

TO CLONE OR NOT TO CLONE

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In the last decade, science, especially the biomedical field, has been transforming what has heretofore been the realm of science fiction into reality.¹ Science, medicine in particular, has been advancing at a pace that has far outstripped the ability of our legal and ethical system to cope with its new realities.² The possibility of cloning is merely the latest discovery in this long line of scientific developments that has been thrust upon our legal and ethical system.³

Should the law encourage, regulate, or prohibit cloning? Should the law distinguish between human and non-human cloning? A skeptical public has greeted cloning with disbelief and delighted amazement, as well as repulsion, fear, and distrust.⁴ Many in the legal community have discouraged human cloning.⁵ Despite these reserva-

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1. See generally GINA KOLATA, *CLONE: THE ROAD TO DOLLY, AND THE PATH AHEAD* 71 (1998).

2. See Joan Beck, *Careless Intentions: Have We Fully Thought Out All of the Consequences of Reproductive Medicine*, CHI. TRIB., Feb. 1, 1998, § 1, at 19.

3. See Charles Austin, *Ethics of Gene Splicing Troubling Theologians*, N.Y. TIMES, July 5, 1981, at A1.

4. Arlene Judith Klotzko, *Science Fictions: Cloning is Bad and Septuplets are Good*, WASH. POST, Dec. 14, 1997, at C3.

5. See, e.g., Lisa Sowle Cahill, *No Human Cloning: A Social Ethics Perspective*, 27 HOFSTRA L. REV. 487, 487 (1999) (addressing *inter alia* “the negative impact of human cloning on the family”); Jennifer Cannon & Michelle Haas, *The Human Cloning Prohibition Act: Did Congress Go Too Far?*, 35 HARV. J. ON LEGIS. 637, 645 (1998) (discussing Congress’s immediate reaction to cloning of sheep in Scotland by passing Human Cloning Prohibition Act, S. 1601, 105th Cong. (1998)); Vernon J. Ehlers, *The Case Against Human Cloning*, 27 HOFSTRA L. REV. 523, 523 (1999); Leon R. Kass, *Why We Should Ban the Cloning of Human Beings*, 4 TEX. REV. L. & POL. 41 (“[C]loning is a serious evil, both in itself and in what it leads to, and . . . we ought to try to stop it by legislative prohibition.”); Sophia Kolehmainen, *Human Clon-*

tions, we must look at the actual process of cloning in light of the potential longterm benefits that can be derived from this technique.⁶ If the process of cloning can be properly harnessed, repulsion, fear, and distrust will be replaced by interest and optimism. But first we must thoroughly deal with the legal and ethical issues that cloning presents.

Western culture is replete with myths and legends alluding to human cloning, most of which have stressed its dark side. This theme was probably most brilliantly portrayed by Mary Shelley in her novel, *Frankenstein; or The Modern Prometheus*.⁷ This book, along with other literature in the field, is filled with warnings against human beings who tried to be godlike and create human life. Shelley's reference to the *Modern Prometheus* relates to a "fundamental goal of the Romantic poets and philosophers," among them her husband Percy Shelley, who were attempting to "*perfect* mankind, to transform mortals into godlike creatures, [and] to locate the divine *in* the human."⁸ In particular, *Frankenstein* stresses the havoc that could be wrought if such efforts were attempted. In all such tales, when humans create clone-type human beings, horror results.

Although first published in 1818, *Frankenstein* confronted anxieties that are relevant today, such as family conflict and society's mistrust of science.⁹ It also addressed concerns regarding scientific thought and the psychology of the scientist by questioning its emphasis on "search[ing] for objective truth, whatever the consequences."¹⁰ Not only did *Frankenstein* explore the nature of scientific enterprise, but it also addressed and recognized society's fear of the dangers involved in scientific experimentation.¹¹ Its theme has been revisited in numerous movies and science fiction articles.¹² Indeed, the *Franken-*

ing: Brave New Mistake, 27 HOFSTRA L. REV. 557, 557 (arguing against use of cloning to create offspring).

