombinant DNA technologies); see also *infra* note 372 (defining recombinant DNA procedures). See generally Dan L. Burk, *Patenting Transgenic Human Embryos: A Nonuse Cost Perspective*, 30 HOUS. L. REV. 1597, 1610-15 (1993).

166. Lagod & Martin, *supra* note 8, at 305. See generally Norton, *supra* note 34, at 1588-92 (discussing genes and their processes).

167. Lagod & Martin, *supra* note 8, at 306.

168. *State Regulation*, *supra* note 119, at 301; Gore & Owens, *supra* note 4, at 352; Lagod & Martin, *supra* note 8, at 306; Steinbock, *supra* note 2, at 40-41. Inserting cytokine genes into malignant cancer cells is an example of somatic cell gene therapy and would cause the production of cytotoxic T cells as an immune response to specifically target the tumorous growth. Steinbock, *supra*, at 28. This procedure would affect the patient only, without disturbing the genetics of any future generations. *Id.*; see *infra* notes 175-76 and accompanying text (exploring the significance of gene therapy which impacts future generations).

169. *State Regulation*, *supra* note 119, at 298.

hemophilia¹⁷⁰ are examples of genetically caused diseases which have the possibility of being cured through gene therapy.¹⁷¹

Although two of the ten states that prohibit experimental procedures appear to prohibit gene therapy and the other eight states permit gene therapy, it is likely that this procedure would be permissible in nine states.¹⁷² Because the technique attempts to provide a health benefit to the embryo with minimal risk to the embryo, gene therapy should be considered lawful in nine states since these states do not interpret their bans on "experimentation" broadly enough to encompass beneficial procedures—especially when the states have codified an exception for beneficial techniques.¹⁷³

The state concerns about gene therapy centers around the creation of life and the tampering with that life through unnatural means.¹⁷⁴ For instance, there are two types of gene therapy: somatic cell gene therapy, which is performed on non-reproductive cells; and germ-line cell therapy, which is performed on reproductive cells.¹⁷⁵ Germ-line cell therapy could impact future generations by manipulating reproductive cells which are then passed on to children. The NIH recognizes these concerns and restricts funding to somatic cell gene therapy to eliminate the likelihood that the therapy will affect more than the individual treated.¹⁷⁶

170. See SLOANE SUPP., *supra* note 7, at 272 (describing "hemophilia" as a genetic disease which effects the ability of the blood to coagulate, resulting in subcutaneous and intramuscular bleeding).

171. Gore & Owens, *supra* note 4, at 352; Lagod & Martin, *supra* note 8, at 305-06; see Lisa M Krieger, *Gene Therapy Buttresses Crucial Cells*, S.F. EXAM., Apr. 3, 1996, at A-2 (announcing that research suggests that gene therapy could prolong the lives of HIV positive patients).

172. Eight states permit procedures which would be beneficial to the embryo. LA. REV. STAT. ANN. §§ 9:121-133 (West 1991); MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op 1996); MICH. COMP. LAWS ANN. §§ 333.2686, 333.2692 (West 1992); MINN. STAT. ANN. § 145.422 subd. 1, 2 (West 1989); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994); N.D. CENT. CODE § 14-02.2-01, 14-02.2-02 (1991); 18 PA. CONS. STAT. ANN. § 3216 (Supp. 1995); R.I. GEN. LAWS § 11-54-1(a)-(c) (1994). Maine prohibits any form of experimentation. ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992). New Hampshire bans the subsequent transfer of an embryo into a uterus after the embryo has been donated for research. N.H. REV. STAT. ANN. § 168-B:15(II) (1994).

173. *State Regulation*, *supra* note 119, at 301.

174. Steinbock, *supra* note 2, at 40-42; see *id.* (citing examples of possible problems when gene therapy is performed, such as injecting a gene for one characteristic that in turn effects the placement of organs, or correcting a gene which causes both a genetic disease and provides a benefit, i.e. the Sickle Cell trait causes a crippling, fatal disease in the offspring of two carriers but provides an immunity from malaria in carriers).

175. *Id.* at 28.

176. *Id.*; see *id.* (noting that the NIH will only fund research involving gene therapy on somatic cells, or non-reproductive cells, as opposed to germ-line cells, or reproductive cells, which include eggs in women and sperm in men). But see Lagod & Martin, *supra* note 8, at 306 n.348 (stating that some fear that somatic cell research may transmit somatic cell changes unintentionally from an individual to the offspring). See generally Attanasio, *supra* note 165 (discussing ethical and constitutional implications of positive genetic engineering); Gore & Owens, *supra* note 4, at 351-52 (discussing the differences between somatic and germline therapy).

E. Cell Line Development

Cell line development is another medical technique which can be performed on embryos. All ten states that prohibit embryological research have vaguely worded statutes which could encompass cell line development if the statutes were interpreted broadly.¹⁷⁷ States are more likely to enforce prohibitions against cell line development than prohibitions against gene therapy because cell line development is not considered beneficial to the mother or embryo, therefore taking the procedure outside of the exceptions for beneficial medical procedures.¹⁷⁸ Cell line development involves implantation of altered embryos after the procedure, raising the same concerns identified in somatic cell gene therapy—the genetic impact on future generations.¹⁷⁹ However, some cell line development could be characterized as non-experimental, thus removing it from the scope of experimentation bans.¹⁸⁰ Most frequently, the concerns with cell line development involve commercialization and consent.¹⁸¹

F. Twinning

Twinning is another procedure which is limited by state law.¹⁸² Researchers duplicate, or “twin,” embryos by dividing the embryo in half prior to implantation.¹⁸³ The process occurs by micromanipulation at the two-cell stage and the resulting “twins” are allowed to mature to the six- to eight-cell stage until they are ready for implantation.¹⁸⁴ Twinning increases the embryos available for implantation by doubling those retrieved through surgery, thus reducing the risks

177. LA. REV. STAT. ANN. §§ 9:121-133 (West 1991); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op. 1996); MICH. COMP. LAWS ANN. §§ 333.2685, 333.2686, 333.2692 (West 1992); MINN. STAT. ANN. § 145.422 subd. 1, 2 (West 1989); N.H. REV. STAT. ANN. § 168-B:15(II) (1994); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994); N.D. CENT. CODE §§ 14-02.2-01, 14-02.2-02 (1991); 18 PA. CONS. STAT. ANN. § 3216(a) (Supp. 1995); R.I. GEN. LAWS § 11-54-1(a)-(c) (1994); *State Regulation*, *supra* note 119, at 301.

178. *State Regulation*, *supra* note 119, at 301.

179. *Id.*

180. C. Ann Sheehan, Comment, *Fetal Tissue Implants: An Explosive Technology Needs National Action*, 92 DICK. L. REV. 895, 901 (1988).

181. *State Regulation*, *supra* note 119, at 301; *see, e.g.*, NEV. REV. STAT. ANN. § 451.015 (Michie 1991) (forbidding the use of an aborted embryo or fetus for any commercial purpose); *cf.* MINN. STAT. ANN. § 145.422 subd. (3) (West 1989) (permitting the sale of cell culture lines taken from non-living human embryos or fetuses while banning the sale of living embryos, fetuses or nonrenewable organs). Consent issues relate to the extent to which researchers inform the gamete providers about the profitable nature of cell lines. By concealing the profitability, cell line developers may hope to sell the line without sharing the profit with the provider.

182. *See infra* note 187 and accompanying text (listing state laws which restrict twinning).

183. *State Regulation*, *supra* note 119, at 300.

184. Van Blerkom, *supra* note 7, at 8. While twinning has been accomplished using human embryos, the resulting “twins” have not been implanted. Gina Kolata, *Researcher Clones Embryos of Human in Fertility Effort*, N.Y. TIMES, Oct. 26, 1993, at A1.

inherent in additional surgical retrieval procedures, including not only those risks associated with surgery, but also the risks of subjecting the mother to additional hormonal treatments.¹⁸⁵ Twinning is highly experimental and risky for the embryo.¹⁸⁶ This procedure would definitely fall within the definition of "experimental," thus violating prohibitions in eight states.¹⁸⁷ This research raises moral issues since it may be viewed as creating life, and it impugns the rights of twinned embryos by exposing them to greater risk.¹⁸⁸

G. Basic Research

Basic research is the final area that is prohibited by state embryological research bans. Basic research, as the term is used in this Comment, refers both to research for the gathering of new knowledge and the understanding of how mechanisms work, and to applied research that takes the knowledge gained and develops techniques and applications.¹⁸⁹ This research differs from previously discussed procedures that have already been developed. While the relevance of basic research seems more remote, in context its use is imperative.¹⁹⁰ Basic research using human embryos may potentially assist in the development of cancer treatments and contraceptives in ways that research using animals will not.¹⁹¹ The importance of using human research subjects cannot be underestimated. For instance, many products have been found to cause cancer in lab animals. However, these results are based on attempts to duplicate the intake of humans. Such results would not be questioned if they were based on human subjects and human reactions.

Basic research incorporates many of the same concerns raised earlier, such as the moral status of the embryo, the movement toward the creation of life, and

185. *State Regulation*, *supra* note 119, at 300.

186. *Id.*; Van Blerkom, *supra* note 7, at 8.

187. LA. REV. STAT. ANN. §§ 9:121-133 (West 1991); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op 1996); MINN. STAT. ANN. § 145.422 subd. 1, 2 (West 1989); N.H. REV. STAT. ANN. § 168-B:15(II) (1994); N.D. CENT. CODE § 14-02.2-01 (1991); 18 PA. CONS. STAT. ANN. § 3216(a) (Supp. 1995); R.I. GEN. LAWS § 11-54-1(a)-(c) (1994); *State Regulation*, *supra* note 119, at 300.

188. Steinbock, *supra* note 2, at 34-37; *see id.* at 36 (explaining that some oppose cloning because of the possibility of preserving the cloned embryo for possible replacement body parts); *id.* at 37 (discussing the fear that cloned embryos will be preserved in the hope of recreating the "perfect child" should the first born child develop as such).

189. *See generally* Ferguson, *supra* note 101, at 640-42 (discussing the implications of the various types of basic research); Lewis Thomas, *Overview: Regulating Biotechnology*, 3 YALE L. & POL'Y REV. 309, 312-13 (1985) (distinguishing the two types of research).

190. *State Regulation*, *supra* note 119, at 302.

191. *Id.*; *see id.* (noting that human research was necessary to determine the dangerousness of the Rubella vaccine for pregnant women, since the initial research using monkeys indicated that the vaccine did not cross the placenta, while research using human test subjects found the vaccine did cross the human placenta).

the religious concerns related to disposal of the embryo.¹⁹² Nine states ban non-therapeutic basic research.¹⁹³

III. CONSTITUTIONALITY

Federal courts have examined the constitutionality of embryological research prohibitions in three states, Illinois, Louisiana, and Utah, based on challenges asserted under the Fifth and Fourteenth Amendments of the United States Constitution.¹⁹⁴ While these lower court decisions are similar, the Supreme Court has not expressed its view. The lower courts have looked at the right of individuals to make reproductive decisions in association with the right to privacy, as protected by the Fourteenth Amendment. They have also examined the vagueness of the statutes to determine constitutionality.¹⁹⁵ The concept of vagueness under the Fifth Amendment protects individuals from laws which are so vague that those individuals cannot determine whether their conduct is lawful.¹⁹⁶ Additionally, some commentators believe the courts could look to the First Amendment's freedom of speech to protect the right to pursue knowledge through research, although this has not been specifically addressed by any court.¹⁹⁷

A. Vagueness

The decisions that invalidated state embryological research bans held that the laws were unconstitutional due to vagueness.¹⁹⁸ The laws which were invalidated prohibited "experimentation" on embryos unless the procedures were

192. *Id.*

193. LA. REV. STAT. ANN. §§ 9:121-9:133 (West 1991); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12J(a)(I) (Law. Co-op. 1996); MICH. COMP. LAWS ANN. §§ 333.2685, 333.2686, 333.2692 (West 1992); MINN. STAT. ANN. § 145.422 subd 1, 2 (West 1989); N.M. STAT. ANN. §§ 24-9A-1, 24-9A-3, 24-9A-5 (Michie 1994); N.D. CENT. CODE §§ 14-02.2-01, 14-02.2-02 (1991); 18 PA. CONS. STAT. ANN. § 3216 (Supp. 1995); R.I. GEN. LAWS § 11-54-1(a)-(c) (1994).

194. *Jane L. v. Bangerter*, 61 F.3d 1493 (10th Cir. 1995); *Lifchez v. Hartigan*, 735 F. Supp. 1361 (N.D. Ill. 1990), *cert. denied sub nom. Scholberg v. Lifchez*, 498 U.S. 1069 (1991); *Margaret S. v. Edwards*, 794 F.2d 994 (5th Cir. 1986) [hereinafter *Margaret S. II*].

195. U.S. CONST. amend. XIV, § 1; *Jane L.*, 61 F.3d at 1499-1502; *Lifchez*, 735 F. Supp. at 1364, 1377; *Margaret S. II*, 794 F.2d at 999; *see Jane L.*, 61 F.3d at 1499-1502 (vagueness); *Lifchez*, 735 F. Supp. at 1364 (vagueness); *id.* at 1377 (reproductive decisions); *Margaret S. II*, 794 F.2d at 999 (vagueness); *infra* notes 212-381 and accompanying text (suggesting that the Fourteenth Amendment's protection of personal liberties is applicable to a constitutional analysis of state laws that prohibit embryological research).

196. U.S. CONST. amend. V; *State Regulation*, *supra* note 119, at 303; *see infra* notes 198-211 and accompanying text (discussing vagueness as relates to the constitutionality of state embryological research bans).

197. U.S. CONST. amend. I; *see infra* notes 382-450 (proposing that the First Amendment's protection of the freedom of speech also protects the right to research, including a right to use embryos for research).

198. *Jane L.*, 61 F.3d at 1500-02; *Lifchez*, 735 F. Supp. at 1364, 1376; *Margaret S. II*, 794 F.2d at 999.

“therapeutic” to the embryo.¹⁹⁹ The crux of the interpretative problem is how to define “experimentation” and “therapeutic” as used in the statutes of Illinois, Louisiana, and Utah.²⁰⁰ Many doctors testified that experimentation has various meanings.²⁰¹ These include basic scientific research, using a procedure which is not commonly utilized, and attempting a treatment method that is new to an individual patient in hopes that it will aid the patient.²⁰²

Similar problems exist with the term “therapeutic.”²⁰³ In *Lifchez v. Hartigan*, the court found that statements by the proponent of the law were contradictory as to which procedures were prohibited and which were legal.²⁰⁴ Legal doctrine dictates that when exceptions are codified, the legislation must be strictly interpreted to include all things which do not fall within those exceptions.²⁰⁵ One court asked whether the statutory exception for in vitro fertilization includes only the fertilization procedure, or those techniques which assist the fertilization procedure, such as cryopreservation.²⁰⁶ This confusion was further exemplified by a variety of techniques that may or may not be legal, including preimplantation genetic screening, hormonal therapies which induce supra ovulation in a woman, testing for certain cancers which originate in the fetus and can kill the mother, and even such common occurrences as prescribing medications to pregnant women, like aspirin for headaches.²⁰⁷ All of these procedures are beneficial to the mother in some aspect, but are uncertain as to the affect on the fetus.²⁰⁸ Because this leaves the practitioner unable to determine what is beneficial to the fetus and what is not, the practitioner is unable to know whether the conduct is lawful. Thus, the statutes were found to violate the Fourteenth Amendment’s guarantee.²⁰⁹

199. ILL. ANN. STAT. ch. 720, para. 510/6 (Smith-Hurd 1993); LA. REV. STAT. ANN. § 1299.35.13 (West 1991); UTAH CODE ANN. § 76-7-310 (1993); see ILL. ANN. STAT. ch. 720, para. 510/6 (Smith-Hurd 1993) (prohibiting any person from selling or *experimenting* on a fetus created by the fertilization of a human ovum by a human sperm, unless the *experimentation* is *therapeutic* to the fetus) (emphasis added); LA. REV. STAT. ANN. § 1299.35.13 (West 1991) (forbidding anyone from *experimenting* on an unborn child or an aborted fetus unless the *experimentation* is *therapeutic* to the unborn child or fetus) (emphasis added); UTAH CODE ANN. § 76-7-310 (1993) (prohibiting *experimentation* using live, unborn children except where medical expertise indicates that genetic testing is necessary) (emphasis added).

200. *Jane L.*, 61 F.3d at 1500-01; *Lifchez*, 735 F. Supp. at 1364; *Margaret S. II*, 794 F.2d at 999.

201. *Jane L.*, 61 F.3d at 1500-01; *Lifchez*, 735 F. Supp. at 1364-65.

