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Suzanne H. Rhodes

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# The Difficulty of Regulating Reproductive and Therapeutic Cloning: Can the United States Learn Anything from the Laws of Other Countries?

Suzanne H. Rhodes\*

## I. Introduction

Sometime this year, Dr. Panayiotis Zavos expects that he and his team of scientists will be able to impregnate a woman with a clone.<sup>1</sup> Dr. Zavos is a fertility expert from Lexington, Kentucky who advocates cloning as a method to help infertile couples have children.<sup>2</sup> While testifying in front of the United States House of Representatives Subcommittee on Criminal Justice, Drug Policy and Human Resources in March 2002, Zavos advised that legislators should not try to turn back the clock by banning cloning because the genie is already out of the bottle.<sup>3</sup> He is not alone; other doctors and reproductive cloning advocates worldwide are actively pursuing the goal of cloning a human being as soon as possible. Despite the staunch advocacy of a few, most people are opposed to reproductive cloning either because of moral reasons or a fear that scientists know too little about cloning to begin experimenting with humans.<sup>4</sup>

An important development was announced on November 22, 2001, when a Massachusetts firm, Advanced Cell Technology (ACT), reported

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\* J.D. Candidate, The Dickinson School of Law of The Pennsylvania State University, 2003.

1. MSNBC NEWS, *Genie Out of the Bottle on Cloning*, at <http://www.msnbc.com/news/752767.asp> (last visited October 15, 2002).

2. See Dr. Panayiotis Zavos, *Testimony Before House Subcommittee on Criminal Justice, Drug Policy and Human Resources* 1 at <http://www.reproductivecloning.net/zavos.pdf> (last visited October 15, 2002).

3. *Id.* at 8.

4. Cf. Jeffrey M. James & Joseph Carrol, *Americans Oppose Idea of Human Cloning*, GALLUP NEWS, Dec. 6, 2001, at <http://www.gallup.com/poll/releases/pr011206.asp> (last visited Jan. 17, 2002) [hereinafter *Gallup poll*].

that they had cloned a human embryo.<sup>5</sup> That same day, President Bush made his position on cloning humans clear; he opposed all cloning including the type of embryo cloning that ACT reported.<sup>6</sup> When the report was published, a bill prohibiting human cloning had been passed in the U.S. House of Representatives and was awaiting consideration in the Senate.<sup>7</sup> Under the pending bill, the procedure ACT employed would be prohibited and violators would be subject to a prison term or fine.<sup>8</sup>

This comment will explore the recent legal trends in human cloning. First, the comment will examine the background information necessary for understanding the issue, including an overview of the history of cloning, the science of cloning, and recent developments in cloning. Next, cloning legislation in the United States and the cloning laws abroad, will be explored. This analysis will include an examination of why the United States has tried and failed to pass a federal cloning ban.<sup>9</sup> Furthermore, this comment will address whether recently passed laws of other countries can provide guidance to lawmakers in the United States. Finally, this comment suggests types of laws that would be most effective in addressing this difficult issue.

## II. Background

### A. History

Cloning has been a salient international issue since the mid-nineteen

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5. CNN News, *Human Embryo Created Through Cloning*, Nov. 26, 2001, at <http://www.cnn.com/2001/TECH/science/11/25/human.embryo.clone/index.html> (last visited Nov. 26, 2001)[hereinafter *Embryo Created*]. The term “embryo cloning” is misleading because multiple copies of embryos were not made, as the phrase would imply, instead the nucleus was removed from an egg and the empty egg was injected with a somatic cell, or cell from the body, of a donor. The egg then developed into an embryo. BBC NEWS, *Q & A Therapeutic Human Cloning*, Jan. 23, 2001 at [http://news.bbc.co.uk/hi/english/sci/tech/newsid\\_859000/85972.stm](http://news.bbc.co.uk/hi/english/sci/tech/newsid_859000/85972.stm) (last visited Nov. 25, 2001).

6. *Embryo Created*, *supra* note 5.