6. See Ian Wilmut, *Potential Benefits of Cloning and Nuclear Transfer*, Roslin Institute Online (March 3, 1998), at <http://www.ri.bbsrc.ac.uk/library/research/cloning/nt-benefits2.html> [hereinafter Wilmut, *Potential Benefits of Cloning*].

7. MARY SHELLEY, *FRANKENSTEIN; OR THE MODERN PROMETHEUS* (M.K. Joseph ed., Oxford Univ. Press 1969) (1831).

8. Anne K. Mellor, *Introduction* to MARY SHELLEY, *FRANKENSTEIN; OR, THE MODERN PROMETHEUS* xiv-xv (Anne K. Mellor & Theresa Reyes eds., Washington Square Press 1995) (1831).

9. Diane Johnson, *Introduction* to MARY SHELLEY, *FRANKENSTEIN* x (Bantam Books 1991) (1818).

10. Mellor, *supra* note 8, at xviii.

11. *Id.* at xx.

12. See Christine Corcos et al., *Double-Take: A Second Look at Cloning, Science Fiction and Law*, 59 LA. L. REV. 1041, 1045 (1999).

stein legend has been one of the most filmed works of literature in cinematic history.¹³

Religious cultures have frequently warned about the danger of cloning human beings by mortals. One example is found in ancient Jewish tradition, which stressed the double-edged sword that resulted from the creation of the *golem*,¹⁴ a superhuman clone. Like Mary Shelley, this tradition emphasized the clone's lack of a soul. The most well-known of the *golem* stories is the sixteenth century legend of the *Golem of Prague* and its creator, Rabbi Loeb.¹⁵ In this legend, which has been recounted numerous times in books, plays and films,¹⁶ Rabbi Loeb, a holy man, creates the golem out of clay, and is only able to bring it to life with divine help and for the purpose of saving lives. The legend stresses that a human is forbidden from creating life, and that the use of such a power could be turned against one who invoked God's name to create a living being.¹⁷ Indeed, the soulless creature takes terrible retribution upon humanity. Given these legends, it is no wonder the process of human cloning has suffered from such terrible public opinion.

The very concept of human cloning has raised doubts, protests, and outright condemnation.¹⁸ In 1997, the National Bioethics Advisory Commission (NBAC) held a public hearing regarding cloning and heard from several religious leaders.¹⁹ At the hearing, Roman Catholic speakers and several conservative Protestant speakers voiced outright opposition to cloning,²⁰ expressing the viewpoint that using cloning technology to create human life is "intrinsically immoral; and

13. For instance, a search of the "Internet Movie Database" for the term "Frankenstein" yields eighty-nine matches in movies, television, and video. *IMDb name and title search*, at <http://us.imdb.com> (last visited Oct. 10, 2000).

14. 7 *ENCYCLOPAEDIA JUDAICA* 754-55 (1971). The only use of *golem* in the Old Testament describes Adam's soulless body. *Id.* at 754.

15. Ilil Arbel, *Rabbi Loeb and the Golem of Prague*, *ENCYCLOPEDIA MYTHICA*, at http://www.pantheon.org/cgi-bin/view.cgi?file=Rabbi_loeb.html (last visited Oct. 10, 2000).

16. *Id.*

17. *Id.*

18. See John A. Robertson, *Liberty, Identity, and Human Cloning*, 76 *TEX L. REV.* 1371, 1371-72 (1998) (describing immediate response to human cloning by U.S. government); see also Klotzko, *supra* note 4, at C3.

19. NAT'L BIOETHICS ADVISORY COMM'N, *CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION 39-40* (1997) [hereinafter *CLONING HUMAN BEINGS*], available at <http://www.bioethics.gov/pubs.html>.