202. *Jane L.*, 61 F.3d at 1500-01; *Lifchez*, 735 F. Supp. at 1364-65; see *Jane L.*, *supra* (noting that “experimentation” has three possible meanings: 1) Procedures which are not routinely conducted by a specific doctor or hospital, 2) procedures which are performed on one person while designed to benefit another person, and 3) procedures designed to advance pure research and are not conducted to benefit the research subject).

203. *Lifchez*, 735 F. Supp. at 1364, 1370.

204. *Id.* at 1367-70.

205. *Id.* at 1368.

206. *Id.* at 1367-70.

207. *Id.*

208. *Id.*

209. *Jane L.*, 61 F.3d at 1502; *Lifchez*, 735 F. Supp. at 1376; *Margaret S. II*, 794 F.2d 994, 999 (5th Cir. 1986).

Current state legislation regarding embryological research in at least seven states could suffer from vagueness if the federal courts in Louisiana, Illinois, and Utah are correct in their interpretation of "experimentation" and "therapeutic."²¹⁰ If the statutes are ruled unconstitutionally vague, the laws could be struck entirely or the vague portions could be excised in a way that preserves the legislative intent.²¹¹ While there has been no Supreme Court holding on the specificity or vagueness of terms such as "experimentation" and "therapeutic," vagueness defects can be corrected by clearly defining such terms.

B. Right to Privacy

Another constitutional area which might afford protection for various medical procedures that use human embryos is the Fourteenth Amendment's right to privacy. The right to privacy has developed from the Fourteenth Amendment's guarantee of personal liberties in the Due Process Clause, although the right is guaranteed in other areas of the Constitution as well.²¹² The Supreme Court has discussed the right to privacy in a variety of areas, including reproductive choice,²¹³ marital relationships,²¹⁴ family relationships,²¹⁵ child rearing,²¹⁶ and education.²¹⁷

1. Fundamental Rights

The Supreme Court has limited the application of the right to privacy to *fundamental rights*.²¹⁸ While activity associated with sexual conduct is generally

210. LA. REV. STAT. ANN. §§ 9:121-133 (West 1991); ME. REV. STAT. ANN. tit. 22, § 1593 (West 1992); MASS. ANN. LAWS ch. 112, § 12J (Law. Co-op. 1996); MINN. STAT. ANN. § 145.422 (West 1989); N.D. CENT. CODE §§ 14-02.2-01, 14-02.2-02 (1991); 18 PA. CONS. STAT. ANN. § 3216 (Supp. 1995); R.I. GEN. LAWS § 11-54-1 (1994).

211. *Lifchez*, 735 F. Supp. at 1377; *Margaret S. II*, 794 F.2d at 999.

212. See generally *Roe v. Wade*, 410 U.S. 113, 152 (1973) (associating the right to privacy with the penumbras of the Bill of Rights and the Ninth Amendment, as well as the Fourteenth Amendment); *Griswold v. Connecticut*, 381 U.S. 479, 484 (1965) (noting that the right to privacy is based on the Bill of Rights, including the First, Third, Fourth, Fifth and Ninth Amendments).

213. See *Carey v. Population Servs. Int'l*, 431 U.S. 678, 685 (1977) (abortion); *Roe v. Wade*, 410 U.S. 113 (1973) (abortion); *Skinner v. Oklahoma ex rel. Williamson*, 316 U.S. 535, 541-42 (1942) (procreation).

214. See *Griswold*, 381 U.S. at 485 (marriage).

215. See *Roberts v. United States Jaycees*, 468 U.S. 609, 619-20 (1984) (family relationships); *Moore v. City of East Cleveland, Ohio*, 431 U.S. 494, 499 (1977) (family life); *Eisenstadt v. Baird*, 405 U.S. 438, 453-54 (1972) (family relationships).

216. See *Prince v. Massachusetts*, 321 U.S. 158, 166 (1944) (child rearing), *reh'g denied*, 321 U.S. 804 (1944).

217. *Carey*, 431 U.S. at 685; see also *Pierce v. Society of Sisters of the Holy Names of Jesus & Mary*, 268 U.S. 510, 534-35 (1925) (educational decisions regarding children); *Meyer v. Nebraska*, 262 U.S. 390, 400 (1923) (education).

218. *Michael H. v. Gerald D.*, 491 U.S. 110, 122-24 (1989); *Bowers v. Hardwick*, 478 U.S. 186, 191-92 (1986), *reh'g denied*, 478 U.S. 1037.

protected as a fundamental right, like access to contraception for both married and unmarried people, the Supreme Court has denied that all activities associated with sexual conduct are protected by the Fourteenth Amendment.²¹⁹ In *Bowers v. Hardwick*,²²⁰ the Court addressed a law banning sodomy between consenting adults as applied to homosexuals.²²¹ The Court found that sodomy was not a right rooted in our nation's history or implicit in the concept of liberty.²²²

More recently, in *Michael H. v. Gerald D.*,²²³ a plurality tried to define "fundamental" rights which would necessitate constitutional protection.²²⁴ "Fundamental" rights should include liberty interests which society has traditionally protected, according to the plurality opinion.²²⁵ The dissent believed that the emphasis should not be on traditionally protected interests, but on interests which society has traditionally found important.²²⁶ Thus, defining the interest as "protected" narrows the interpretation to specific conduct, while the dissent's use of the word "important" allows a more expansive and general characterization of the activity. In *Michael H.*, the interest that was not traditionally protected was that of a relationship outside of the unitary family—a father's relationship to his illegitimate child born to a mother who is married to another.²²⁷ The dissent characterized this interest in the more expansive method under the "important" terminology as an interest in parenthood.²²⁸ Although the Supreme Court has protected abortion and contraception under the Fourteenth Amendment's right to privacy, there is some indication that these specific activities are not fundamental rights, but are generally protected because they are "essential to [the] exercise of the constitutionally protected right of decision in matters of childbearing" as

219. *Bowers*, 478 U.S. at 192; see *id.* (upholding the constitutionality of a state law banning sodomy between consenting adults); *Eisenstadt*, 405 U.S. at 453-54 (holding that there is no rational basis to differentiate between unmarried couples, who could not purchase contraceptives, and married couples, who have a right to have access to contraception); *Griswold v. Connecticut*, 381 U.S. 479, 485 (1965) (finding that a ban on access to contraception violates a married couple's right to privacy). The *Bowers* Court specifically declined to address the issue as it relates to heterosexual couples. *Bowers*, 478 U.S. at 190.

220. 478 U.S. 186 (1986).

221. *Bowers*, 478 U.S. at 192.

222. *Id.* at 191-92.

223. 491 U.S. 110 (1989); see *id.* at 124 (holding that the natural father of a child, who was not the husband of the mother, did not have a right to maintain a relationship with the child because of a state law that presumed that a child born while the mother was living with her husband was a child of the marriage).

224. *Michael H. v. Gerald D.*, 491 U.S. 110, 122-24 (1989).

225. *Id.* But see *Bowers*, 478 U.S. at 191-92 (setting forth a two prong test to determine whether a right falls within the zone of privacy—(1) whether the right is "implicit in the concept of ordered liberty," and (2) whether the right is "deeply rooted in this Nation's history and tradition"); *Whalen v. Roe*, 429 U.S. 589, 599-600 (1977) (describing the right to privacy as an "interest in independence in making certain kinds of important decisions").

226. *Michael H.*, 491 U.S. at 139-41 (Brennan, J., dissenting); see *id.* (finding that the interest was one in parenthood, an interest society has traditionally recognized as important).

227. *Id.* at 124.

228. *Id.* at 139-41 (Brennan, J., dissenting).

stated in the underlying foundation of the holdings in *Griswold v. Connecticut*,²²⁹ *Eisenstadt v. Baird*,²³⁰ and *Roe v. Wade*.²³¹

a. *Reproductive Technologies as Fundamental Rights*

At least four of the areas curtailed by state laws—cryopreservation, pre-implantation screening, gene therapy, and twinning—are associated with procreation, which is a traditionally protected area.²³² Thus, these various procedures could be generally characterized as specific liberties or means by which one exercises the more general right of procreation.²³³

i. *Embryo Cryopreservation and Embryo Twinning*

Embryo cryopreservation and embryo twinning qualify as protected interests based on the line of cases addressing abortion and contraception. This line of cases held that procreation is a fundamental right.²³⁴ Both procedures are used to actually promote procreation,²³⁵ and can be characterized as “essential to [the] exercise of the . . . right of decision in matters of childbearing.”²³⁶ The *Margaret S. v. Treen (Margaret S. III)*²³⁷ court stated that reproductive choice is not limited to “abortion decisions . . . but extends to both childbirth and contraception.”²³⁸ Additionally, in *Margaret S. III* the court held, that “the woman’s privacy right encompasses the entire process surrounding abortion” in a second challenge to the Louisiana statute.²³⁹ Logically, the fundamental right encompassing procreation should encompass the entire process as well.²⁴⁰ Thus, “[i]t takes no great leap of logic to see that within the cluster of constitutionally protected choices that includes the right to have access to contraceptives, there must be included within

229. 381 U.S. 479 (1965).

230. 405 U.S. 438 (1972).

231. *Carey v. Population Servs. Int’l*, 431 U.S. 678, 688-89 (1977); *Roe v. Wade*, 410 U.S. 113 (1973).

232. *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 851-60 (1992).

233. Norton, *supra* note 34, at 1622; *see Casey*, 505 U.S. at 846 (defining a woman’s interest in abortion as the specific “liberty” to choose abortion, rather than as a more general right to not procreate); *Eisenstadt*, 405 U.S. at 453 (discussing the means by which a woman could carry out her reproductive decision).

234. *See supra* notes 213-15 (listing cases identifying reproduction as a fundamental right).

235. *See supra* notes 136-38, 183-85 and accompanying text (describing the processes of embryo cryopreservation and embryo twinning and how these relate to procreation).

236. *Carey v. Population Servs. Int’l*, 431 U.S. 678, 688-89 (1977).

237. *Margaret S. v. Treen*, 597 F. Supp. 636 (E.D. La. 1984) [hereinafter *Margaret S. III*], *aff’d sub nom. Margaret S. II*, 794 F.2d 994 (5th Cir. 1986).

238. *Margaret S. III*, 597 F. Supp. at 673.

239. *Id.* at 671. The Fifth Circuit declined to discuss the right to privacy issues upon appeal, but instead found the statute unconstitutionally vague. *Margaret S. II*, 794 F.2d 994, 999 (5th Cir. 1986).

240. Eggen, *supra* note 31, at 655.

that cluster the right to submit to a medical procedure that may bring about, rather than prevent pregnancy.”²⁴¹

ii. *Preimplantation Screening*

The right to procreative freedom also justifies preimplantation diagnostic testing, fitting squarely within the fundamental rights outlined in the abortion cases because of this procedure’s connection to reproduction through in vitro fertilization.²⁴² The *Lifchez* court noted that “the constitutional choices that include the right to abort a fetus within the first trimester must also include the right to submit to a procedure designed to give information about that fetus which can then lead to a decision to abort.”²⁴³ Specifically, the *Margaret S. III* court’s rationale is more directly applicable in this situation since fundamental rights “encompa[ss] the entire process surrounding the abortion,” including procedures that aid in making a reproductive decision like preimplantation diagnostic testing.²⁴⁴ Also, the *Margaret S. III* holding stated that prohibiting diagnostic testing “violated the fundamental rights of women . . . to make reproductive choices” and was overly burdensome to a woman’s decision to have an abortion.²⁴⁵

iii. *Gene Therapy*

Gene therapy also appears to be a fundamental liberty because of the intent to benefit the embryo.²⁴⁶ Gene therapy corrects genetic defects by replacing the faulty gene.²⁴⁷ The issues arising in this situation can be analogized to the privacy right inherent in child rearing.²⁴⁸ Courts have held that parents, as primary care

241. *Lifchez v. Hartigan*, 735 F. Supp. 1361, 1377 (N.D. Ill. 1990). *But see* *Roe v. Wade*, 410 U.S. 113, 152-53 (1973) (clarifying that right to privacy implications have “some extension to activities relating to marriage, . . . procreation, . . . [and] contraception”) (emphasis added) (citations omitted).

242. *Carey v. Population Servs. Int’l*, 431 U.S. 678, 687-88 (1977); *see id.* (holding that the right to choose an abortion necessarily includes the right of access to information to effectuate one’s choice). *See generally* *Clapp*, *supra* note 121, at 1086-87, 1089.

243. *Lifchez*, 735 F. Supp. at 1377; *cf.* *Robertson*, *supra* note 8, at 965 n.79 (suggesting that procedures that allow the selection of certain characteristics in an offspring may be outside the zone of privacy which has been traditionally recognized by society as the right to procreate).

244. *Margaret S. III*, 597 F. Supp. 636, 673 (E.D. La. 1984), *aff’d sub nom. Margaret S. II*, 794 F.2d 994 (5th Cir. 1986).

245. *Id.*; *see* *Eggen*, *supra* note 31, at 655 (suggesting that “research” which has a sufficient connection to reproductive freedom will be constitutionally protected).

246. *State Regulation*, *supra* note 119, at 301.

247. *Lagod & Martin*, *supra* note 8, at 305-06; *Steinbock*, *supra* note 2, at 40.

248. *Attanasio*, *supra* note 165, at 1300-01.

givers, have a duty to care for and nurture the child.²⁴⁹ Additionally, in *Bowen v. American Hospital Assoc.*,²⁵⁰ the Supreme Court noted a strong presumption that parents are appropriate decision-makers.²⁵¹ The Court found the state an inappropriate decision-maker by invalidating as unconstitutional a mandatory treatment statute for handicapped newborns.²⁵² Thus, gene therapy, used to care for and hopefully cure the child, would fall within that group of actions that a parent takes to fulfill his or her custodial duties.²⁵³

Wrongful life and wrongful birth cases related to a physician's failure to provide information regarding genetic defects support the conclusion that gene therapy is a medical treatment decision best left to the parent.²⁵⁴ While courts have generally declined to recognize a child's wrongful life action, they have readily accepted claims made by the parents for wrongful birth due to misinformation by the doctor.²⁵⁵ Thus, the courts seem to indicate a preference for leaving medical treatment issues to the parents, whose options may include drug

249. *Stanley v. Illinois*, 405 U.S. 645, 651 (1972); *Prince v. Massachusetts*, 321 U.S. 158, 166 (1944); see *Stanley*, 405 U.S. at 651 (noting that the right to raise one's children is an essential, basic civil right of man, a right far more precious than any property right). *Stanley* seems to indicate that raising, which includes caring, is a "fundamental right" because society has traditionally recognized raising children as a right that should be protected. *Id.* at 650-53.

250. 476 U.S. 610 (1986).

251. *Bowen*, 476 U.S. at 637-28 n.13; see *United States v. University Hosp. of State Univ. of New York at Stony Brook*, 575 F. Supp. 607, 616 (E.D. N.Y. 1983) (holding that government involvement in choosing between alternative reasonable medical treatments for handicapped children raises grave right to privacy concerns), *aff'd*, 729 F.2d 144 (2d Cir. 1984); *In re Seiferth*, 127 N.E.2d 820, 823 (N.Y. 1955) (granting discretionary authority to parents regarding medical treatment of their children when there is no present emergency). But see *Jacobson v. Massachusetts*, 197 U.S. 11, 37-39 (1905) (upholding compulsory vaccinations to which the parents and children object); *In re Jamaica Hosp.*, 491 N.Y.S.2d 898, 899-900 (1985) (ordering a blood transfusion for a mother, against her will, to benefit her unborn fetus); Attanasio, *supra* note 165, at 1301-04 (proposing arguments which invalidate the propriety of parents making decisions related to the genetic engineering of their own embryos). See generally John M. Maciejczyk, Note, *Withholding Treatment from Defective Infants: "Infant Doe" Postmortem*, 59 NOTRE DAME L. REV. 224 (1983) (analyzing the *Infant Doe* cases which affirmed the parent's right to make important medical decisions for offspring because the parent's rights outweighed the child's rights in light of the fact that the child lacked an opportunity for a minimally adequate life); Shannon K. Such, Note, *Lifesaving Medical Treatment for the Nonviable Fetus: Limitations on State Authority Under Roe v. Wade*, 54 FORDHAM L. REV. 961, 969 n.48 (1986) (discussing the constitutional right of parents to make decisions regarding their children); Yolanda V. Vorys, Comment, *The Outer Limits of Parental Autonomy: Withholding Medical Treatment From Children*, 42 OHIO ST. L.J. 813 (1981) (examining the breadth of parental ability to withhold medical treatment from children). It should be noted that decisional authority and criteria vary from state to state. Lagod & Martin, *supra* note 8, at 274 n.150.

252. *Bowen*, 476 U.S. at 627-28 n.13.

253. Attanasio, *supra* note 165, at 1300-01. Attanasio also argues that bans on gene therapy should be unconstitutional because other reproductive technologies are constitutionally permitted, thus government prohibitions in the method of reproductive technology used should be unconstitutional based on the Equal Protection Clause. *Id.* at 1288-90; see *id.* (arguing that genetic manipulations which aid in procreation are supported as a fundamental right by a myriad of traditions).