7. *Id.*

8. The Human Cloning Prohibition Act of 2001, H.R. Con. Res. 2505, 107th Cong.(2001).

9. Although there is no federal cloning ban, the Food and Drug Administration (FDA) has asserted that cloning is subject to the regulation of the FDA. It is uncertain, but doubtful, that the FDA actually has authority over cloning experimentation. The FDA argues that human embryos are drugs under the definition in the Food, Drug, and Cosmetic Act. The act defines drug as “articles (other than food) intended to affect the structure or any function of the body.” The FDA asserts that embryos are articles that are intended to affect the structure of a woman’s body by making her pregnant. See Rick Weiss, *Legal Barriers to Human Cloning May Not Hold Up*, WASH. POST, May 23, 2001, available at <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A61636-2001May22>. (last visited Jan. 17, 2002).

nineties. In 1997, the public became more aware of the issue when Dr. Ian Wilmut successfully cloned the first mammal from an adult body cell at the Roslin Institute in Scotland.<sup>10</sup> Dr. Wilmut cloned a sheep using the nuclear transfer technique in which he transferred a nucleus of a mammary cell from one adult sheep into an enucleated egg cell of another sheep, which resulted in Dolly, the world-famous cloned sheep.<sup>11</sup>

Dolly's creation led to much public discourse and speculation; if scientists could clone sheep, then a human being might not be far behind. In response, President Clinton declared a moratorium on federal funding for human embryo research.<sup>12</sup> Privately funded organizations were asked to cease their efforts in cloning research until the implications were better understood.<sup>13</sup> The President also asked the National Bioethics Advisory Commission to look into cloning issues and make a report of their findings.<sup>14</sup>

Despite all of the debate, the legal response has been slow and unsatisfying. Congress has repeatedly grappled with the issue, but has not yet been able to pass a federal ban. California,<sup>15</sup> Rhode Island,<sup>16</sup> Michigan,<sup>17</sup> and Louisiana<sup>18</sup> have passed cloning bans. The California<sup>19</sup> and Rhode Island<sup>20</sup> bans sunset in 2002 while the Michigan<sup>21</sup> and Louisiana<sup>22</sup> bans are permanent. California has significantly relaxed its position.<sup>23</sup> In September of 2002, the governor signed a bill promoting stem cell research, including research conducted on stem cells extracted from cloned embryos.<sup>24</sup>

The response from international organizations has been more responsive and decisive. The European Union has condemned human

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10. See Ian Wilmut et al., *The Second Creation: Dolly and The Age of Biological Control* 5-6 (Farrer, Straus and Giroux 2000).

11. *Id.* at 3.

12. CNN News, *Clinton Bars Federal Funds for Human Cloning Research*, March 4, 1997, at <http://www.cnn.com/TECH/9703/04/clinton.cloning/> (last visited Jan. 10, 2002). [hereinafter *Clinton Bars Federal Funds*].

13. *Id.*

14. *Id.*

15. CAL. HEALTH AND SAFETY CODE § 24185 (Deering 2001).

16. R.I. GEN LAWS § 23-16.4-2 (2000).

17. MICH. COMP. LAWS § 750.430a (2001).

18. LA. REV. STAT. ANN. § 40:1299.36.1 (West 2001).

19. *Supra* note 15.

20. *Supra* note 16.

21. *Supra* note 17.

22. *Supra* note 18.

23. See generally Emma Young, *California Challenges US Stem Cell Rules*, September 23, 2002, at <http://www.newscientist.com/hottopics/cloning/cloning.jsp?id=ns99992830> (last visited October 15, 2002). Lawmakers hope to attract stem cell researchers to California and are accepting research proposals.

24. *Id.*

cloning,<sup>25</sup> along with the Council of Europe.<sup>26</sup> The United Nations is also currently working on an international treaty to ban reproductive cloning.<sup>27</sup> France, Germany, Britain, Italy, Austria, Denmark, and Finland have already passed laws prohibiting human cloning.<sup>28</sup> Japan<sup>29</sup> and South Korea<sup>30</sup> have passed similar bans.

Although making laws is never a quick or easy process, developing cloning laws presents a set of unique problems to lawmakers. Legislating cloning requires some understanding of the scientific processes, which are complicated and unfamiliar to most legislators. Some scientists advocating cloning seek to create a duplicate of an organism, while others seek to treat disease or create new tissue or organs. A total ban on human cloning would prevent all procedures, including those aimed at treating disease.

There are aggressive lobbyists on both sides. Some oppose all cloning because cloning techniques inevitably result in the destruction of human embryos and; thus, devalues human life.<sup>31</sup> Others believe that cloning research should go forward because of the possible benefits for the sick, such as generating skin for burn victims or organs for patients awaiting transplants.<sup>32</sup> There has been a distinction drawn in common terminology; cloning for the purpose of medical treatment is referred to as therapeutic cloning, while cloning for the purpose of duplicating human beings is referred to as reproductive cloning. There are other terms used to describe the process aimed at treating disease, such as

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25. See *European Union: Charter of Fundamental Rights of the European Union*, 40 I.L.M. 266, 267 (2001).