20. See also KOLATA, *supra* note 1, at 39.

thus [can] never be morally justified” and should be banned.²¹ In contrast, some Protestant, Islamic, and Jewish presenters expressed support for cloning research on a limited basis.²² Despite their support, they also conveyed deep moral reservations concerning the cloning of a human being, and encouraged further discussion and scientific research in the hope that cloning technology will eventually be medically beneficial to society.²³ They further suggested that regulations and strict controls could prevent the potential misuse and abuse of this technology.²⁴

Religious opponents of cloning generally object to human beings “playing God.”²⁵ For example, Islamic teaching holds that scientific knowledge is a sign of God’s creation, and possible only because God allows the scientific discovery to occur.²⁶ Even where there is a general acceptance of scientific knowledge in religious thought, the application of that knowledge is often a point of contention.

The moral and religious objections to cloning are numerous. First, there is a taboo against human beings possessing God’s power to create human life, demonstrated by the belief that finite human beings should not aspire to perform infinite activities because no human is as moral as the Divine.²⁷ Second, there is a strong religious belief that cloning violates the sanctity of human life.²⁸ Third, there is a fear that human cloning will be used for evil purposes, such as perceived supe-

21. CLONING HUMAN BEINGS, *supra* note 19, at 107-08. *See also id.* at 55 (quoting Albert S. Moraczewski, O.P., Pope John Center, who opposed human cloning for reproductive purposes even under exceptional circumstances).

22. *See id.* at 45 (discussing religions’ overarching “quest for scientific knowledge.”). In addition,

Some Protestants emphasize the idea of “continuing creation,” coupled with the theme that persons are co-creators who are called to participate with God in shaping a better future. Indeed, human destiny is so open and indefinite that the Christian may be a “co-explorer” with God in discovering new and unlimited possibilities through innovative technologies. This perspective on human destiny can offer qualified support to human cloning, insofar as it is technically feasible and publicly supported.

Id. at 48 (citation omitted). Finally, some Jewish theologians believe cloning is permissible under certain circumstances, such as when a sterile person wants to continue a bloodline or when people need cures for serious and fatal diseases. *Id.* at 55.

23. *Id.* at 39.

24. *Id.* at 56-57 (quoting Rabbi Elliot Dorff, supporting regulation but not banning of human cloning).

25. *Id.* at 44 (noting invocation of this creed when “a powerful new scientific tool is developed”).

26. “They said: ‘Glory to be You; we have no knowledge except whatever You have taught us. You are the Aware, the Wise!’” QUR’AN I, 2:30.

27. *See* CLONING HUMAN BEINGS, *supra* note 19, at 44-45.

28. *See id.* at 51.

rior genetic selection—a purpose which invokes the horrors of the Third Reich.²⁹ In addition, cloning has been seen as diminishing or possibly eliminating human dignity by robbing the clone of its unique identity by creating a life through impersonal manipulation, rather than from an expression of love in a relationship.³⁰

We are currently dealing with strong moral objections that have been raised in many quarters against the cloning of human beings. These objections, which may not remain consistent with all aspects of cloning, are primarily religio-ethical in nature and ultimately based on moral perspective. Fundamentalists and Catholic theologians believe that once human life is created in any manner, it is life, and should therefore be deemed sacred.³¹ When viewed in this context, the distinction between natural and scientific creation becomes less significant. If all life is sacred, then one form of life cannot be more sacred than another. In addition, advances in reproduction technology have further blurred the lines between “begetting” and “making.”³² Ironically, many opponents of cloning in legal and religious communities are the very same groups prepared to accept similar scientific innovations in human conception and gene therapy research as positive developments in numerous circumstances.³³

The common criticism that genetically identical clones would be soulless creations is flawed, as it fails to account for naturally conceived identical twins, which have identical deoxyribonucleic acid (DNA). Despite the fact that twins have no genetic traits to distinguish between them, there has never been a serious claim by any major faith that they lack individual souls. Studies of identical twins “do not support the concern that genetically identical people are not individuals in their own right.”³⁴

29. See WILLIAM L. SHIRER, *THE RISE AND FALL OF THE THIRD REICH: A HISTORY OF NAZI GERMANY* (1959).

30. See CLONING HUMAN BEINGS, *supra* note 19, at 49 (quoting J.M. Haas, Pope John Center, who claims that cloning is “a violation of human dignity”).