254. *Id.* at 1298-1301.

255. *Id.* at 1298; PROSSER AND KEETON ON THE LAW OF TORTS 370 (E. Page Keeton et al. eds., 5th ed. 1984).

therapy, monitoring, and perhaps even gene therapy.²⁵⁶ Further evidence of the parent's ability to make choices for the child, overriding the possible interests of the child, include the ability to abort a fetus based on the sex of the fetus.²⁵⁷

b. Cell Line Development and Basic Research

Because cell line development and basic research using embryos gives no direct, immediate benefit or therapy to a mother or an embryo, such procedures are more difficult to categorize as fundamental interests.²⁵⁸ However, the limited case where a mother or future embryo would benefit from a cure for a genetic defect carried by the parents is more easily developed. For example, cell line development could be used therapeutically to cure a genetically faulty embryo. Additionally, curing future genetic defects in offspring will lead to future procreation of healthy generations, and procreation is traditionally a protected area.²⁵⁹ The familial relationships involved lend credence to the fundamental nature of this zone of privacy as well. Therefore, cell line development and basic research that would cure a genetic defect that is carried by the parents seem to fall within a zone of privacy.

i. Basic Research as Fundamental Knowledge

While basic research and cell line development that do not directly benefit the family unit are not as readily classified as fundamental rights as those procedures that assist in procreation or benefit the embryo, commentators have proposed various arguments that would support classifying cell line development and basic embryological research as a fundamental right.²⁶⁰ Basic research for the pursuit of fundamental knowledge is connected to our democratic history, and is traditionally protected through impassioned rhetoric.²⁶¹ In *Meyer v. Nebraska*,²⁶²

256. Attanasio, *supra* note 165, at 1299.

257. *Id.* at 1299-1300.

258. *State Regulation*, *supra* note 119, at 302.

259. *See supra* note 234 and accompanying text (labeling procreation as a fundamental right).

260. *See infra* notes 261-70 and accompanying text. *But see Margaret S. I.*, 488 F. Supp. 181, 220-21 (E.D. La. 1980) (holding that the right of medical researchers to engage in fetal research is not fundamental under the Constitution); *Wynn v. Scott*, 449 F. Supp. 1302, 1322 (N.D. Ill. 1978) (stating that medical researchers did not have a fundamental right to conduct research using fetuses), *aff'd sub nom. Wynn v. Carey*, 599 F.2d 193 (7th Cir. 1979).

261. Clifford Grobstein, *Regulation and Basic Research: Implications of Recombinant DNA*, 51 S. CAL. L. REV. 1181, 1186 (1978); *see* National Cooperative Productions Amendment of 1993, 15 U.S.C.A. § 4301 historical note (West Supp. 1996) (enacted by Pub. L. No. 103-42 § 2(a)(1), 107 Stat. 117 § 2(a)(1)) (noting legislative findings that technological advancements through research should be promoted because this research leads to commercial opportunities which will raise the standard of living within the United States); Rebecca Dresser, *Research in Animals: Values, Politics, and Regulatory Reform*, 58 S. CAL. L. REV. 1147, 1147 (1986) (noting that our nation has traditionally been suspicious of governmental restrictions on scientific research); Ferguson, *supra* note 101, at 640-41 (commenting on Western traditions of not restricting research based on

the Supreme Court appeared to recognize this traditional protection, by stating that the Fourteenth Amendment protects the freedom "to acquire useful knowledge."²⁶³ While *Meyer* addressed children's right to learn a modern language other than English in grammar school, basic research is specifically related to acquiring useful knowledge.²⁶⁴ Also, in *Henley v. Wise*,²⁶⁵ a district court stated that the "right of scholars to do research and advance the state of man's knowledge" was a protected activity.²⁶⁶ Based on these statements by the courts, basic research clearly falls within the *Michael H.* court's definition of fundamental rights—those which society has traditionally protected—because the courts have protected this right since 1923.²⁶⁷

ii. Basic Research as a Burden on Reproductive Decision-Making

Some commentators have argued that bans on research are a direct and indirect burden on the ability to make reproductive decisions—either to procreate or to terminate a pregnancy—by "freez[ing] information at an arbitrary point in

the sanctity of knowledge and the inherent value of intellectual freedom); Gary L. Francione, *Experimentation and the Marketplace Theory of the First Amendment*, 136 U. PA. L. REV. 417, 419 n.2 (discussing concern during congressional hearings on amendments to the Animal Welfare Act over the right to research, such that amendments were drafted so as to survive constitutional analysis based on the right to research); see also *Richards of Rockford, Inc. v. Pacific Gas & Elec. Co.*, 71 F.R.D. 388, 390 (N.D. Cal. 1976) (stating that "society has a profound interest in the research of its scholars, work which has the unique potential to facilitate change through knowledge"); *United States v. Doe*, 460 F.2d 328, 333-34 (1st Cir. 1972) (suggesting that the continued flow of information to researchers is an important public interest), *cert. denied sub nom. Popkin v. United States*, 411 U.S. 909 (1973); *Henley v. Wise*, 303 F. Supp. 62, 66 (N.D. Ind. 1969) (noting society's protection of the "right of scholars to do research and advance the state of man's knowledge"); *Miller v. California*, 413 U.S. 15, 26 (1973) (listing "scientific value" among the criteria that would prevent sexually oriented material from being found obscene, and thus unprotected), *reh'g denied*, 414 U.S. 881. See generally *Richard Delgado & David R. Millen, God, Galileo, and Government: Toward Constitutional Protection for Scientific Inquiry*, 53 WASH. L. REV. 349, 392-94 (1978) (noting possible arguments which support a finding that scientific research is a fundamental right). But see John A. Robertson, *The Scientist's Right to Research: A Constitutional Analysis*, 51 S. CAL. L. REV. 1203, 1214 (1977) [hereinafter *Right to Research*] (opposing the notion that the right to research has been traditionally protected by society).

262. 262 U.S. 390 (1923).

263. *Meyer*, 262 U.S. at 399; see *Right to Research*, *supra* note 261, at 1212-13 (suggesting that more recent Supreme Court decisions which relied on *Meyer* support the recognition of the ability to research as a fundamental right); see also *Roe v. Wade*, 410 U.S. 113, 165-66 (1973) (affirming the physician's right to administer medical treatment up to the point where compelling state interests exists). But see *Right to Research*, *supra*, at 1213-14 (questioning the plausibility of the Supreme Court recognizing the right to research as a personal liberty guaranteed by the Fourteenth Amendment's right to privacy).

264. *Meyer*, 262 U.S. at 399.

265. 303 F. Supp. 62 (N.D. Ind. 1969).

266. *Henley*, 303 F. Supp. at 66.

267. See *supra* notes 218-31 and accompanying text (discussing the Court's definition of "fundamental right").

time and halt[ing] the use and development of new medical procedures."²⁶⁸ The Supreme Court has voiced a strong objection to governmental interference which overly burdens reproductive choices.²⁶⁹ By freezing reproductive technology at this point in time, abortion foes can rest easier in the knowledge that society will not gain the technology to make reproductive decisions based on genetics. However, this connection to reproductive decision-making is yet a further indication that embryological research should be considered a fundamental right that has a history of societal protection.

iii. *Basic Research as Medical Care*

Another suggestion has been made that beneficiaries of fetal tissue donation may constitutionally attack total bans on fetal tissue donation as impermissibly infringing on society's belief in the right to medical care.²⁷⁰ Society has long protected the right to medical treatment by establishing health care entitlement programs for the poor. Additionally, hospitals support this societal approval by providing medical care in emergency rooms to indigents and writing off the portions of bills that can never be collected. A similar argument can be made for embryological research, albeit the beneficiaries may be unknown at the time of the research. Based on these connections to traditionally protected activities, embryological research should be recognized as a fundamental right.

However, the relationship between these analogies and rights traditionally protected by society may seem too tenuous to some and analogies to societal protection afforded individuals in the disposal of the dead and organ donation may be helpful in posing a more forceful argument for recognizing basic research and cell line development as a fundamental right, even when there is no connection to the family unit. Specifically, analogies to the traditional right in the next-of-kin to dispose of their dead, a quasi-property right in the deceased's body, and the right to control one's organs after removal are especially helpful.²⁷¹

268. Clapp, *supra* note 121, at 1086-90; see Rebecca J. Cook, *Human Rights and Reproductive Self-Determination*, 44 AM. U. L. REV. 975, 1002-04 (1995) (discussing the implications of the United Nation's right to the benefits of scientific research as listed in the International Covenant on Economic, Social, and Cultural Right, including embryological research as relates to women's rights).

269. *E.g.*, *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 874 (1992).

270. *Danis*, *supra* note 26, at 1103.

271. See *infra* notes 272-76 and accompanying text (suggesting that analogies to the quasi-property right in the deceased body aid in determining that basic research and cell line development are a fundamental right); *infra* notes 277-89 and accompanying text (proposing that a respect for the ability to give bodily gifts indicates that disposal of excess embryos for basic research and cell line development are traditionally protected, thus making these procedures a fundamental right).

iv. *Basic Research and the Next-of-Kin's Right to Dispose of the Deceased*

Courts recognize a traditional "quasi-property" right in a corpse, which includes the time-honored right in the next-of-kin to dispose of a body without interference, and the newly recognized right to donate organs.²⁷² This recognition is derived from a long history of common law.²⁷³ Many cases question the appropriateness of governmental intervention that is at odds with the wishes of the next-of-kin.²⁷⁴ This quasi-property right in dead bodies and organs has been recognized by society as a right which should be protected, thus fulfilling the Supreme Court's definition of a "fundamental right"—a right traditionally protected by society.²⁷⁵ Since embryos which are not implanted are in a technical sense "dead,"²⁷⁶ the gamete providers, as the next-of-kin, should have the right to dispose of the "body," including disposing of it through research use.

272. *E.g.*, *Brotherton v. Cleveland*, 923 F.2d 477, 481 (6th Cir. 1991); Erik S. Jaffe, Note, '*She's Got Bette Davis's Eyes*': Assessing the Nonconsensual Removal of Cadaver Organs Under the Takings and Due Process Clauses, 90 COLUM. L. REV. 528, 543-44 (1990); *see Brotherton*, 923 F.2d at 482 (invalidating a state law which mandated removal of corneas from the deceased against the wishes of the next-of-kin, the wife in this case); *Arnaud v. Odom*, 870 F.2d 304, 307-09 (5th Cir. 1989) (noting the next-of-kin's right over the deceased as relates to a coroner performing various impact experiments on twins which had died from trauma to the head), *cert. denied sub nom. Tolliver v. Odom*, 493 U.S. 855; *McCoy v. Georgia Baptist Hosp.*, 306 S.E.2d 746, 747-48 (Ga. 1983) (determining the propriety of a hospital to hold the body of a stillborn infant in a freezer for a month without burying the infant); *Snyder v. Holy Cross Hosp.*, 352 A.2d 334, 341 (Md. 1976) (recognizing the next-of-kin's right in the body of the deceased, although denying a request to stay the autopsy of a son when the autopsy was against the religious beliefs of the father).

273. William Boulier, Note, *Sperm, Spleens, and Other Valuables: The Need to Recognize Property Rights in Human Body Parts*, 23 HOFSTRA L. REV. 693, 707-11 (1995); *see id.* (tracing the development of the next-of-kin's quasi-property right in the deceased's body). Certain disposal methods are more acceptable than others, with the distinction related to the proper respect of the dead. *Feinberg, supra* note 92, at 31-32 (explaining the acceptance of pathological research involving cadavers and autopsies in light of society's nonacceptance of cadavers used in research as "crash dummies" is due to the difference between society's view of medical technicians in spotless exam rooms "radiating the newly acquired symbolic respectability of professional medicine" and the violent accidents resulting in the cadavers being smashed to bits).

274. *See supra* notes 272-73 and accompanying text (listing several instances where the governmental regulations were contrary to the wishes of the next-of-kin).

275. *Georgia Lions Eye Bank, Inc. v. Lavant*, 335 S.E.2d 127, 128 (Ga. 1985), *cert. denied sub nom. Lavant v. St. Joseph's Hosp.*, 475 U.S. 1084; *Rivers v. Greenwood Cemetery, Inc.*, 22 S.E. 2d 134, 135 (Ga. 1942); *Pollard v. Phelps*, 193 S.E. 102, 107 (Ga. Ct. App. 1937); Boulier, *supra* note 273, at 718; *see Arnaud*, 870 F.2d at 307-08 (recognizing that parents had a property interest in their infant's corpse when the state recognized a quasi-property interest which was constitutionally protected based on due process); *Feinberg, supra* note 92, at 31-32 (noting society's general acceptance of medical research using cadavers). *But see Feinberg, supra* note 92, at 31-32 (discussing Congressman Moss's angry letter denouncing the use of cadavers by the Department of Transportation in research as crash dummies because such use "violates fundamental notions of morality and human dignity" as an example of society's intolerance of some methods of disposal that the next-of-kin might choose).

276. *See SLOANE SUPP., supra* note 7, at 153-54 (defining "death" as a lack of brain, respiratory and circulatory activity); *id.* (describing "fetal death" as a fetus who does not exhibit respiratory functions, heart beats, or muscle movement when the fetus is outside of the uterus); WEBSTER'S, *supra* note 16, at 579 (defining "dead" as not able to sustain life). Embryos which are not implanted are unable to sustain life.

v. Basic Research and Organ Donations

Society's acceptance, protection and promotion of organ donations lends further credence to the proposition that embryological research is a fundamental right. All fifty state legislatures have recognized the importance of promoting bodily gifts by passing the Uniform Anatomical Gift Act,²⁷⁷ which recognizes an interest in control over one's body parts that is rooted in personal freedom and dignity.²⁷⁸ The right to provide bodily gifts is an important aspect of a large society.²⁷⁹ This gift-giving provides a connection through "shared embodiment and expression of personal dignity."²⁸⁰ While these needs are more adequately met when the organ is used directly for a specific human being, donation for research also answers these needs by providing cures and eliminating defects, thus benefiting the larger society rather than an individual. Arguably, this has a greater altruistic effect because a greater number of society-members benefit from the donation. Since society has recognized that this important aspect needs to be free from governmental interference, as evidenced by society's rejection of mandatory donation laws, embryological research appears to meet the criteria for a "fundamental right."²⁸¹

The concepts of bodily integrity and autonomy are promoted by society, and bodily integrity and autonomy have traditionally been protected by the courts, as well as by society. Courts have recognized that people have an ultimate right of control over their bodily tissues, fluids, and organs.²⁸² Also, many commentators have discussed the right to autonomy, or bodily integrity, associated with organ donation and have denounced mandatory donation laws.²⁸³ This is further evidence that society wishes to protect the right to bodily integrity. Bodily integrity and the right not to be governed by the state in setting the physical

277. See UNIF. ANATOMICAL GIFT ACT § 8A U.L.A. (1987) (providing regulations regarding organ donations for research and transplant purposes).

278. *Id.* at 20 (prefatory note); Sharon Nan Perley, Note, *From Control Over One's Body to Control Over One's Body Parts: Extending the Doctrine of Informed Consent*, 67 N.Y.U. L. REV. 335, 351 (1992). See generally UNIF. ANATOMICAL GIFT ACT §§ 1-14, 8A U.L.A. 29 (1987).

279. Rhonda G. Hartman, *The Privacy Implications of Professor Anderson's Proposed Mandatory Registry for Bone Marrow Donation: A Reply*, 54 U. PITT. L. REV. 531, 538 (1993).

280. Feinberg, *supra* note 92, at 32; Hartman, *supra* note 279, at 539.

281. See e.g., *Brotherton v. Cleveland*, 923 F.2d 477, 482 (6th Cir. 1991) (striking down a mandatory cornea donation law in response to a claim by deceased's widow); *supra* notes 223-25 and accompanying text (discussing how the Supreme Court in *Michael H.* defined "fundamental right" as something society has traditionally protected); see also ALVIN W. DRAKE, *THE AMERICAN BLOOD SUPPLY* 3-6 (1982) (commenting on society's rejection of government regulated blood donation and participating en masse in voluntary gifting of blood in both England and the United States); Nan Perley, *supra* note 278, at 352-53 (arguing that individual's should have the right to designate what purposes for which the donated organs may be used).

282. See, e.g., *Moore v. Regents of Univ. of Cal.*, 51 Cal. 3d 120, 129, 793 P.2d 479, 483, 271 Cal. Rptr. 146, 150 (1990), *cert. denied*, 499 U.S. 936 (1991).