26. See *Council of Europe: Draft Additional Protocol to the Convention on Human Rights and Biomedicine on the Prohibition of Cloning Human Beings*, 36 I.L.M. 1415, 1417 (1997).

27. Damien Carrington, *South Korea Bans all Human Cloning*, September 25, 2002, at <http://www.newscientist.com/hottopics/cloning/cloning.jsp?id=ns99992847> (last visited October 15, 2002) [hereinafter *South Korean Ban*].

28. Gregory Katz, *Europe's Cloning Opponents Aim to Make Research Tough*, DALLAS MORNING NEWS, Aug. 12, 2001, at [http://www.dallasnews.com/science/44324\\_cloning\\_12int.html](http://www.dallasnews.com/science/44324_cloning_12int.html) (last visited Oct. 19, 2001).

29. EUBIOS JOURNAL OF ASIAN AND INTERNATIONAL BIOETHICS, *The Law Concerning Regulation Related to Human Cloning Techniques and Other Similar Techniques*, (2000) at <http://www.biol.tsukuba.ac.jp/~macer/eclone.pdf> (last visited Nov. 25, 2001)[hereinafter *Japanese Law*].

30. See *South Korean Ban*, *supra* note 27. South Korea quickly passed the ban in response to a criminal investigation into a report that a woman was pregnant with a clone. A cult based in the United States claimed to have impregnated a Korean woman. In an editorial piece from a Korean newspaper, one man wrote, "Being the first place for a human cloning birth to happen would be an international disgrace." *Id.*

31. See Ronald Green & Dave Weldon, *Taking Sides: To Forbid or Not*, ABC NEWS, Aug. 6, 2001, at <http://abcnews.go.com/sections/scitech/TakingSides/takingsides11.html> (last visited Jan. 17, 2001)[hereinafter *Taking Sides*].

32. See *id.*

genetic cell replication; however, therapeutic cloning is the commonly used phrase and this comment will continue to use therapeutic cloning.<sup>33</sup>

### B. *The Science of Cloning*

The two types of procedures that can produce genetically identical animals, or maybe humans, are blastomere separation cloning and somatic cell nuclear transfer cloning.<sup>34</sup> In blastomere separation cloning, a developing embryo is split in two shortly after fertilization.<sup>35</sup> This method is similar to the way identical twins develop.<sup>36</sup>

Somatic cell nuclear transfer is a more complicated procedure that developed in the 1980s.<sup>37</sup> Somatic cells are cells of the body.<sup>38</sup> These cells are diploid, meaning that they have two sets of genes, both maternal and paternal.<sup>39</sup> On the other hand, germ cells, eggs and sperm, have a haploid nucleus.<sup>40</sup> Haploid means having only one set of chromosomes, either, maternal or paternal.<sup>41</sup> In somatic cell nuclear transfer, the nucleus is removed from an egg and the empty egg is injected with the diploid nucleus of a somatic cell.<sup>42</sup> Unlike sexual reproduction where a sperm and an egg fuse, there is only one genetic parent.<sup>43</sup> This comment will focus on somatic cell nuclear transfer, which was the method used to create Dolly the sheep.<sup>44</sup>

In Dolly's case, the parent was an adult sheep. Dolly's creation marked an impressive scientific advance because the somatic cell the scientists used was a cell from the udder of an adult sheep.<sup>45</sup> Before this, scientists had thought that somatic cell nuclear transfer could only work when the donor cell was a stem cell taken from an embryo.<sup>46</sup> Stem cells

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33. Senator Arlen Specter, a Republican from Pennsylvania, rejects the term "therapeutic cloning." He believes the term is confusing and misleading. He further asserts that what people commonly refer to as therapeutic cloning is not cloning at all. CNN News, *Democrat Blocks Senate Debate of Cloning Ban*, Nov. 21, 2001, at <http://www.cnn.com/2001/ALLPOLITICS/11/27/cloning.senate/index.html> (last visited Nov. 21, 2002).

34. NATIONAL BIOETHICS ADVISORY COMMISSION, *CLONING HUMAN BEINGS* 14 (June 1997), at <http://bioethics.georgetown.edu/nbac/pubs/cloning1/chapter2.pdf> (last visited Oct. 28, 2001) [hereinafter NBAC].