31. See CATHOLIC MED. ASS’N, *HUMAN CLONING: POSITION PAPER OF THE CATHOLIC MEDICAL ASSOCIATION*, reprinted in 15 *ISSUES L. & MED.* 323, 323-24 (2000) (“The cloning of human beings would be a violation of the natural moral law. Research in cloning as it applies to man is degrading. It destroys the dignity of human nature by treating the human person as a material commodity to be manipulated according to whim and fancy.”); see also Courtney S. Campbell, *Religious Perspectives on Human Cloning*, in CLONING HUMAN BEINGS, *supra* note 19, at D-13.

32. CLONING HUMAN BEINGS, *supra* note 19, at 52.

33. See KOLATA, *supra* note 1, at 18-19 (citing John Robertson, law professor at the University of Texas at Austin).

34. Nancy L. Segal, *Behavioral Aspects of Intergenerational Human Cloning: What Twins Tell Us*, 38 *JURIMETRICS J.* 57, 61 (1997).

Although the cloning process is initiated by human beings, it is primarily a process of asexual reproduction which occurs in nature, and not through some artificial spark. As plants grow and waves crash, so cloning occurs. Even if cloning is viewed as a byproduct of scientific thought, it is not necessarily at odds with religious theory. In fact, “[f]or major strands of Christian, Jewish and Islamic traditions, the quest for scientific knowledge is not, in general, theologically problematic or threatening. Islamic scholars, for example, emphasize that all scientific discovery is ultimately a revelation of the divinely ordained creation.”³⁵

What is cloning? The most basic definition of a clone is a genetically precise copy of the original, be it as small as a molecule or as large and complex as an animal or human being.³⁶ Cloning has long been a practical part of science, utilized primarily for reproducing plant life (clipping a piece of the original and letting it take root on its own, commonly referred to as grafting), or for research on a molecular level. Molecular cloning involves the reproduction of DNA fragments in a host cell, usually a bacterium. These experiments have led to major advances in medicine, such as the development of insulin and anti-clotting medication.³⁷

Another type of cloning used today is cellular cloning, which consists of making copies of soma, or body cells, by growing them in culture in the confines of a laboratory.³⁸ The resulting cells are called a “cell line” and are genetically identical to the original cell.³⁹ Cell lines contribute to the development of new medicines, including those mentioned with regard to molecular cloning. Cellular cloning cannot produce an offspring because it involves only the somatic cells, not the reproductive germ cells.

The cloning process directed toward the production of genetically identical animals may be divided into two separate methodologies. The first, blastomere separation, separates a cluster of cells almost immediately after fertilization.⁴⁰ Each of the separated cells is capable

35. CLONING HUMAN BEINGS, *supra* note 19, 45 (citing testimony by Islamic scholar, Abdulaziz Sachedina, Ph.D., and Sheikh Fadlallah, Shi'ite Muslim jurist before National Bioethics Advisory Commission that “the recent cloning discovery” occurred “because God allowed it”).

36. *See id.* at app. 1 (“Clone: A precise copy of a molecule, cell, or individual plant or animal.”); *see also* George J. Annas, *Human Cloning: Should the United States Legislate Against It?*, A.B.A. J., May 1997, at 80 (“[c]loning is replication, not reproduction”).

37. CLONING HUMAN BEINGS, *supra* note 19, at 14.

38. *Id.*

39. *Id.*

40. *Id.* at 15.

of producing a new organism. This type of cloning would have significant impact on the breeding of desirable livestock by increasing the reproduction of elite male and female animals. Nevertheless, it would still be critical to maintain a genetically diverse animal population to ensure viability.