283. *Legal Status*, *supra* note 83, at 402-06; Danis, *supra* note 26, at 1102-03; Hartman, *supra* note 279, at 544-50; Robertson, *supra* note 8, at 978-81.

parameters of one's personal identity are two of the foundations of personal dignity and self esteem.²⁸⁴ Our society recognizes that the human body provides an individual with a point of separation between the community, or society, and the individual's personhood.²⁸⁵

An additional argument can be made based on the gamete providers' role as parents. Logically, the persons providing the gametes, the parents, should have the primary decision-making authority over the gametes due to the genetic link between the two.²⁸⁶ This is consistent with how the *Bowers* dissent proposes to define the right to privacy—"the right to be let alone."²⁸⁷ After all, a state's intrusion into bodily integrity raises fears of the Moral Majority imposing value judgements on the minority.²⁸⁸ However, some commentators feel that once that decision-making authority is transferred to another—such as a researcher—the zone of privacy surrounding procreative freedom might not encompass the desires of the transferee.²⁸⁹

2. Compelling State Interest

Once a zone of privacy is identified, courts have held that the state must have narrowly drawn the regulation to serve a compelling, justified interest in order for the government to constitutionally intrude into this zone.²⁹⁰ The abortion cases indicate that the overriding compelling interest is determined by balancing the mother's interests against those of the state.²⁹¹ Because of the similarity between the mother's interests as they relate to obtaining an abortion and the parents'

284. Hartman, *supra* note 279, at 545. See generally Edward J. Bloustein, *Privacy as an Aspect of Human Dignity: An Answer to Dean Prosser*, 39 N.Y.U. L. REV. 962 (1964).

285. Hartman, *supra* note 279, at 545.

286. *Hecht v. Sup. Ct. (Kane)*, 16 Cal. App. 4th 836, 849-50, 20 Cal. Rptr. 2d 275, 283 (1993); Robertson, *supra* note 8, at 976. Courts and laws continue to distinguish a mass of tissues with the potential for life (an embryo or fetus) from an "organ," justifying further limitations on the gamete donors beyond those implicated as a traditional organ donor, such as those limited property interests in burial and body donation. *Id.* at 976; see UNIF. ANATOMICAL GIFT ACT § 3(b)(3), 8A U.L.A. 40 (1987) (permitting the donation of fetal tissue by the parent, which infers that the tissue mass is not another organ, but has some identity separate from the parent); *Roe v. Wade*, 410 U.S. 113, 153-54 (1973) (weighing the interests of the state in protecting the fetus and the mother, adding to the premise that a fetus is not an "organ," but has a separate, distinct identity from the mother).

287. *Bowers v. Hardwick*, 478 U.S. 186, 199 (1986) (Blackmun, J., dissenting) (quoting *Olmstead v. United States*, 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting)), *reh'g denied*, 478 U.S. 1039; see *supra* notes 219-22 and accompanying text (discussing the implications of the *Bowers* decision).

288. *Thornburgh v. American College of Obstetricians and Gynecologists*, 476 U.S. 747, 776-77 (1986) (Stevens, J., dissenting).

289. Flannery et al., *supra* note 123, at 1327-28; Robertson, *supra* note 8, at 976. This hurdle may be overcome by remembering that basic research and cell line development is meant to benefit people in the areas of procreation and health.

290. See, e.g., *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 877 (1992); *Roe v. Wade*, 410 U.S. 113, 155 (1973).

291. *Casey*, 505 U.S. at 877; *Roe*, 410 U.S. at 154.

interests as they relate to procedures utilizing embryos, the court may look to abortion case law, as well as other case law involving fetuses, for state interests that may be implicated by embryological research bans.

a. *State Interests*

i. *Interests Related to Protecting the Life of the Fetus*

Courts have recognized a variety of state interests which could outweigh a person's right to bodily autonomy which are applicable to the donation of embryos for research purposes.²⁹² In *Superintendent of Belchertown State School v. Saikewicz*,²⁹³ the Massachusetts Supreme Court summarized several court opinions to develop a list of interests that the State had in treating a man for cancer which could outweigh the man's right to bodily integrity and, thus, permit the State to compel medical treatment.²⁹⁴ These include the preservation of life, the protection of innocent third parties, the prevention of suicide, and the maintenance of the ethical integrity of the medical profession.²⁹⁵ The first two are relevant to embryological research. The last two interests, that do not appear to be applicable to the question of the constitutionality of embryological research bans, have had their validity questioned.²⁹⁶

The *Planned Parenthood of Southeastern Pa. v. Casey*²⁹⁷ court recognized that the State has a compelling interest in protecting and preserving the life of the fetus, an innocent third party, from the outset of the pregnancy.²⁹⁸ However, the legitimacy of a state's interest in protecting the life of an embryo that is not implanted remains unanswered since the pregnancy has not actually begun.²⁹⁹ While a state's interest in an embryo is arguably compelling, the state must still satisfy the balancing test used in *Roe* and *Casey* to determine if, and when, the

292. See *Superintendent of Belchertown State School v. Saikewicz*, 370 N.E.2d 417, 425 (Mass. 1977) (providing a list of court decisions which identified state interests in violating a person's right to bodily integrity).

293. 370 N.E.2d 417 (Mass. 1977).

294. *Id.* at 425.

295. *Id.*; see also *In re President & Directors of Georgetown College, Inc.*, 331 F.2d 1000, 1008-09 (D.C. 1964), *cert. denied sub nom. Jones v. President & Directors of Georgetown College Inc.*, 377 U.S. 978 (1964); *Bartling v. Superior Court*, 163 Cal. App. 3d 186, 195, 209 Cal. Rptr. 220, 224 (1984); *John F. Kennedy Memorial Hosp. v. Heston*, 279 A.2d 670, 672-74 (N.J. 1971).

296. Brian P. Buggy, et al., *Forced Medical Treatment of Pregnant Women: "Compelling Each to Live as Seems Good to the Rest,"* 37 HASTINGS L.J. 703, 759-61 (1986); see *id.* (questioning the strength of these interests to compel any medical treatment).

297. 505 U.S. 833 (1992).

298. *Casey*, 505 U.S. at 870-71.

299. *Id.* at 871; *Roe v. Wade*, 410 U.S. 113, 163-64 (1973); see *Casey*, 505 U.S. at 871 (discussing the state interest after the pregnancy had begun); SLOANE SUPP., *supra* note 7, at 429 (clarifying that a woman is not considered "pregnant" until the embryo begins to develop within the uterus).

governmental interests override the interests of the parents.³⁰⁰ It is hard to imagine a state interest in an entity with less legal standing than a fetus that would rise above the bond between the embryo and its creators, a bond which gains significance from the historical and physical continuity between generations and the implications of kinship.³⁰¹

The cases dealing with the right to choose to have an abortion indicate that the state's interests have related primarily to protecting the fetus, as a potential life, from the termination of that life without justification.³⁰² However, the courts have held that the state's interest in protecting the child prior to viability is minimal.³⁰³ Based on the lesser legal status of the embryo due to its biological development, this reasoning supports noninterference by the government within the privacy zones that encompasses embryological research.³⁰⁴

ii. Interests Related to the Moral Status of the Embryo

Some commentators, however, argue that the embryo has a greater legal status than human organs because of the embryo's life potentiality.³⁰⁵ Thus, society has created duties that demonstrate a commitment to human life, such as protecting and showing respect toward embryos because they represent human life, which reflect society's moral sentiments.³⁰⁶ Others raise concerns during fetal tissue experimentation discussions that implicate a state interest in preventing the degradation of the reproductive process.³⁰⁷ They argue that restrictions on embryological research upholds the value of life by respecting the embryo as a symbol of life.³⁰⁸ By allowing embryological research, the government would be condoning the degradation of life. This would lead to disrespect for actual life through individual action. If the courts recognize this interest in the symbolic representation of life, that interest must be balanced against the privacy interest encompassed by embryological research to determine whether the state's interest outweighs the parents' interest.³⁰⁹ While the protection of symbols may be a

300. *Casey*, 505 U.S. at 871; *Roe*, 410 U.S. at 154.

301. Lagod & Martin, *supra* note 8, at 287. *But see* Flannery et al., *supra* note 123, at 1327-28 (suggesting that once the embryo is donated to the researcher, the state's interests become "compelling" as compared to the minimal interests of the researcher).

302. Hemphill, *supra* note 107, at 378.

303. *Roe*, 410 U.S. at 163.

304. Robertson, *supra* note 8, at 974; *see* David T. Ozar, *The Case Against Thawing Unused Frozen Embryos*, 15 HASTINGS CENTER REP. 7, 8 (1985) (noting that the state cannot have a compelling interest in an embryo which is not to be implanted based on the potential for life using the *Roe v. Wade* viability standard).

305. Ozar, *supra* note 304, at 10-12; Robertson, *supra* note 8, at 975.

306. *Legal Status*, *supra* note 83, at 362; Ozar, *supra* note 304, at 10-12; Robertson, *supra* note 8, at 975.

307. Danis, *supra* note 26, at 1104-05.

308. Robertson, *supra* note 8, at 982.

309. *Id.* at 975.

legitimate state interest, it does not rise to the compelling nature necessary to intrude upon a zone of privacy.

In essence, such a position would protect the symbol to the detriment of potential life and of actual life, based on the beneficial nature of medical research.³¹⁰ Furthermore, there is no evidence that the negative treatment of a symbol affects the actions of individuals.³¹¹ Likewise, if such connection were found, the disparity between the physical appearance of an embryo, a mass of undifferentiated cells, and an actual person would not foster the feared association suggested.³¹²

The Supreme Court has frowned on arguments that promote intrusion on constitutional rights based on the public's moral sentiment, such as that expressed for a symbol.³¹³ Thus, while protecting embryos, which might develop into children, would be constitutionally permissible for the purposes of promoting a compelling interest such as public health, state bans that are enacted to promote morality would be impermissible. This issue becomes pertinent in determining whether the legislation is narrowly tailored to address health concerns, as opposed to complete prohibitions, which appear to be regulating morality.

Even if public sentiment leans toward respecting the embryo as a symbol of potential life, embryo donation for research purposes would not denigrate the embryo as a symbol of respect for life. Gifts have been shown, through anthropological studies, to play an important role in the initiation and maintenance of personal relationships.³¹⁴ The gift of an embryo for research would satisfy the need to establish a connection with society.³¹⁵ Thus, the donation of an embryo, the symbol of our society's respect for life, for research would actually be the utmost gesture of a person's respect for life.³¹⁶

310. Feinberg, *supra* note 92, at 31; *see id.* (recognizing the importance of respecting symbols of the values which are sacred to society, but also recognizing the importance of not respecting the symbols too much such that the values which they represent are overshadowed by feelings of sentimentality and squeamishness).

311. *Id.* at 37.

312. *Legal Status*, *supra* note 83, at 363-64. However, there is a difference between physical recognition which establishes a connection between a person and another item, and respecting the symbolic nature of an embryo which represents future generations.

313. *Carey v. Population Serv. Int'l.*, 431 U.S. 678, 701 (1977); *see id.* (noting that "the fact that protected speech may be offensive to some does not justify its suppression"). *See generally* John C. Fanta, *Legal Issues Raised by In Vitro Fertilization and Embryo Transfer in the United States*, 2 J. IN VITRO FERTILIZATION & EMBRYO TRANSFER 65, 72 (1985) (arguing that "[e]ven if a majority of the public found [in vitro fertilization and embryo transfer] morally offensive, it would be done privately and out of the public eye; [therefore, c]learly, the offense to public morality would not be sufficiently pervasive or extensive to justify a complete ban of the procedure").

314. RICHARD M. TITMUS, *THE GIFT RELATIONSHIP: FROM HUMAN BLOOD TO SOCIAL POLICY* 72-73 (1971). Of course, this assumes that prohibitions regarding commercialization are in place such that a donee could only receive reimbursement of expenses, at most.

315. *See supra* notes 277-81 and accompanying text (discussing the importance of organ donations to society).

316. Hartman, *supra* note 279, at 538; *see id.* (noting that gifts of the body are essential to a large society in order for its citizen's to mature and flourish as individuals).

iii. *Morality as an Interest*

Many states express concern over the legal status of a fetus by enacting laws that are broad enough to encompass embryos and also appear to be regulating morality.³¹⁷ Because of this morality aspect, the contraception line of right to privacy cases that address the human dignity of reproduction and morality, may be relevant.³¹⁸ For instance, the Catholic belief that obstructing fertilization is morally reprehensible, because contraception separates procreation from the sexual act, can be applied to embryological research since the research would separate the embryo from any chance at becoming a life, according to the guidelines proposed.³¹⁹ The contraception line of right to privacy cases also seem to implicate state interests in public morality and health issues.³²⁰ However, the courts have found that a person's right to use contraception is so fundamental that it "must be free from unwarranted governmental intrusion."³²¹ The Supreme Court has refused to recognize a state interest in regulating the morality of its citizens as "compelling."³²² Therefore, the contraception line of cases indicate that state interests implicated in banning embryological research that seek to regulate morality would not withstand a right to privacy challenge. Health concerns that

317. See *supra* notes 118-93 and accompanying text (discussing the various state laws which could be broadly interpreted to cover procedures which use embryos and the history of such legislation).

318. See, e.g., *Carey v. Population Serv. Int'l*, 431 U.S. 678, 694-95 (1977) (rejecting New York's argument that the state's interest in preventing increased sexual activity among minors was compelling); *Eisenstadt v. Baird*, 405 U.S. 438, 442 (1972) (noting that Massachusetts argued that the statute, which banned the distribution of contraceptives unless distributed by a physician or pharmacist to a married person, was intended to promote the health of its citizens and protect morals by regulating the "private sexual lives of single persons" (citing *Sturgis v. Attorney Gen.*, 260 N.E.2d 687, 690 (Mass. 1970))); *Griswold v. Connecticut*, 381 U.S. 479, 499 (1965) (Goldberg, J., concurring) (stating that Connecticut only asserted the interest in discouraging extramarital affairs as the compelling interest in banning the use of certain contraceptive methods by married persons).

319. RICHARD MCCORMICK, *HOW BRAVE A NEW WORLD* 311-13 (1981); see Cahill, *supra* note 80, at 342 (quoting COMM. ON DOCTRINE OF THE NAT'L CONFERENCE OF CATHOLIC BISHOPS, *ETHICAL & RELIGIOUS DIRECTIVES FOR CATHOLIC HEALTH FACILITIES* directive 21 (1971), reprinted in 39 LINACRE Q. 8, 11 (1972)) (describing the Catholic objection to interference with procreation as upsetting the *natural law* "because the ultimate expression of . . . love in the marital act is . . . the only fitting context for the human sharing of the divine act").

320. See *supra* note 318 and accompanying text (listing contraception cases which make note of state interests related to morality and health concerns).

321. *Eisenstadt*, 405 U.S. at 453. The Supreme Court first held that contraceptive use by married couples was a matter involving the marital relationship and restricting contraceptive use would "have a maximum destructive impact upon that relationship." *Griswold*, 381 U.S. at 485. *Eisenstadt* expanded that notion to unmarried couples. *Eisenstadt*, 405 U.S. at 453.

322. *Carey*, 431 U.S. at 694; see *Eisenstadt*, 405 U.S. at 448 (noting that "[i]t would be plainly unreasonable to assume that [government] has prescribed pregnancy and the birth of an unwanted child as punishment for fornication" (quoted in *Carey*, 431 U.S. at 695)); Brown, *supra* note 36, at 206 n.181 (indicating that it would also be "plainly unreasonable to assume that [government would prescribe] the physical and psychological dangers of an abortion . . . as punishment for fornication" (altering the quote from *Eisenstadt*, 405 U.S. at 448)).

are implicated in the contraception cases are not implicated in embryological research bans since there are health risks associated with contraceptive products that are not present in embryological research using spare, "dead" embryos.

b. Parental Interests

In the abortion line of cases, the mother's interests included autonomy over her own body and the right to make reproductive choices.³²³ The substantiality of these interests was determined by looking at the stigma of unwed motherhood, the psychological harm to the mother related to having an unwanted child, the quality of life with unwanted additional children, and the mental impact of caring for children.³²⁴ The Supreme Court based its analysis on the assumption that the mother would raise the child if required to carry the child to term.³²⁵ After weighing these interests, the Supreme Court has held that until the fetus reaches viability, a state's interests do not sufficiently outweigh the mother's interest in reproductive freedom to justify supporting a complete ban on abortions.³²⁶

i. Psychological and Mental Impact

The parents' interests in permitting embryological research, or one of the five other procedures that are banned by state laws must be examined to determine if they outweigh a state's interest in banning these procedures.³²⁷ In analyzing the parents' interests implicated in embryological research, many of the factors discussed by the courts have little relevance. For instance, the physical impact of an unwanted pregnancy on the mother is not an issue, thereby lessening the interests of the gamete providers. While the stigma of unwed childbirth does not affect the analysis, psychological and mental impacts may still be significant factors. For instance, in *Davis II*, the Tennessee Supreme Court recognized the burdens inherent in parenthood from the viewpoint of a noncustodial parent, weighing this burden against the state's interest in an embryo's potential for life.³²⁸ The parents may look to research that uses the spare embryos as a way of showing respect for

323. *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 871 (1992); *Roe v. Wade*, 410 U.S. 113, 163 (1973).

324. *Roe*, 410 U.S. at 153.

325. The Court only analyzed the impact of forcing the mother to carry the child to term under the condition that she raise the child herself, without addressing the possible implications of the mother putting the child up for adoption.

326. *Casey*, 505 U.S. at 871-74; *Roe*, 410 U.S. at 163.

327. *Casey*, 505 U.S. at 877; *Roe*, 410 U.S. at 154.

328. *Davis II*, 842 S.W.2d 588, 602 (Tenn. 1992), *cert. denied sub nom. Stowe v. Davis*, 567 U.S. 911 (1993); see *Davis I*, No. E-14496, 1989 Tenn. App. LEXIS 641, *2 (Tenn. Cir. Ct. Sept. 21, 1989) (raising questions regarding support, visitation, and custody of any children produced through in vitro fertilization when one parent does not desire to implant the excess embryos, but declining to address these issues until an actual case was tried).

life. This choice appears better than donating the embryos to another person because of concerns regarding the psychological burden of the parents knowing their genetic child will exist without knowing them.³²⁹ In vitro fertilization necessarily produces spare embryos to limit health risks to the woman.³³⁰ Thus, in vitro fertilization parents are left with a dilemma regarding the disposition of these spare embryos that may impact their ultimate decision to procreate.³³¹ Several options are available—destroying the spare embryos; donating the spare embryos to another woman, possibly under a mandatory donation law;³³² or permitting the embryos to be used in research projects. Some parents may not choose to procreate through in vitro fertilization—possibly the only avenue open to them—because of governmental interference in their decisional authority.³³³

Another issue not specifically addressed by the Court is the emotional impact on the parents if the lack of reproductive choices forced the parents to put the unwanted child up for adoption. Arguably, the Court's lack of consideration of the more severe psychological impact of adoption, implies that the Court recognizes the emotional impact of giving birth to a child whom the parents cannot raise and who must be raised by strangers, somewhere in the world.³³⁴ Adoption should be rejected as an option because creating a child whom the parents will not know causes a heavy emotional burden on the parents.³³⁵ Mandatory embryo donation raises the same concerns and could be analogous to forced adoption, with its detrimental psychological impact.³³⁶ If the government requires a ban on embryological research as a means of showing respect for embryos as symbols of life, discarding spare embryos would be a similarly disrespectful act. As such, the only option left for the spare embryos is mandatory donation to another parent—in effect forcing adoption. Thus, the emotional impact of mandatory donation makes this option not feasible.

329. *Davis II*, 842 S.W.2d at 603-04.

330. See *supra* notes 29-38 and accompanying text (describing the egg retrieval process which results in spare embryos).

331. Brown, *supra* note 36, at 236-37.

332. See, e.g., LA. REV. STAT. ANN. § 9:122 (West 1991) (limiting the creation of an embryo ex utero solely for the purpose of a completed pregnancy); *id.* § 9:129 (West 1991) (prohibiting the destruction of embryos).

333. Brown, *supra* note 36, at 230 n.347.

334. Hemphill, *supra* note 107, at 368.

335. *Id.* at 368 n. 59; see *id.* (noting that studies indicate that parents suffer great psychological injury after relinquishing the child).

336. *Id.* at 374. The psychological trauma implicated by adoption includes feelings of "loss, pain, mourning and a continuing sense of caring for that long vanished child." A. SOROSKY & R. PANNOR, *THE ADOPTION TRIANGLE* 72 (1978).

ii. *Impact on Reproductive Decisions*

Many parents might feel uneasy being involved in a process that creates the potential for life merely to have the excess embryos destroyed without being used for a higher purpose. These parents may value life and the symbolic nature of the embryo too much to have the eggs merely destroyed. Thus, denying these parents an option that respects the embryo as a symbol of life, such as donation for embryological research, would seriously affect and limit their reproductive choices.

Through beneficial research that has the potential of enriching society, women may choose to participate in alternative reproductive methods, like in vitro fertilization, by donating eggs without raising society's concerns regarding the degradation of the value of life. Additionally, the Supreme Court should give great weight to the right to control one's own genetic material, at least to the extent of permitting embryos that will not be implanted to be used in research to benefit humankind.³³⁷ Furthermore, a ban on embryological research may affect reproductive decisions because undiscovered new technologies will never be developed which would better alternative reproductive methods. Because a states's interests are slight while the embryo is not viable, those interests do not override the parental interests, and as bans would such, unduly burden reproductive decision-making.³³⁸ Banning embryological research is therefore unconstitutional.

iii. *Parental Interests Outside of the Reproductive Decision*

Based on lower court decisions and state statutes, some commentators have suggested that fundamental reproductive rights only override a state's interests when the right to procreate and the right to abort is exercised, precluding the parents' right to donate embryos to research.³³⁹ Outside the procreation and abortion choices, a state's interests in protecting the unborn overrides the parents' interests.³⁴⁰ However, these instances cannot be distinguished because the state

337. Hemphill, *supra* note 107, at 374.

338. Norton, *supra* note 34, at 1627-29. Case law has held that statutes that prescribe certain methods of disposing of fetus' are overly burdensome of the right to reproductive freedom because the statutes psychologically penalize a woman for exercising the right to choose to abort. *Margaret S. I.*, 488 F.Supp. 181, 221-23 (E.D. La. 1980); *see id.* (stating that a Louisiana statute was unconstitutional because of the psychological impact on the woman).

339. Flannery et al., *supra* note 123, at 1327-28.

340. Statutes protecting the unborn from child abuse and lower court cases add credence to this position. CAL. PENAL CODE § 270 (West Supp. 1995); *In re Jamaica Hosp.*, 491 N.Y.S.2d 898, 899-900 (1985); *see* CAL. PENAL CODE § 270 (West Supp. 1995) (defining an "existing person" to include a child conceived but not yet born for purposes of establishing certain rights); *In re Jamaica Hosp.*, 491 N.Y.S.2d at 899-900 (ordering a blood transfusion for a pregnant woman, against her will, to benefit the non-viable fetus); Dawn E. Johnsen,

may only afford protection to the fetus to the detriment of the parents' interests past the point of viability or if intended to be carried to term.³⁴¹ For example, courts refuse to grant damages for wrongful death of a fetus if the fetus is miscarried prior to viability.³⁴² Thus, the rationale that the compelling nature of a state's interests outweighs other interests once a researcher is involved should not be an impediment to embryological research.

c. Balancing the Interests

i. Reproductive Choices

The courts should find that laws completely prohibiting procedures that use embryos to gather information for the purpose of making reproductive choices or promoting procreation are unconstitutional.³⁴³ The state interests do not outweigh the parents' interests due to a close link to procreative freedom.³⁴⁴ This protection should extend to preimplantation genetic screening, twinning, and in some respects cryopreservation.³⁴⁵ The lack of viability should be a key indicator that the privacy interests of the parents override the state interest in protecting life.³⁴⁶ Additionally, cryopreservation can encompass protecting the mother's life while promoting procreation,³⁴⁷ a further indication that complete bans would be found unconstitutional due to the overriding maternal interests.

Note, *The Creation of Fetal Rights: Conflicts with Women's Constitutional Rights to Liberty, Privacy and Equal Protection*, 95 YALE L.J. 599, 604-05, 609-10 (1986) (noting the expansion of California criminal child abuse laws to encompass the unborn fetus).

341. E.g., *In re Jamaica Hosp.*, 491 N.Y.S.2d at 899-900; Nicholas P. Terry, "Alas! Poor Yorick," *I Knew Him Ex Utero: The Regulation of Embryo and Fetal Experimentation and Disposal in England and the United States*, 39 VAND. L. REV. 419, 453 (1986); see *In re Jamaica Hosp.*, 491 N.Y.S.2d at 899-900 (mandating that an 18 week pregnant mother receive a blood transfusion necessary to save her fetus when the mother's religious beliefs would not allow the transfusion and the mother intended to carry the fetus to term).

342. E.g., *Estate of Baby Foy by Foy v. Morningstar Beach Resort, Inc.*, 635 F. Supp. 741, 744 (D.V.I. 1986); see *Toth v. Goree*, 237 N.W.2d 297, 301-02 (Mich. 1975) (refusing to be the first court to grant damages for the death of a nonviable fetus). But see *Del Zio v. Presbyterian Hospital*, No. 74 Civ. 3588 (S.D.N.Y. Nov. 14, 1978) (LEXIS, Ny library, Nymega File), reprinted in 2 BIOETHICS REP. 7, 14-15 (1985) (awarding damages for the intentional destruction of a fertilized embryo).

343. Robertson, *supra* note 8, at 982; Norton, *supra* note 34, at 1628.

344. Robertson, *supra* note 8, at 982; Norton, *supra* note 34, at 1628.

345. Robertson, *supra* note 8, at 982.

346. Schaeffer, *supra* note 2, at 107.

347. Brody, *supra* note 31, at 153; see *id.* (explaining that the long term effects of hyperstimulation and multiple egg retrievals are unknown); see *supra* note 32 and accompanying text (discussing the need for producing excess embryos due to health concerns, in vitro fertilization success rates and expense). Additionally, in vitro fertilization is the most stressful non-coital reproduction procedure, both emotionally and financially. Brody, *supra* note 31, at 153.

ii. Public Health

However, concerns regarding decreasing the gene pool so that genetic diversity is curtailed can easily be characterized as a legitimate state interest in public health—typically a compelling interest.³⁴⁸ If genes were screened such that certain genes were not reproduced and the gene pool diminished, the resulting gene pool may not be adaptable to our changing environment.³⁴⁹ Additionally, the state interest in preventing the screening of embryos with certain genes that may be linked to beneficial genes, like the link between Sickle Cell anemia and malaria, are similarly compelling.³⁵⁰

The compelling state interest appears to override the parents' interest when nontherapeutic genetic screening is done, such as screening for certain sex or hair color traits.³⁵¹ The compelling state interest in public health is reduced when compared to the gamete provider's interest in using information gained through therapeutic genetic screening to aid in a decision to have a healthy baby or bear an afflicted child.³⁵² The balancing would necessarily include the emotional, physical, and financial hardships that accompany the birth of a genetically defective child.³⁵³ Thus, the state may constitutionally ban nontherapeutic genetic screening, as opposed to therapeutic genetic screening, and not violate the gamete providers' right of privacy in the form of reproductive freedom. However, courts may not recognize the distinction since they have not made a distinction in an analogous situation, i.e. between the fertile and the infertile with respect to the right of access to contraceptives.³⁵⁴ If the distinction between therapeutic and nontherapeutic genetic screening is not recognized, state laws could not constitutionally restrict any kind of prenatal diagnosis without being declared unconstitutional because of the impact such restrictions would have on procreative freedom.³⁵⁵

State laws which completely ban gene therapy should be held unconstitutional by the courts because gene therapy actually benefits the embryo by improving the health of the embryo. The compelling state interests in respecting

348. *Roe v. Wade*, 410 U.S. 113, 154 (1973); *see id.* (recognizing that the state has a compelling interest in protecting the public's health, including the health of an unborn child); *Superintendent of Belchertown State School v. Saikewicz*, 370 N.E.2d 417, 425 (Mass. 1977) (recognizing that the state has a compelling interest in the preservation of life and the protection of innocent third parties); Norton, *supra* note 34, at 1613, 1642-44 (noting that a decrease in the gene pool may lead to an inability for the human race to adapt to a changing environment).

349. Norton, *supra* note 34, at 1613, 1642-44.

350. *Id.* at 1613; *see id.* (explaining that selections could result in an increase to disease or defects).

351. *Id.* at 1641-42; *see id.* at 1641-42 (discussing the impact bans on nontherapeutic preimplantation genetic screening would have on the gamete provider's decision to procreate).

352. *Id.* at 1625.

353. *Id.*

354. *Id.* at 1627.

355. *Id.* at 1627-28.

life and protecting the embryo would not outweigh the parents' interest in the health of the child. While the state's interest in curtailing the tampering with life may be characterized as a compelling public health interest, the individual child's interest in personal health should override the state's interest.

Governmental interests based on a tremendous societal need for organs and public recognition of the importance of health regulations to protect health and safety add more strength to the invalidity of the research bans.³⁵⁶ There is an inconsistency between legislation banning embryological research in order to protect society and legislation that encourages organ donation in order to protect society. Embryological research benefits and protects society.³⁵⁷ By permitting embryological research, the field of medicine can advance, saving people from genetic defects and disease, as well as increasing reproduction through more effective procedures.³⁵⁸ This will promote public health and safety policies and regulations, such as prolonging life, easing discomfort, and preventing disease and injury. Also, organ donation is considered a necessity by the public and both organ and embryo donation are allowed under law.³⁵⁹ Therefore, embryo donation for the specific purpose of research should be permitted as well.

iii. Donation for Research Purposes

Even without permitting embryo donation for reproduction purposes, the similarities between organ donation and embryo donation for research purposes necessitate similar results. While an organ is a portion of a body and the embryo is the entire entity as it exists presently, both require "implantation" for enhancing or "creating" life. Thus, banning embryological research would indicate an

356. See *Georgia Lions Eye Bank, Inc. v. Lavant*, 335 S.E.2d 127, 128-29 (Ga. 1985) (holding that the state may override the common law quasi-property right by enacting mandatory organ donation laws based on a tremendous need for organs and the society's need for health regulations if the regulation is reasonable and impartial), *cert. denied sub nom. Layant v. St. Joseph's Hosp.*, 475 U.S. 1087 (1986); *infra* note 359 and accompanying text (listing a sampling of various state laws which recognize and promote organ donations).

357. See *supra* notes 7-8 and accompanying text (suggesting many ways in which embryological research could benefit mankind).

358. See *supra* notes 7-8 and accompanying text (proposing various areas in which the medical field can utilize embryos to save people).

359. Hemphill, *supra* note 107, at 374; see, e.g. DEL. CODE ANN. tit. 16, §2701 (1995) (allowing the donation of dead bodies for research purposes); LA. REV. STAT. ANN. § 9:133 (1991) (referring to permissible embryo donations); *id.* § 32:410(A), (B) (West Supp. 1995) (discussing programs to encourage organ donation); *id.* § 32:410(B)(b)(I) (West Supp. 1995) (permitting organ donation for research purposes); ME. REV. STAT. ANN. tit. 22 § 2903(1) (West 1992) (permitting donations for research purpose); *id.* tit. 29-A, § 1402(A)(1), (2) (West Supp. 1995) (allowing drivers to declare anatomical gifts to various entities, including research institutions); MASS. ANN. LAWS ch. 113, § 1 (Law. Co-op. 1996) (providing that various institutes may claim deceased bodies which are to be buried at public expense for research purposes); *id.* § 10(a)-(e) (Law. Co-op. 1996) (permitting individuals to donate organs or parts of bodies); MICH. COMP. LAWS ANN. § 333.10102a (West 1992) (discussing requirements for organ donation); 18 PA. CONS. STAT. ANN. § 3213(e) (1983 & Supp. 1995) (establishing reporting requirements for cryopreserved embryos which are to be donated).

inconsistency between the state's interest implicated with an embryo and the state's interest implicated with a viable, existing person with full fledged rights. This inconsistency demonstrates that the state's interests, while compelling, are weakened since there should be a greater interest in a viable, existing person than in an embryo which is for all purposes dead. This lesser interest does not outweigh the gamete providers' interests, thereby showing that the courts should declare that total bans on embryological research are unconstitutional.

iv. Disposal of the Deceased

If the state's concerns are related to the disposal of the dead with dignity, the courts have recognized state interests that could permissibly intrude into the zone of privacy. States may regulate, or intrude upon, this right to remedy perceived defects or accommodate changing circumstances, typically with respect to the health and decency of the community.³⁶⁰ Case law indicates that the state's interest in protecting the public health from contagions or contaminated water supplies, or even offensive sights, are sufficient to override the next-of-kin's quasi-property right in the decedent's body.³⁶¹

Disposal of embryos through embryological research does not subject the public to offensive sights similar to carrying a body in the back of a car, as the defendant did in the Tennessee case of *State v. Vestal*.³⁶² In fact, embryological research is carried out privately and is not open to the public's viewing. Nor does it subject the public to health risks, similar to the health risks of exposure to contaminants or contagions when a corpse is disposed of improperly and the public water supply is effected.³⁶³ While it does subject the public to risks of research misuse, these fears can be addressed through limiting improper uses, not through absolute bans. Thus, those state interests which have permitted regulation of corpse disposal are not present in the embryological research context.