The second method, aimed at producing genetically identical animals, is nuclear transplantation cloning.⁴¹ In this process, the nuclei of a germ cell and a somatic cell are removed, and the nucleus of the somatic cell is placed in the germ cell, resulting in a fetus which is a genetic twin of the somatic cell donor.⁴² Early experiments in this type of cloning were done with frog DNA.⁴³ These experiments had a very poor success rate. In order to be successful, the adult nucleus must replicate its DNA and reprogram its gene expression.⁴⁴

Experiments continued to evolve with the eventual result of the now infamous Dolly, a cloned sheep. Not as well known is that the experiment that produced Dolly began with 277 fusions of the adult nuclei and its host egg. Only 29 of the 277 fusions resulted in blastocysts, and of those only one evolved into a viable sheep!⁴⁵

In July of 1988, scientists in Hawaii announced the successful cloning of mice for three generations, using a different technique from that used to create Dolly.⁴⁶ The process' success rate was higher than the Wilmut (Dolly) process, producing one clone per forty embryos, as opposed to one out of 277.⁴⁷

Less than two years after Dolly's birth and five months after the Hawaiian experiment, scientists in Japan reported the birth of eight calves that had been cloned from the cells of an adult cow that had been slaughtered.⁴⁸ This seemed to remove the doubt as to whether the Dolly success could be replicated, since the survival rate was sig-

41. *Id.*

42. *Id.*

43. *Id.* at 17-18.

44. See LEE M. SILVER, REMAKING EDEN: CLONING AND BEYOND IN A BRAVE NEW WORLD 96 (1997).

45. I. Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810, 810-13 (1997).

46. T. Wakayama et al., *Full-Term Development of Mice from Enucleated Oocytes Injected with Cumulus Cell Nuclei*, 394 NATURE 369 (1998). See also Gina Kolata, *In Big Advance, Cloning Creates Dozens of Mice*, N.Y. TIMES, July 23, 1998, at A1.

47. Wakayama et al., *supra* note 46, at 371 (announcing that 7 of 287 embryos introduced into "foster mothers" produced live clones).

48. Gina Kolata, *Japanese Scientists Clone a Cow, Making Eight Copies*, N.Y. TIMES, Dec. 9, 1998, at A8.

nificantly higher in the Japanese experiment.⁴⁹ This third successful cloning of an animal is also significant because it is a cloning of a different species.

Scientists in South Korea claim to have successfully cloned a human cell.⁵⁰ The embryo was not allowed to develop past a four cell stage, raising widespread doubts in the scientific community as to whether the transferred nucleus had been successfully reprogrammed.⁵¹ The clear scientific implication of these cloning experiments is that the successful cloning of a human body may be far less remote than originally thought possible.

The potential benefits of cloning are numerous. The cloning process can be used to create livestock which produce biological proteins to aid humans suffering from various diseases. Animals could be produced with organs for human transplant that would not be rejected by recipients.⁵² Humans suffering from certain ailments that would require cell donation (such as leukemia) would be able to donate cells to themselves.⁵³ Finally, this technology potentially offers alternative reproductive possibilities. As cloning is simply an asexual type of reproduction,⁵⁴ it could provide a means for individuals with gametic failure, single-sex female couples, and single women to have a genetic connection with their offspring.⁵⁵ The use of cloning for these purposes can be seen as another form of assisted reproduction, much like in vitro fertilization.

When considering the potential use of cloning technology to aid in human reproduction, it is important to note that the sharing of genes is not the only factor involved in the development of an individual human being. According to Dr. Lee Silver, “[p]eople who simply share the same set of genes are not clones of each other as the word is commonly used and understood.”⁵⁶ While DNA plays an important

49. *Id.* (noting that “80 percent of the embryos transferred to surrogate mothers survived until birth.”).