Therefore, based on case law, various state interests which run the gamut from morality to preservation of life to public health and safety do not override the parents' interest in personal freedom. Primarily, the crux of the problem is

360. Leigh v. Olson, 497 F. Supp. 1340, 1351 (D.N.D. 1980); Planned Parenthood Ass'n v. Fitzpatrick, 401 F. Supp. 554, 573 (E.D. Pa. 1975), *aff'd sub nom.* Franklin v. Fitzpatrick, 428 U.S. 901 (1976); *Georgia Lions Eye Bank, Inc.*, 335 S.E. 2d at 128-29; *see id.* at 128-29 (holding that the state may override the common law quasi-property right by enacting mandatory organ donation laws based on a tremendous need for organs and the society's need for health regulations if the regulation is reasonable and impartial). There is a definite difference between the analysis of regulations compelling organ donation and regulation permitting organ donation, namely the interest in procuring organs versus the interest in abusing the ability to create life and the symbol of respect for life. Danis, *supra* note 26, at 1102-03.

361. *State v. Vestal*, 611 S.W.2d 819, 821-22 (Tenn. 1981).

362. *Id.*; *see State v. Robinson*, 274 N.W.2d 553, 554 (Neb. 1979) (upholding a guilty verdict for the offensive act of placing the deceased in the back of a car and driving it off the road into a ditch).

363. *Vestal*, 611 S.W.2d at 821-22; *see id.* (proposing that increased health risks from contamination or contagions would provide a sufficient state interest to override the next-of-kins' interest).

that the state's interests are minimal, albeit legitimate, if the spare embryo has no potential for life. This aspect, combined with the fact that total bans on procedures that use embryos unduly burden the parents' reproductive freedom, leads to the conclusion that complete bans on embryological research or experimentation are unconstitutional. The only time the state interest rises above the parents' interests is in the case of nontherapeutic genetic screening because of the gravity of harm that may occur since it is difficult to predict the dangers of genetic screening.

3. *Restricting Research Without Absolute Bans*

If total embryological research bans are found unconstitutional, the states may constitutionally regulate research in a limited manner. Abortion cases provide clear examples of regulations that are constitutional because they are not overly burdensome on the right to privacy.³⁶⁴ In *Planned Parenthood of Southeastern Pennsylvania v. Casey*,³⁶⁵ the Supreme Court adopted an "undue burden" standard for determining the constitutional viability of abortion regulations.³⁶⁶ This test conforms with earlier Supreme Court decisions holding that "unreasonable or arbitrary" attempts to limit a fundamental right or subtly control the right as a means of discouraging conduct are unconstitutionally burdensome.³⁶⁷

364. *Planned Parenthood of Southeastern Pa. v. Casey*, 505 U.S. 833, 877-78 (1992) (distinguishing between permissible and impermissible abortion regulations).

Regulations which do no more than create a structural mechanism by which the State, or the parent or guardian of a minor, may express profound respect for the life of the unborn are permitted, if they are not a substantial obstacle to the woman's exercise of the right to choose. . . . Unless it has that effect on her right of choice, a state measure designed to persuade her to choose childbirth over abortion will be upheld if reasonably related to that goal. Regulations designed to foster the health of a woman seeking an abortion are valid if they do not constitute an undue burden.

Id.; see also *Planned Parenthood of Central Missouri v. Danforth*, 428 U.S. 52, 79-81 (1976) (upholding the constitutionality of a state law mandating special records be kept as long as anonymity of the mother is protected); *id.* at 65-66 (confirming that written consent from a woman is not overly burdensome of the right to choose not to bear a child); *Connecticut v. Menillo*, 423 U.S. 9 (1975) (validating a state requirement that abortions shall be performed by licensed physicians). But see *Thornburgh v. American College of Obstetricians and Gynecologists*, 476 U.S. 747, 763-64 (1986) (holding that state regulations prescribing coercive consent forms or procedures are unconstitutional); *City of Akron v. Akron Center for Reproductive Health, Inc.*, 462 U.S. 416, 434-35 (1983) (holding that state laws which increase the cost of the abortion procedure are unconstitutional due to the excessive burden increased costs place on a woman's right to an abortion); *West Side Women's Serv., Inc. v. Cleveland, Ohio*, 573 F. Supp. 504, 524 (N.D. Ohio 1983) (invalidating a state regulation which limited the location of abortion clinics).

365. 505 U.S. 833 (1992).

366. *Casey*, 505 U.S. at 877; see *id.* (defining the "undue burden standard" to invalidate abortion regulation if its purpose or effect is to place a substantial obstacle in the path of a woman seeking an abortion before the fetus attains viability).

367. *Thornburgh*, 476 U.S. at 763-64; *Danforth*, 428 U.S. at 79; *Planned Parenthood Ass'n of Cincinnati, Inc. v. City of Cincinnati*, 635 F. Supp. 469, 471 (S.D. Ohio 1986), *aff'd.*, 822 F.2d 1390 (6th Cir. 1987). But see *Margaret S. II*, 794 F.2d 999, 998 n.11 (5th Cir. 1986) (indicating that a statute designed to remove the incentives for researchers to promote abortions or to manipulate timings of abortions for the

The Supreme Court has afforded great weight to American Medical Association Guidelines in determining whether a regulation is unreasonable.³⁶⁸ As such, the American Fertility Society's and the American College of Obstetrics and Gynecology's guidelines regarding medical facility and personnel criteria for conducting in vitro fertilization might lead to a court validation of similar state requirements.³⁶⁹

The states may have a compelling interest to regulate very limited, specific kinds of research as well. When the compelling nature of the states interests rises, regulating specific kinds of research appears warranted.³⁷⁰ For instance, banning research that results in implantation after manipulation would appear to be constitutional since it raises questions of prenatal rights of offspring with a greater potential for life.³⁷¹ Also, prohibitions on recombinant human DNA research³⁷² used to introduce genes from other species or genes created in a laboratory into a human would appear to be constitutional because of public health concerns related to the fear of misapplying the technology.³⁷³ As the NIH panel proposes, promotes, commercialization and exploitation of women and embryos would be an appropriate matter for state regulation because such legislation would not unduly burden reproductive decisions and it addresses legitimate governmental concerns.³⁷⁴

While many state-imposed burdens have been invalidated, the Supreme Court has held that the Constitution does not protect against burdens that are not state-

purpose of supplying fetal tissue for experimentation is rationally related to an important state interest).

368. *City of Akron*, 462 U.S. at 436-37; *see id.* (reviewing the recommendations of the American Public Health Association and the American College of Obstetricians and Gynecologists that certain second trimester abortions could be performed in outpatient facilities to determine that the state's requirements that second trimester abortions required hospitalization was unconstitutionally burdensome).

369. COMMITTEE ON ETHICS, ETHICAL ISSUES IN HUMAN IN VITRO FERTILIZATION AND EMBRYO PLACEMENT, AMERICAN COLLEGE OF OBSTETRICS AND GYNECOLOGY, AMERICAN COLLEGE OF OBSTETRICS AND GYNECOLOGY COMMITTEE OPINION (1986); American Fertility Society, *Revised Minimum Standards for In Vitro Fertilization, Gamete Intrafallopian Transfer, and Related Procedures*, 53 FERTILITY & STERILITY 225, 225-26 (1990); *see id.* (recommending that all programs participate in the United States In Vitro Fertilization Registry or make available current statistics regarding the use and success of procedures, and recommending full disclosure to prospective patients of the program's own statistics); Dickey, *supra* note 1, at 328-30 (noting that the American College of Obstetrics and Gynecology and the American Fertility Society have guidelines regarding facility and personnel requirements for providing optimum in vitro fertilization results).

370. Robertson, *supra* note 8, at 981-82. For instance, a state's interests may rise as the potential for life increases. Cahill, *supra* note 80, at 348-354; *see id.* (discussing different religious views that hold that the moral status of the conceptus increases as the potentiality for life increases).

371. Clapp, *supra* note 121, at 1096.

372. SLOANE SUPP., *supra* note 7, at 197 (defining "recombinant human DNA research" as artificially introducing human DNA into a cell so that the cell's genetic and physical makeup is altered).

373. Clapp, *supra* note 121, at 1096.

374. *See* Danis, *supra* note 26, at 1104 (proposing that states may properly regulate fetal tissue transplantation as relates to commercialization and exploitation of women and fetuses).

created.³⁷⁵ For example, the state may express its distaste for embryological research by withholding public funding for research, much the same as a state withholding public funding of abortions.³⁷⁶ One hypothetical argument that a state could propose is that the lack of scientific knowledge is not a state-imposed burden.³⁷⁷ This theory could then provide a constitutional basis for banning embryological research, since the right to privacy only governs state action.³⁷⁸ However, this argument is flawed.³⁷⁹ A state's refusal to fund abortions still allows private arrangements for abortions, although effectively removing that reproductive choice from the poor.³⁸⁰ However, a state's refusal to permit embryological research terminates a source of information fundamental to the reproductive decision.³⁸¹

C. Right to Research

Many commentators have suggested that the First Amendment protects the right to gather knowledge through research.³⁸² This is based on our nation's long history of respect for freedom. History provides many examples of scientific theories which, when proved correct, altered the moral fabric of society—such as the theory of evolution and the discovery of the atom.³⁸³ This history has taught the Western world, and the United States in particular, the hazards of restricting scientific inquiry—synonymous with the dangers of strict governmental control in areas like speech.³⁸⁴ As a result, the United States glorifies the sanctity of

375. *Harris v. McRae*, 448 U.S. 297, 316 (1980), *reh'g denied*, 448 U.S. 917; *Maier v. Roe*, 432 U.S. 464, 474 (1977).

376. Courts have noted that the right to make reproductive decisions does not translate into an affirmative right which the government must fund. *Maier*, 432 U.S. at 474; *see Harris*, 448 U.S. at 324-26 (upholding a state's value judgment to support childbirth, rather than abortions, through funding); *Buckley v. Valeo*, 424 U.S. 1, 94 (1976) (noting that denying funding to Presidential candidates does not overly burden the right to vote, because lack of funding is merely "denial of the enhancement of opportunity"); *cf. Delgado & Millen*, *supra* note 261, at 389-90 (arguing that restricting government funding of scientific research would be unconstitutional); *id.* at 398-99 (suggesting that discontinuing government funding because the research would be "too dangerous or socially disruptive" could be unconstitutional based on a due process argument).

377. *Clapp*, *supra* note 121, at 1090.

378. *Harris*, 448 U.S. at 316; *Maier*, 432 U.S. at 474.

379. *Clapp*, *supra* note 121, at 1090-92.

380. *Id.* at 1091.

381. *Id.*

382. *See infra* note 388 and accompanying text (providing a list of commentators who propose that previous court decisions indicate there is a right to research implicit in the First Amendment's freedom of speech).

383. *See generally Ferguson*, *supra* note 101, at 641 & n.7 (noting historical scientific advances which society feared would conflict with its values as discussed in F.S. KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS* 52-91 (1970)).

384. *Id.* at 641; *see Francione*, *supra* note 261, at 428-29 (discussing the sacred nature of scientific inquiry which the framers of the Constitution desired to protect).

knowledge and the value of intellectual freedom.³⁸⁵ The major tenet underlying these theories is that the essence of humanity is an active mind, which is used for a free exchange of ideas facilitated through the acquisition of knowledge.³⁸⁶

The First Amendment guarantees freedom of speech—the “full opportunity for expression in all its varied forms to convey a desired message.”³⁸⁷ In order to have the opportunity for meaningful expression in the marketplace of ideas, one must have the freedom to pursue knowledge, including research.³⁸⁸ Without such protection, the government could restrict the free flow of information by regulating its source.³⁸⁹ This would defeat a major premise of the First Amendment: the protection from government interference. This protection enables the public to gain information for public and private decision-making.³⁹⁰

Various Supreme Court decisions, read together, seem to acknowledge a freedom to conduct research which is anchored in the freedom of speech.³⁹¹ The Supreme Court has protected various stages of research: hypothesis develop-

385. Ferguson, *supra* note 101, at 641.

386. *Id.*

387. U.S. CONST. amend. I; *Young v. American Mini Theatres, Inc.*, 427 U.S. 50, 76 (1976) (Powell, J., concurring), *reh'g denied*, 429 U.S. 873.

388. Davidson, *supra* note 12, at 894-95; Delgado & Millen, *supra* note 261, at 372-88; Ferguson, *supra* note 101, at 644; Eggen, *supra* note 31, at 653-57; *Right to Research*, *supra* note 261, at 1216-18. *But see* Stephen L. Carter, *The Bellman, the Snark, and the Biohazard Debate*, 3 YALE L. & POL'Y REV. 358, 369-73 (1985) (questioning whether the right to research is a right protected under the ruberik of the First Amendment); Francione, *supra* note 261, at 430-59 (arguing that the theory that research is necessary to freely participate in the marketplace of ideas does not provide a basis for First Amendment protection).

389. Francione, *supra* note 261, at 428-29; *Right to Research*, *supra* note 261, at 1217.

390. Francione, *supra* note 261, at 428-29; *Right to Research*, *supra* note 261, at 1216-18. *See generally* Delgado & Millen, *supra* note 261, at 354-71 (discussing the historical and constitutional underpinnings of the freedom of speech as relates to the freedom to conduct research).

391. Delgoda & Millen, *supra* note 261, at 372-88; *see* *Miller v. California*, 413 U.S. 15, 34 (1973) (holding that the “First Amendment protects works which, taken as a whole, have . . . scientific value, regardless of whether the government or a majority of the people approve of the ideas these works represent”); Flannery et al., *supra* note 123, at 1325 (quoting the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research Report and Recommendations (HEW Publication No. (OS) 78-0003)); *Roth v. United States*, 354 U.S. 476, 484 (1957) (noting that the Continental Congress cited scientific advancement as a reason for protecting freedom of the press), *reh'g denied*, 355 U.S. 852; *Sweezy v. New Hampshire*, 354 U.S. 234, 250 (1957) (noting that “[t]eachers and students must always remain free to inquire, to study and to evaluate, to gain new maturity and understanding; otherwise our civilization will stagnate and die”), *reh'g denied*, 355 U.S. 852. In *Sweezy's* concurring opinion, Justice Frankfurter explained:

For society's good—if understanding be an essential need of society—inquiries into these problems, speculations about them, stimulations in others of reflection upon them, must be left as unfettered as possible. Political power must abstain from intrusion into this activity of freedom, pursued in the interest of wise government and the people's well being, except for reasons that are exigent and obviously compelling. . . . Freedom to reason and freedom for disputation on the basis of observation and experiment are the necessary conditions for the advancement of scientific knowledge.

Sweezy, 354 U.S. at 262-63 (Frankfurter, J., concurring). *See generally* Francione, *supra* note 261, at 419 n.2 (listing numerous articles which discuss the right to research).

ment,³⁹² information accumulation through experimentation,³⁹³ dissemination of findings,³⁹⁴ receipt of information and application of methods obtained from others.³⁹⁵ In *Branzburg v. Hayes*,³⁹⁶ the Supreme Court specifically recognized that "[t]he informative function asserted by representatives of the organized press . . . is also performed by lecturers, political pollsters, novelists, *academic researchers*, and dramatists."³⁹⁷ Thus, the right to acquire information through research from willing participants or from material under their control—such as embryos that will not be implanted—can be extrapolated from the First Amendment right to acquire information from willing sources.³⁹⁸ However, while each step of the research process appears to have received tangential Supreme Court approval, state bans on embryological research only prohibit the use of embryos in research. Thus, this discussion will center on the impermissibility of banning this conduct—embryological research. Classifying the regulation as

392. *Palko v. Connecticut*, 302 U.S. 319, 320 (1937).

393. See *Pell v. Procunier*, 417 U.S. 817 (1974); *Branzburg v. Hayes*, 408 U.S. 665 (1972); *Zemel v. Rusk*, 381 U.S. 1 (1965), *reh'g denied*, 382 U.S. 873; see Delgado & Millen, *supra* note 261, at 373-78 (extrapolating the protection of the right to accumulate information afforded journalists in the *Branzburg* case to afford protection to scientific researchers as well); *Right to Research*, *supra* note 261, at 1226-29 (noting there is a distinction between a right to gather information reserved to the press and one reserved to the public, but concluding that both the press and the public have a constitutional right to gather information). See generally *id.* at 1229-37 (discussing the differences which differentiate the news gathering cases between willing and unwilling sources, as well as the difference between government and public sources). John Robertson argues that the right to accumulate information can be gleaned from the Supreme Court cases which recognize a right to receive information from willing sources. *Id.* at 1219-26; see, e.g., *Linmark Assoc., Inc. v. Willingboro*, 431 U.S. 85 (1977) (home buyers right to acquire information from "for sale" signs regarding home sales activity); *Virginia State Bd. of Pharmacy v. Virginia Citizens Consumer Council, Inc.*, 425 U.S. 748 (1976) (right of consumers to receive pharmacists' advertising); *Kleindienst v. Mandel*, 408 U.S. 753 (1972) (scholars right to receive a lecture from a Marxist scholar); *Stanley v. Georgia*, 394 U.S. 557 (1969) (right to receive information within the privacy of own home through the reading of obscene materials); *Lamont v. Postmaster General of U.S.*, 381 U.S. 301 (1965) (addressee's right to receive "communist political propaganda" mailed from abroad); cf. *Gotkin v. Miller*, 379 F. Supp. 859 (E.D.N.Y. 1974) (denying a former mental patient access to her hospital records in order to write a book about her experience because the "speaker" was unwilling to impart the information), *aff'd*, 514 F.2d 125 (2d Cir. 1975); *Right to Research*, *supra*, at 1225-26 (suggesting that courts have not protected the right to acquire information when the source is unwilling to provide such information to the public).

394. Delgado & Millen, *supra* note 261, at 385; Eggen, *supra* note 31, at 654.

395. *Lamont*, 381 U.S. at 308 (Brennan, J., concurring); Delgado & Millen, *supra* note 261, at 372-88; Eggen, *supra* note 31, at 653-57; see *Meyer v. Nebraska*, 262 U.S. 390, 399 (1923) (recognizing the right to "acquire useful knowledge").

396. 408 U.S. 665 (1972).

397. *Branzburg*, 408 U.S. at 705 (emphasis added).

398. *Right to Research*, *supra* note 261, at 1223-24, 1237-40. But see Francione, *supra* note 261, at 430-59 (arguing that research is not constitutionally protected by the First Amendment because it does not qualify as "expressive"). See generally Delgado & Millen, *supra* note 261, at 349.

affecting "conduct," as opposed to speech, does not take it outside the realm of First Amendment Protection.³⁹⁹

John Robertson,⁴⁰⁰ a leading legal scholar in the area of reproductive technologies, expresses a simpler theory to evaluate the constitutionality of state prohibitions on embryological research. This theory focuses on the constitutionality of banning the publishing of research results.⁴⁰¹ Robertson argues that because publishing results is protected under the First Amendment, conducting the research, a necessary precursor to publication, would be protected as well.⁴⁰² The Supreme Court has included many precursors to speech in the broad protection of the First Amendment.⁴⁰³ In *Buckley v. Valeo*⁴⁰⁴ and *First National Bank of Boston v. Bellotti*,⁴⁰⁵ the Supreme Court extended First Amendment protection to the financing of speech because it is a precursor to speech in the political realm.⁴⁰⁶ Earlier, in *Sweezy v. New Hampshire*,⁴⁰⁷ the Court found that the First Amendment protected not only teachers' and students' speech, but also the precursors to that speech—gaining new maturity and understanding through inquiry, study, and evaluation.⁴⁰⁸ More clearly on point, *Branzburg* recognized a First Amendment protection for the gathering of news, a precursor to reporting the news.⁴⁰⁹

In each of these cases the resulting speech was fundamentally dependent on the restricted activity, just as speech regarding embryology and other scientific topics is fundamentally dependent on the development of that knowledge through embryological research. This holding and the earlier ones should permit not only the researcher's scientific inquiry and experimentation, but also the individual's

399. *United States v. O'Brien*, 391 U.S. 367, 376 (1968), *reh'g denied*, 393 U.S. 900; *see id.* (upholding convictions for draft card burning, a combination of "speech" and "nonspeech," because a compelling governmental interest justified the incidental limitation on the freedom of speech). *But see* Francione, *supra* note 261, at 431-42 (suggesting that the Supreme Court distinguished research as facilitating expressive conduct from actual expressive conduct, which is protected by the First Amendment, in *Clark v. Community for Creative Non-Violence*, 468 U.S. 288, 296 (1984)).

400. John Robertson is a Professor of Law at the University of Texas School of Law. He received his A.B. from Dartmouth College in 1964 and his J.D. from Harvard in 1968. Robertson, *supra* note 8, at 942.

401. *Right to Research*, *supra* note 261, at 1251-53. *But see* Francione, *supra* note 261, at 459-511 (proposing that the First Amendment does not protect the freedom to conduct research based on categorizing research as a necessary precursor to speech because all conduct could be considered the precursor to some kind of speech and any limitation would probably be viewed as promoting governmental ideas because of the predominance of government funded experimentation).

402. *Right to Research*, *supra* note 261, at 1251-53.

403. *First Nat'l Bank of Boston v. Bellotti*, 435 U.S. 765, 787-93 (1978), *reh'g denied*, 438 U.S. 907; *Buckley v. Valeo*, 424 U.S. 1, 19 (1976); *Branzburg*, 408 U.S. at 681-82; *Sweezy v. New Hampshire*, 354 U.S. 234, 250 (1957), *reh'g denied*, 355 U.S. 852. *But see* Francione, *supra* note 261, at 462 (disputing whether the Supreme Court recognizes First Amendment protection of many precursors to speech).

404. 424 U.S. 1 (1976).

405. 435 U.S. 765 (1978).

406. *First Nat'l Bank of Boston*, 435 U.S. at 788-92; *Buckley*, 424 U.S. at 16.

407. 354 U.S. 234 (1957).

408. *Sweezy*, 354 U.S. at 250.

409. *Branzburg*, 408 U.S. at 681-82.

participation as a research subject—a precursor to the publication of scientific findings.⁴¹⁰ The relatively few cases that have determined the constitutionality of state interference with research have recognized the right to research based on the freedom of speech.⁴¹¹

The Supreme Court has accepted incidental infringement on the freedom of speech based on a sufficiently compelling governmental interest.⁴¹² The Supreme Court has recognized a variety of tests to be used to determine what label of government interference is permissible.⁴¹³ For instance, in *United States v. O'Brien*,⁴¹⁴ the Court held that burning a draft card was a course of conduct with speech and nonspeech elements closely intertwined.⁴¹⁵ Thus, the government could restrict the nonspeech portion if the governmental interest in the prohibition was sufficiently important to override the incidental nature of the freedom infringement.⁴¹⁶ This standard seems most appropriate in the embryological research area since the speech and nonspeech facets are very intermingled.⁴¹⁷ When speech is regulated as a byproduct of regulating noncommunicative acts, the regulation is constitutional as long as it does not unduly restrict the flow of information and ideas.⁴¹⁸ According to the Supreme Court, activities may be

410. Flannery et al., *supra* note 123, at 1325; *Right to Research*, *supra* note 261, at 1212. *But see* Carter, *supra* note 388, at 373-77 (arguing that the "precursor" premise supporting the right to research is too tenuous).

411. *Henley v. Wise*, 303 F. Supp. 62 (N.D. Ind. 1969); *see id.* (upholding the right of academic researchers in the Kinsey Institute at the University of Indiana to maintain and use obscene materials as part of a research project); *see also In re Consumers Union of U.S., Inc.*, 495 F. Supp. 582, 586-88 (S.D.N.Y. 1980) (finding that a subpoena for background data, which resembled scholarly research, for a Consumer's Report article could be quashed because of First Amendment implications); *Trachtman v. Anker*, 563 F.2d 512, 516 (2d Cir. 1977) (noting that a survey distributed by a student journalist which researched the sexual attitudes, preferences, knowledge and experience of high school students implicated First Amendment protection), *cert. denied*, 435 U.S. 925 (1978). *See generally* Robert M. O'Neil, *Scientific Research and the First Amendment: An Academic Privilege*, 16 U.C. DAVIS L. REV. 837 (1983) (discussing the ability to raise First Amendment defenses to prevent subpoena information from being revealed); *Right to Research*, *supra* note 261, at 1240-46 (discussing the implications of recent court decisions on the right to research).

412. *United States v. O'Brien*, 391 U.S. 367, 376 (1968), *reh'g denied*, 393 U.S. 900; Delgado & Millen, *supra* note 261, at 376-77; *see O'Brien*, 391 U.S. at 376 (holding that a sufficiently important governmental interest can legitimize incidental intrusions on First Amendment freedoms when "speech" and "nonspeech" elements are combined in the same conduct); *see also Pell v. Procunier*, 417 U.S. 817, 835 (1974) (upholding regulations which banned the press from interviewing prison inmates because the state interests in security and related administrative problems, along with the policy underlying the correctional system, outweighed the slight infringement on the press' freedom of speech given the information was not available to the general public); Eggen, *supra* note 31, at 654 n.113 (noting that scientific research is a hybrid of "speech" and "nonspeech" elements, including pure speech, in the form of published writings, and conduct, in the form of performing experiments).

413. Davidson, *supra* note 12, at 914-18; Delgado & Millen, *supra* note 261, at 390-91.

414. 391 U.S. 367 (1968).

415. *O'Brien*, 391 U.S. at 376.

416. *Id.*

417. Davidson, *supra* note 12, at 915-18; Delgado & Millen, *supra* note 261, at 391.

418. *Schneider v. State*, 308 U.S. 147, 161 (1939); LAWRENCE TRIBE, *AMERICAN CONSTITUTIONAL LAW* 791-92 (2d ed. 1988); *see* Delgado & Millen, *supra* note 261, at 384 (discussing the limitations on the free flow of information if scientific information is curtailed through prohibitions on research); Eggen, *supra* note 31,

properly restricted if the legislation is based on a substantial government interest, such as protecting the health or autonomy of subjects, or the safety of the community, as opposed to restricting undesirable ideas or knowledge sought.⁴¹⁹ A balancing test is used to determine the legitimate nature of the state interest by looking at the risk of harm occurring and the gravity of harm.⁴²⁰ An interest is considered legitimate if it has a high probability of occurring or a corresponding high degree of harm, or a balanced combination of both.⁴²¹ Thus, regulation of activities that are a precursor to speech would not be permissible solely to restrict or prohibit the development of new knowledge.⁴²² Furthermore, if the state has a substantial interest, then the state must establish that the incidental restriction on free expression is no greater than is necessary for the furtherance of the interest.⁴²³

Thus, when state concerns focus on limiting knowledge because of the fear of improper use of the knowledge, such as using the information gained to make abortion decisions or making choices regarding the characteristics of a child, state prohibitions would be constitutionally barred because the state interest is not a legitimate one.⁴²⁴ Additionally, basic research on embryos could be classified as restricting or prohibiting the development of new knowledge if embryological research was performed only when all other avenues were exhausted. Curtailing the development of new knowledge is not a legitimate goal since the Court has

at 655 n.114 (noting that research associated with the advanced reproductive technologies would likely utilize this analysis, as opposed to the "clear and present danger" standard).

419. *First Nat'l Bank of Boston v. Bellotti*, 435 U.S. 765, 786 & n.23 (1978), *reh'g denied*, 438 U.S. 907; *Elrod v. Burns*, 427 U.S. 347, 362-63 (1976); *O'Brien*, 391 U.S. at 377; *Davidson*, *supra* note 12, at 901, 915-16; *Ferguson*, *supra* note 101, at 655-64; *Flannery*, *supra* note 123, at 1325-26; *Right to Research*, *supra* note 261, at 1249-50, 1254.

420. *Landmark Communications, Inc. v. Virginia*, 435 U.S. 829, 843 (1978); *Ferguson*, *supra* note 101, at 657-58.

421. *Landmark Communications, Inc.*, 435 U.S. at 843; *Ferguson*, *supra* note 101, at 657-58.

422. *Flannery et al.*, *supra* note 123, at 1325-26; *Right to Research*, *supra* note 261, at 1249-50.

423. *O'Brien*, 391 U.S. at 377; *Schneider v. State*, 308 U.S. 147, 160-61 (1939); *Delgoda & Millen*, *supra* note 261, at 377, 392; *Ferguson*, *supra* note 101, at 655-64; *Right to Research*, *supra* note 261, at 1249-51.

424. *Ferguson*, *supra* note 101, at 662-63; *Right to Research*, *supra* note 261, at 1251; *see Davidson*, *supra* note 12, at 915-16 (suggesting that the standard should be more stringently applied than it was in *O'Brien* because research is the sole way of gathering data for a researcher's expression, as opposed to a multitude of ways of expressing displeasure with the draft besides a public burning as committed in *O'Brien*); *see also O'Brien*, 391 U.S. at 377 (holding that Congress had a sufficiently important interest in prohibiting destruction of draft cards since the cards served as proof of registration, facilitated information regarding the registrant and carried reminders for the registrant). *But see Keith Werhan, The O'Briening of Free Speech Methodology*, 19 ARIZ. ST. L.J. 635, 640-41 (1987) (arguing that the compelling component will always be satisfied because "legislatures simply do not enact wholly useless provisions") (quoting Ely, *Flag Desecration: A Case Study in the Roles of Categorization and Balancing in First Amendment Analysis*, 88 HARV. L. REV. 1482, 1486 (1975)).

invalidated governmental control that would deal with "control of reason and intellect," such as the reason and intellect involved in basic research.⁴²⁵

The first requirement in restricting speech is that the state have a substantial justification. Legitimate state concerns would necessarily relate to health and welfare, as opposed to society's collective conscience or morality.⁴²⁶ A state may propose to promote the health and welfare of its citizenry by curtailing research like embryological research due to a fear of the possible evils that could result from such research, either because the procedures imperil public health and welfare, or because the knowledge is in some sense dangerous or inopportune. In such a case, the courts could give great deference to a state's fears, for although the probability of harm is unknown, the gravity of harm could be extensive.⁴²⁷ A state may also fear that the knowledge gained or the procedure itself conflicts with a central moral value.⁴²⁸

Also, a state may argue that prohibiting embryological research is not banning the development of new knowledge, but merely regulating the methodology of research in general. After all, over the past decades, new knowledge has developed without the use of embryological research in areas such as in vitro fertilization.

States may also argue that alternatives to embryological research exist such as computer simulation and animal experimentation. Further, because the proposed criteria for permitting embryological research would only allow research that is necessary because the information cannot be gained any other way, a state argument implying that the restriction would be curtailing a method of gathering information, and not the information itself, would be false. A direct need for the research would be identified, which could be met with computer simulation or animal experimentation.

The second requirement in a First Amendment constitutional analysis is that the restriction be narrowly tailored so that the restriction is no greater than is required to further the governmental interest.⁴²⁹ While state interests may be found substantial by characterizing them as health and welfare-related issues, regulations promoting those concerns could be less restrictive of speech while still furthering the governmental interest.⁴³⁰ If the laws regulated adverse use,

425. *Paris Adult Theatre I v. Slaton*, 413 U.S. 49, 67 (1973).

426. *Erznoznik v. City of Jacksonville*, 422 U.S. 205, 209 (1975); Davidson, *supra* note 12, at 913, n.150; Ferguson, *supra* note 101, at 663; see *Erznoznik*, 422 U.S. at 209 (holding that the First Amendment strictly limits the power of the government to act as a censor when it "undertakes selectively to shield the public from some kinds of speech on the ground that they are more offensive than others").

427. Ferguson, *supra* note 101, at 657-58.

428. *Id.* at 657.

429. *Schneider v. State*, 308 U.S. 147, 161 (1939); TRIBE, *supra* note 418, at 791-92.

430. Ferguson, *supra* note 101, at 663; *Right to Research*, *supra* note 261, at 1250; see Davidson, *supra* note 12, at 915-16 (arguing that the least restrictive standard must be strictly enforced, as opposed to the lesser enforcement exemplified in *O'Brien* due to the nature of research for a researcher—the sole avenue of gaining information with which to express ideas); Ferguson, *supra* note 101, at 658 (presenting a similar counter

rather than all embryological research, a state concern that new information would be misused, such as a concern related to eugenics, could be addressed while still permitting the development of new knowledge through embryological research. State laws banning basic embryological research are clearly absolute, and thus, should be classified as unduly burdensome of the freedom of speech.

The Supreme Court has recognized several areas in which state interests outweigh the right to free speech.⁴³¹ The Court held that the contents of these areas of speech are of such slight social value, and did not even faintly resemble an "expression of ideas," that the state interest in social order and morality outweighs the benefit of permitting such speech.⁴³² For example, criminal sanctions are permissible when the speech is used to incite "imminent lawless action."⁴³³ The state may also regulate libel and pornography.⁴³⁴

None of these standards are applicable to embryological research, or general research.⁴³⁵ First, published general research or embryological research could not be classified as an incitement to unlawful behavior.⁴³⁶ Second, even if a researcher was held liable for incitement of unlawful conduct based on information presented in a noninciteful manner, the state could not prove that there is a high probability of grave harm in order to override the freedom of speech, a factor necessary to prove incitement.⁴³⁷ Even if the "high probability of grave harm" standard was met, the existence of alternative restrictions would bar total prohibitions of embryological research.⁴³⁸ Primarily though, basic research, including that which utilizes embryos, does not pose any real, imminent danger to society, and thus any state interest does not outweigh the benefits of the freedom of speech through the right to conduct research.⁴³⁹ Finally, unlike pornography,

argument for recombinant-DNA technology). *But see* Werhan, *supra* note 424, at 640-41 (proposing that the Supreme Court has failed to strictly enforce this prong, preferring to look to whether the interest could be achieved without the ban, thereby casting this prong as more of a rational basis test).