50. Sheryl WuDunn, *South Korean Scientists Say They Cloned a Human Cell*, N.Y. TIMES, Dec. 17, 1998, at A12.

51. *Id.*

52. CLONING HUMAN BEINGS, *supra* note 19, at 30.

53. Wilmut, *Potential Benefits of Cloning*, *supra* note 6.

54. Lee M. Silver, Comments at the New York University Journal of Legislation and Public Policy Symposium, *Legislating Morality: The Debate over Human Cloning* (Nov. 19, 1999) (transcript on file with the *New York University Journal of Legislation and Public Policy*) (countering Professor Annas, *supra* note 36, that cloning is not replication, but in fact reproduction).

55. John A. Robertson, *Two Models of Human Cloning*, 27 HOFSTRA L. REV. 609, 638 (1999).

56. Silver, *supra* note 54.

role in guiding the development of the human body, it is impossible to predict how a cloned child will end up as an adult individual.⁵⁷ The unique social setting and physical and emotional experiences of a “cloned” child will contribute greatly to its development and ensure that the child will have individual “interests and identity.”⁵⁸ If adequately counseled and prepared, those infertile parents who choose cloning as the means of having a genetically related child will likely be committed to positively influencing the “child’s unique identity” and autonomy despite the genes they share.⁵⁹

Regardless of one’s views or philosophy, single women who choose to bear and raise a child on their own and single-sex families are a reality in modern society, and their needs must be addressed in terms of legal and reproductive rights.⁶⁰ For many adult human beings, the “desire to have and raise” a biologically related child is extremely powerful and instinctive.⁶¹ Cloning techniques could give both single women and lesbian couples a genetic connection without the involvement of a male gamete, thus freeing them of the potential medical and legal problems attached to the involvement of an unknown set of genes. Unless a cloning technique can be used, both lesbian couples and single women would face the problematic choice of which male gamete to involve in the creation of a child. For the lesbian couple, reproductive cloning would allow each partner to be biologically-related to the child,⁶² which raises the issue of whether a woman’s desire to have a genetically related child without male involvement is within her procreative rights.⁶³

Research into the process should be allowed to continue in order to provide scientific resources, such as cell lines, and to strive toward a safe level of regulated human reproductive cloning. The high cost of cloning, brought about by the need to conduct so many fusion of nu-

57. *Id.*

58. Robertson, *Two Models of Human Cloning*, *supra* note 55, at 623-24.

59. *Id.* at 624.

60. *See, e.g.*, Baker v. State, 744 A.2d 864 (Vt. 1999) (holding that exclusion of same-sex couples from benefits and protections incident to marriage under state law violated Vermont’s constitution); E. Donald Shapiro & Lisa Schultz, *Single-Sex Families: The Impact of New Birth Innovations Upon Traditional Family Notions*, 24 U. LOUISVILLE J. FAM. L. 271 (1985).

61. Lee M. Silver & Susan Remis Silver, *Confused Heritage and the Absurdity of Genetic Ownership*, 11 HARV. J.L. & TECH. 593, 595 (1998).

62. Robertson, *Two Models of Human Cloning*, *supra* note 55, at 635 (“One [partner] provid[es] the nuclear DNA and the other cytoplasm and mtDNA, with either one of them gestating”).

63. *See id.* at 634-36 (arguing that lesbian cloning to establish genetic connection to child is analogous to reproductive failure because sexual reproduction is not feasible).

clei and host eggs,⁶⁴ mandates that the process be perfected. The technology is not yet at a level to allow safe and viable human reproduction.

Additionally, Congress must consider not only public policy, but also a Constitutional right guaranteeing freedom for the dissemination of scientific ideas.⁶⁵ Scientists and scholars have argued that the First Amendment “provides some degree of protection to ‘scientific research’ or ‘scientific inquiry.’”⁶⁶ In cases involving the First Amendment protection of political, artistic, and literary speech, the Supreme Court has recognized “the value of scientific freedom” and the importance of a “free flow of scientific ideas.”⁶⁷ However, the First Amendment issue regarding government regulation of scientific experimentation has never been directly addressed by the courts.⁶⁸

64. See Wilmut et al., *supra* note 45, at 810.

65. Lori B. Andrews, *Is There a Right to Clone? Constitutional Challenges to Bans on Human Cloning*, 11 HARV. J.L. & TECH. 647, 661-64 (1998) (exploring possibility that ban on human cloning may unduly interfere with right of scientific inquiry); Richard Delgado & David R. Millen, *God, Galileo, and Government: Toward Protection for Scientific Inquiry*, 53 WASH. L. REV. 349 (1978) (exploring colonial foundations of protection of scientific inquiry and its constitutional protections); Christine L. Feiler, *Human Embryo Experimentation: Regulation and Relative Rights*, 66 FORDHAM L. REV. 2435, 2447 (1998) (discussing constitutional foundations of right to scientific inquiry); Michael J. McDaniel, Note, *Regulation of Human Cloning: Implications for Biotechnological Advancement*, 32 VAL. U. L. REV. 543, 567-68 (1998) (“While it is unclear whether the right to privacy includes the freedom to clone, if cloning is treated as a fundamental right, the courts would apply the strict scrutiny standard in considering any governmentally imposed regulation of human cloning.”).

66. Gary L. Francione, *Experimentation and the Marketplace Theory of the First Amendment*, 136 U. PA. L. REV. 417, 418-19, 426-31 (1987); see Ira H. Carmen, *Should Human Cloning Be Criminalized?*, 4 J.L. & POL. 745, 752 (“Scientific inquiry, including genetic engineering, implicates First Amendment freedom of expression values.”); Michael D. Davidson, Note, *First Amendment Protection for Biomedical Research*, 19 ARIZ. L. REV. 893 (1978) (focusing upon governmental interference with free exercise of scientific research); Matthew B. Hsu, Note, *Banning Human Cloning: An Acceptable Limit on Scientific Inquiry or an Unconstitutional Restriction of Symbolic Speech?*, 87 GEO. L.J. 2399, 2400 (1999); see generally James R. Ferguson, *Scientific Inquiry and the First Amendment*, 64 CORNELL L. REV. 639, 644 (1979) (“[R]esearch enterprise of scientists has a first amendment importance because it is essential to the ability of individuals to engage in scientific expression.”).

67. Hsu, *supra* note 66, at 2406; see, e.g., *Roth v. United States*, 354 U.S. 476, 484 (1956) (noting Founders’ belief in necessity of scientific thought); *Sweezy v. New Hampshire*, 354 U.S. 234, 250 (1954) (“Teachers 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.”). But see, e.g., *Margaret S. v. Edwards*, 488 F. Supp. 181, 220-21 (E.D. La. 1980) (noting that fetal experimentation *in utero* is not fundamental right).

68. Francione, *supra* note 66, at 521; see Jean Macchiaroli Eggen, *The “Orwellian Nightmare” Reconsidered: A Proposed Regulatory Framework for the Advanced Reproductive Technologies*, 25 GA. L. REV. 627, 653-57 (1991) (discussing Supreme

Among the arguments in favor of First Amendment protection of scientific experimentation is the “marketplace model,”⁶⁹ which suggests that the best scientific solution will result from the free flow of ideas into the marketplace. In the case of scientific research, facts which are introduced into the marketplace and have been through scholarly scientific testing are instrumental to the process of scientific discovery.⁷⁰ Once scientific facts are disseminated into the marketplace, other scientists can further test and challenge the ideas, leading to the expansion of scientific knowledge.⁷¹

Unique to the scientific process, experimentation is an essential part of the development and expression of scientific ideas,⁷² and must therefore be granted protection. If experimentation (in this case cloning) can be seen as either “expressive conduct” or “symbolic speech” then it may be protected under the First Amendment.⁷³ Hence, regulations that would inhibit scientists’ ability to discuss and express ideas may be prohibited by the First Amendment.