431. *See* *Gertz v. Robert Welch, Inc.*, 418 U.S. 323 (1974) (libel), *cert. denied sub nom. Robert Welch, Inc. v. Gertz*, 459 U.S. 1226 (1983); *Brandenburg v. Ohio*, 395 U.S. 444, 447 (1969) (incitement); *Roth v. United States*, 354 U.S. 476 (1957) (pornography).

432. *Chaplinsky v. New Hampshire*, 315 U.S. 568, 572 (1942).

433. *Brandenburg*, 395 U.S. at 447; Davidson, *supra* note 12, at 914-15.

434. *See, e.g., Gertz*, 418 U.S. 323; *Roth*, 354 U.S. 476.

435. *Right to Research*, *supra* note 261, at 1250.

436. *Id.*

437. *Id.* at 1250-52. Robertson argues that research results would more likely meet this standard than the conducting of research because research results are known and the reaction to the results can be evaluated with greater certainty than research which is being conducted with substantial uncertainty as to the final outcome. *Id.* at 1252.

438. *Id.* at 1250-52.

439. Delgado & Millen, *supra* note 261, at 380-81.

embryological research has "serious literary, artistic or *scientific value*" because it adds to the body of scientific knowledge known to humankind.⁴⁴⁰

The states may wish to characterize embryological research bans as limitations on the time, manner or place of the speech, as opposed to the means by which that speech is delivered. If the courts characterized bans on embryological research as restricting the manner of research, such as research which utilizes embryos, as opposed to the means, such as research which provides unique knowledge, the restriction would have to relate to a valid state interest in health, peace, order, safety or welfare, and must be narrowly tailored to address only those concerns as affected by the speech.⁴⁴¹ However, these state interests are not legitimate in light of the uncertainty of the dangers of embryological research given that the nonimplanted embryo will never reach viability.⁴⁴² The alternatives available to protect against a state's concerns which would impede the freedom of speech to a lesser degree, such as prohibiting implantation after research on an embryo and banning cross-species gene therapy, provide further impetus to invalidate total embryological research bans. Such alternatives would address a state's concerns regarding abuse of embryological technology, yet still permit embryological procedures.

Some commentators suggest that societal mores may be a sufficient state interest to regulate the manner of research.⁴⁴³ However, if embryological research is recognized as a fundamental right, societal mores will not justify the infringement of that fundamental right.⁴⁴⁴ With the scientific value that embryological research represents, state concerns based on societal mores would be insufficient to justify restriction of the freedom of speech.⁴⁴⁵ Even if societal mores are sufficient grounds, the lack of a societal consensus on the immorality of embryological research indicates that societal mores are a moot point until such con-

440. *Paris Adult Theatre I v. Slaton*, 413 U.S. 49, 67 (1973) (quoting language from *Miller v. California*, 413 U.S. 15, 24, 34 (1973)) (emphasis added); *see id.* (noting that obscene material, "by definition lacks any serious literary, artistic, or scientific value," and thus falls outside of the protection of the First Amendment).

441. *Procunier v. Martinez*, 416 U.S. 396, 412-16 (1974); *Paris Adult Theatre I*, 413 U.S. at 57-69; *United States v. O'Brien*, 391 U.S. 367, 381 (1968), *reh'g denied*, 393 U.S. 900. Specifically, this test has been used most often to determine the constitutionality of non-content related restrictions. *Right to Research*, *supra* note 261, at 1253-55.

442. Delgado & Millen, *supra* note 261, at 380-81.

443. *Right to Research*, *supra* note 261, at 1254 n.233.

444. *Miller v. California*, 413 U.S. 15, 34 (1973); *see id.* (holding that morality cannot justify the repression of works having "serious literary, artistic, political, or scientific value") (emphasis added); *see also* *Erznoznik v. Jacksonville*, 422 U.S. 205, 209 (1975) (holding that the First Amendment strictly limits the power of the government to act as a censor when it "undertakes selectively to shield the public from some kinds of speech on the ground that they are more offensive than others"); *Epperson v. Arkansas*, 393 U.S. 97, 107-09 (1968) (invalidating a state statute which imposed criminal liability on public school teachers who taught Darwin's theory of evolution because moral objections could not constitutionally result in the infringement of a constitutional right); Delgado & Millen, *supra* note 261, at 374 n.166 (discussing the impropriety of using "ethical, philosophical, or religious orthodoxies" to violate free expression).

445. Delgado & Millen, *supra* note 261, at 385.

sensus is reached. Additionally, Justice Brandeis argues that the First Amendment is meant to protect the philosophies "which a vast majority of . . . citizens believes to be false and fraught with evil consequence[s]." ⁴⁴⁶ The Supreme Court echoed Justice Brandeis's viewpoint when it noted that "[a]ll ideas having even the slightest redeeming social importance—unorthodox ideas, controversial ideas, even ideas hateful to the prevailing climate of opinion—have the full protection of the [First Amendment] guarantees, unless excludable because they encroach upon the limited area of more important interests." ⁴⁴⁷

A further consideration that may influence the courts is the impact such bans may have. ⁴⁴⁸ There is some indication that bans may impact the development of diagnostic procedures and the treatment of genetic diseases or defects. ⁴⁴⁹ If embryological research was prohibited everywhere, in vitro fertilization would never have come to fruition. A similar fate could be predicted for all embryological procedures without embryological research being conducted somewhere. This may cause the courts to lean toward striking down bans on embryological research as unduly burdensome of the freedom of speech. ⁴⁵⁰

D. Rational Basis

If the courts find that there is no fundamental right under the First or Fourteenth Amendments implicated in embryological research, the regulation must rationally relate to a legitimate state interest. ⁴⁵¹ Thus, embryological research bans may be regulated to advance legitimate state interests, but such regulations cannot be arbitrarily burdensome. ⁴⁵² While most of the state concerns seem to center on the status of the embryo as a person and protecting it due to its potential for life, that interest is not easily related to a prohibition on research. Because the embryo donator does not wish to implant the embryo and mandatory donation laws have been criticized as unconstitutional, the embryo is, for all

446. *Whitney v. California*, 274 U.S. 357, 374 (1927) (concurring opinion in which Holmes, J., joined).

447. *Roth v. United States*, 354 U.S. 476, 484 (1957).

448. *Ferguson*, *supra* note 101, at 664.

449. *Id.* (quoting Batelle-Columbus Laboratories, *An Assessment of the Role of Research Involving Living Human Fetuses in Advances in Medical Science and Technology*, reprinted in NATIONAL COMMISSION FOR THE PROTECTION OF HUMAN SUBJECTS OF BIOMEDICAL AND BEHAVIORAL RESEARCH, *RESEARCH ON THE FETUS* 15-1 app. (1975)).

450. *Ferguson*, *supra* note 101, at 664.

451. Louis Henkin, *Privacy and Autonomy*, 74 COLUM. L. REV. 1410, 1426 (1974); *Right to Research*, *supra* note 261, at 1254; see Henkin, *supra* (noting that when a fundamental right is not implicated, the right is still subject to the police power of state governments and all the implications thereof, like statutory validity presumption, a very heavy burden of proof to show that a regulation has no conceivable purpose or that the ends are not rationally related to the means).

452. *Margaret S. III*, 597 F. Supp. 636, 675 (E.D. La. 1984), *aff'd sub nom. Margaret S. v. Edwards*, 794 F.2d 994 (5th Cir. 1986). *But see Wynn v. Scott*, 449 F. Supp. 1302, 1305 (N.D. Ill. 1978) (noting that researchers do not have a fundamental right to perform fetal experimentation), *aff'd sub nom. Wynn v. Carey*, 599 F.2d 193 (7th Cir. 1979).

practical purposes, "dead."⁴⁵³ Thus, the ban would be considered arbitrary as the state's interest in protecting life cannot extend beyond the "death" of the embryo.⁴⁵⁴

Furthermore, all states have enacted the Uniform Anatomical Gift Act, in some form, which allows research on deceased children.⁴⁵⁵ Children must clearly have greater symbolic value than embryos, as they represent greater potential than an embryo which is not born, or even implanted, and has no hope of meaningful life. Thus, state concerns regarding the symbolic value and dignity of the "dead" embryo, cannot be rationally related to a state ban on embryological research when the states permit research on dead children, since children have greater symbolic value and greater potential for life.

Moreover, state laws do not rationally relate to protecting life, including the potential life of the fetus, when state laws permit research on live children and viable fetuses.⁴⁵⁶ Federal laws permit research using fetuses and children where only "minimal risk" is present.⁴⁵⁷ "Minimal risk" occurs when the "risks of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests."⁴⁵⁸ Since the embryo is, for all intents and purposes, "dead" because the progenitors do not want to implant the embryo and do not wish to have it implanted in another woman, embryological research can never exceed the risk "ordinarily encountered in daily life"—that of disposal. Also, a state would rationally protect a child, with actual legal rights, and a fetus, where the courts have indicated that the state has a compelling interest after viability, at least to the same extent as an embryo that does not have the potential for life without implantation.⁴⁵⁹ Therefore, total prohibitions on embryological research are inconsistent with laws that permit some research on live children and viable fetuses. Although this argument supports all embryological research, it clearly advances the theory that the state does not have a rationally related basis for banning gene therapy, which provides medical assistance to embryos.

453. Ozar, *supra* note 304, at 8; *see id.* (noting that "dead" includes not only the common definition of dead but also a lack of ability to perform life functions, with or without medical intervention). Since an embryo is unable to perform its life functions without implantation, it is "dead." *Id.*

454. *See Margaret S. III*, 597 F. Supp. at 675 (proposing the same rationale for fetal experimentation).

455. UNIF. ANATOMICAL GIFT ACT, 8A U.L.A. 15-16 (West 1983 & Supp. 1987) (Table of Jurisdictions wherein Act has been adopted); *see Margaret S. III*, 597 F. Supp. at 675 (proposing the same rationale for fetal experimentation).

456. *See, e.g.,* VA. CODE ANN. § 32.1-162.18 (Michie 1992); *see id.* (permitting minors to consent to research which does not represent more than a minor increase over minimal risk if it is also consented to by the minor's legally authorized representative).

457. 45 C.F.R. § 46.111(a)(1) (1989); 45 C.F.R. § 46.208(a) (1989); *see* 45 C.F.R. § 46.111(a)(1) (1989) (permitting children as research subjects); 45 C.F.R. § 46.208(a) (1989) (allowing fetuses as research subjects).

458. 45 C.F.R. § 46.102(g) (1989).

459. Lagod & Martin, *supra* note 8, at 307.

Furthermore, arguments raised earlier regarding the significant respect shown to life through the use of embryos in research negates the rational relationship to denigrating the symbolic respect toward life that the state may claim to be protecting. Moreover, the *Davis v. Davis*⁴⁶⁰ trial court indicated that if a state did not recognize an interest in protecting a fetus through wrongful death statutes that addressed embryos and did not protect fetuses from abortions, then the embryo, a lesser developed fetus, could not be more greatly protected.⁴⁶¹ Again, it seems that while complete bans would not rationally relate to state interests, limiting embryological research to support a state interest related to societal or health concerns could be constitutional.⁴⁶²

IV. CONCLUSION

Twenty-four states regulate fetal tissue research. Out of these twenty-four, only ten states prohibit embryological research and other reproductive procedures which could be classified as research. These state laws regulate gene therapy, twinning, cryopreservation, preimplantation screening, cell line development and basic research.

The wording of these statutes has been called into question by three recent cases, which held that the terms "experimentation" and "nontherapeutic" were too vague to withstand constitutional scrutiny. Many of the state bans which limit embryological research could be considered unconstitutionally vague since "experimentation" and "nontherapeutic" are found in the statutes without further clarity. However, this defect can be corrected.⁴⁶³

Even if the state laws are clarified, they could still face constitutional challenges based on the right to privacy. The procedures which utilize embryos are deeply connected to reproductive decision-making. Additionally, they are associated with the time honored next-of-kin's quasi-property right in the deceased's body. Combined with analogies to organ donation, those related concepts indicate that embryological procedures should be encompassed in the bundle of fundamental rights. Considering the impact complete bans would have on reproductive decision-making and the beneficial nature of these procedures for

460. 842 S.W.2d 588 (Tenn. 1992), *cert. denied sub nom. Stowe v. Davis*, 509 U.S. 911 (1993).

461. *Davis II*, 842 S.W.2d at 594-96; see Lagod & Martin, *supra* note 8, at 307-09 (suggesting some regulation of embryological research, as opposed to complete bans, including regulating commercialization and the production of embryos for the sole purpose of research).

462. Eggen, *supra* note 31, at 708; see *Wynn v. Scott*, 449 F. Supp. 1302, 1322 (N.D. Ill. 1978) (holding that a state law banning nontherapeutic experimentation on premature infants and live aborted fetuses passed the rational basis test since the state has broad latitude in regulating social and health concerns, including fetal research), *aff'd sub nom. Wynn v. Carey*, 599 F.2d 193 (7th Cir. 1979). This case can be distinguished from *Margaret S. I* because the *Margaret S. I* ban prohibited experimentation on *dead* fetuses, while the *Wynn* ban prohibited experimentation on *live* fetuses.

463. See *supra* notes 198-211 and accompanying text (discussing the cases which have invalidated embryological research bans based on vagueness).

the embryo and parents, as compared to the minimal interests the state has in a spare, "dead" embryo with no chance of implantation, the parental interests outweigh the state's interest. Thus, the total prohibitions enacted by states against embryological procedures should be found to violate the constitutional right to privacy.⁴⁶⁴

The First Amendment should also provide an avenue to invalidate total prohibitions of embryological research. This proposal, while supported by various Supreme Court opinions, has not been directly addressed by the Court. Whether the bans are viewed as a precursor to speech in the form of research papers, as a restriction of the means of acquiring new knowledge, or as a limitation on the manner in which new knowledge is acquired, the state interests are not substantial. Additionally, the complete bans are not narrowly tailored to address the state concerns so as to minimally interfere with speech. Thus, the right to conduct research as protected under the umbrella of the First Amendment's freedom of speech should invalidate prohibitions on embryological research. While the constitutional protection of a right to scientific research would clearly provide a basis for invalidating state restrictions on embryological research, this protection is untested in the Supreme Court.⁴⁶⁵

Even if the courts find that embryological research is not rooted in the fundamental rights associated with the right to privacy or the freedom of speech, the total prohibitions are questionable under a rational basis review. However, complete bans seem over inclusive in addressing the state concerns regarding the protection of life and the showing of respect for life. The inconsistencies regarding protecting the life of an embryo which will never be implanted while promoting the donation of bodies after death further support the conclusion that absolute prohibitions cannot rationally relate to the state interests involved.⁴⁶⁶

While total bans may be unconstitutional, the state concerns that prompted regulation are valid and provide further impetus to enact national guidelines for embryological research.⁴⁶⁷ These guidelines could incorporate valid restrictions on embryological research which would address the legitimate state concerns in

464. See *supra* notes 212-381 and accompanying text (analyzing the constitutionality of complete bans on embryological procedures according to the Fourteenth Amendment's right to privacy).

465. See *supra* notes 382-450 and accompanying text (exploring the right to research as a guarantee included within the First Amendment's freedom of speech).

466. See *supra* notes 451-62 and accompanying text (discussing the inability of total state bans to rationally relate to the state interests concerning embryological research).

467. See Baron, *supra* note 122, at 15 (suggesting that the federal regulation of fetal research would provide uniformity and stability to the field); see *supra* notes 72-118 and accompanying text (discussing various ethical viewpoints which provide impetus for state concerns). But see Eggen, *supra* note 31, at 687-89 (discussing the difficulties with enacting national guidelines); Dennis S. Karjala, *A Legal Research Agenda for the Human Genome Initiative*, 32 JURIMETRICS J. 121, 156-57 (1992) (arguing that uniform national guidelines may not be an appropriate answer if there are great differences over basic policy).

a constitutional manner.⁴⁶⁸ In fact, the proposed NIH guidelines appear to address some of the ethical concerns discussed earlier, such as limiting research to a fourteen day window, prohibiting commercialization of embryological research, and precluding research on embryos created solely for the purpose of research. Many commentators have called for clear, precise policies, often to avoid the risk of a chilling effect on embryological research.⁴⁶⁹ These guidelines, combined with the invalidation of state bans on embryological research, should provide a bright beacon to humankind by permitting research which gives such promise and hope to women, men, and children.

468. *Right to Research*, *supra* note 261, at 1256-67; *see id.* (listing various restrictions which would be constitutional, including requiring informed consent or prohibiting research on viable fetuses, children or incompetent persons).

469. Fletcher & Ryan, *supra* note 5, at 132; Clifford Grobstein et al., *Frozen Embryos: Policy Issues*, 312 NEW ENG. J. MED. 1584, 1586 (1985).