Congress must carefully draft legislation that will allow the research to continue. It is premature to legislatively ban cloning research and to criminalize cloning.⁷⁴ Thus far, Congress’ proposed legislation has followed the specific recommendations of the National

Court decisions that could lead to protection of scientific inquiry under First Amendment).

69. THOMAS I. EMERSON, *THE SYSTEM OF FREEDOM OF EXPRESSION* 6-7 (1970); Francione, *supra* note 66, at 422-23; see Delgado & Millen, *supra* note 65, at 365-66 (discussing “attainment of truth” as goal of scientific inquiry); Ferguson, *supra* note 66, at 647 (“[S]cientists clearly have strong individual interests in the free exchange of scientific data and ideas.”); see generally John A. Robertson, *The Scientist’s Right to Research: A Constitutional Analysis*, 51 S. CAL. L. REV. 1203 (1978) (exploring foundations of free speech right for scientists).

70. See Francione, *supra* note 66, at 422; see also June Coleman, Comment, *Playing God or Playing Scientist: A Constitutional Analysis of State Laws Banning Embryological Procedures*, PAC L.J. 1331, 1367-68 (1996) (discussing historical protection courts have given scientific research).

71. See Hsu, *supra* note 66, at 2407.

72. See Robertson, *The Scientist’s Right to Research*, *supra* note 69, at 1217-18 (arguing benefits of research as step in dissemination of knowledge).

73. See *Barnes v. Glen Theatre*, 501 U.S. 560, 565-67 (1991); see also Hsu, *supra* note 66, at 2406 (explaining that Supreme Court has suggested that scientific expression has value to society worthy of First Amendment protection).

74. See John A. Robertson, *Human Cloning: Should the United States Legislate Against It?*, A.B.A. J., May 1997, at 80, 81; see also John A. Robertson, Comments at the New York University Journal of Legislation and Public Policy Symposium, *Legislating Morality: The Debate over Human Cloning* (Nov. 19, 1999) (transcript on file with the *New York University Journal of Legislation and Public Policy*).

Bioethics Advisory Commission.⁷⁵ The Commission recommends a federally legislated prohibition of any attempt, “whether in a research or clinical setting, to create a child through somatic cell nuclear transfer cloning.”⁷⁶ The Commission qualifies this ban with the recommendation “that such legislation include a sunset clause to ensure that Congress will review the issue after a specified time period (three to five years) in order to decide whether the prohibition continues to be needed.”⁷⁷ If this legislation is drafted carefully, it should not require a full prohibition or a sunset clause. An even more extreme position was advanced by the Human Cloning Prohibition Act that Congress failed to pass in February 1998, which would have criminalized somatic cell nuclear transfer research thus halting potentially beneficial discoveries.⁷⁸ “[I]n their haste to pass federal legislation,” the drafters created legislation with “significantly adverse implications.”⁷⁹

Although Congress has made considerable strides in its initial proposal for legislation, it must draft that legislation with sufficient room to allow scientific innovation and discovery. Many people are currently in need of the assistance that this technology can provide. The future benefits of cloning cannot be ignored. Current negative public opinion stems from “exaggerated or mistaken ethical concerns and an unthinking reflexive fear of cloning.”⁸⁰ We cannot let quasi-moral and religious objections, based on fears and misconceptions, stop a technique that could help so many members of our population. That would be truly immoral!

75. See CLONING HUMAN BEINGS, *supra* note 19, at iv (outlining proposed legislative response); see Cannon & Haas, *supra* note 5, at 641 (detailing legislative initiatives to regulate cloning).

76. CLONING HUMAN BEINGS, *supra* note 19, at iv.

77. *Id.*

78. See Cannon & Haas, *supra* note 5, at 641 (discussing Human Cloning Prohibition Act, S. 1601, 105th Cong. (1998)).

79. *Id.* at 638.

80. Lawrence Wu, Note, *Family Planning Through Human Cloning: Is There a Fundamental Right?*, 98 COLUM. L. REV. 1461, 1514 (1998).