35. *See id.*

36. *See id.*

37. NBAC, *supra* note 34, at 15.

38. *See WILMUT ET AL, supra* note 10, at 323.

39. *See NBAC, supra* note 34, at 15.

40. *Id.*

41. *See WILMUT ET AL, supra* note 10, at 319.

42. *See NBAC, supra* note 34, at 15.

43. *Id.*

44. *See WILMUT ET AL, supra* note 10, at 3-4.

45. *See WILMUT ET AL, supra* note 10, at 3-4.

46. Somatic cells are cells taken from a person's body. *Id.* at 323.

are cells that are capable of developing into any type of tissue.<sup>47</sup> Because somatic cells become differentiated for specific purposes, it was thought that they could not be used for cloning. The somatic cell nuclear transfer process has not yet been perfected. In the attempt to clone Dolly the procedure was repeated more than two hundred and fifty times before it was successful.<sup>48</sup>

The processes used in therapeutic cloning are similar to the processes used in reproductive cloning. The goal of therapeutic cloning; however, is not to create a human being but to create an embryo from which stem cells can be harvested. These stem cells could potentially be used to develop medical treatments.<sup>49</sup> Therapeutic cloning begins like reproductive cloning.<sup>50</sup> For example, the nuclear transfer technique is performed on an egg and a somatic cell from a living person.<sup>51</sup> The nucleus would be removed from the egg and a somatic cell from a sick patient would be inserted into the egg.<sup>52</sup> The embryo would live for a short period of time, probably less than fourteen days, and then stem cells could be harvested from the embryo.<sup>53</sup> After the stem cells have matured they can be manipulated to develop into a specific type cell; possibly bone marrow for a leukemia patient or skin tissue for a burn victim.<sup>54</sup> These new cells could then be introduced into a failing organ to repair it.<sup>55</sup> The cells would be perfectly matched to the patient, thereby eliminating problems with rejection.<sup>56</sup> Some scientists contend that it may be possible to one day manipulate the cells to develop into a whole organ that could then be transplanted into the patient's body, although this type of treatment is very speculative.<sup>57</sup>

### C. *Recent Developments*

In August of 2001, President Bush gave a speech concerning his position on federal funding for embryonic stem cell research.<sup>58</sup> Many

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47. *Id.* at 16.

48. *See* NBAC, *supra* note 34, at 13.

49. *See* DEPARTMENT OF HEALTH, STEM CELL RESEARCH MEDICAL PROGRESS WITH RESPONSIBILITY, 14 (2000), at <http://www.doh.gov.uk/cegc/stemcellreport.pdf> (last visited Nov. 25, 2001) [hereinafter STEM CELL RESEARCH].

50. *See id.* at 22.

51. *See id.*

52. *See id.*

53. *See id.*

54. *See* STEM CELL RESEARCH, *supra* note 49.

55. *See id.*

56. *See id.*

57. *See id.*

58. President George W. Bush, Remarks by the President on Stem Cell Research (Aug. 9 2001), at <http://www.whitehouse.gov/news/releases/2001/08/20010809-2.html> (last visited Jan. 10, 2002) [hereinafter *President's Speech*].

Americans anxiously awaited the President's decision. The issue received significant media attention and celebrities, including Christopher Reeve and Michael J. Fox, lobbied for funding of stem cell research.<sup>59</sup> Embryonic stem cell research is closely related to therapeutic cloning. The difference being that in therapeutic cloning, the embryos are tailored to be the genetic twin of a sick patient.<sup>60</sup> However, embryonic stem cell research is usually conducted on embryos left over from in vitro fertilization procedures.<sup>61</sup> Not all of the embryos created for women undergoing in vitro treatments are implanted; leftover embryos are stored in laboratories and are eventually destroyed.<sup>62</sup>

The President noted that the decision was a very difficult one.<sup>63</sup> He decided that the federal government will only fund research using the sixty stem cell lines in existence.<sup>64</sup> The government will not fund research that mines stem cells from embryos, even if the embryos would be destroyed anyway.<sup>65</sup>

Another significant development is the announcement by a Massachusetts biotechnology firm, Advanced Cell Technology (ACT), that it cloned the first human embryo.<sup>66</sup> ACT contends that its cloned embryos will only be used for therapeutic purposes.<sup>67</sup> Prior to ACT's development, scientists were unable to make the cells replicate.<sup>68</sup> The results of the project were published, so that ACT advancements enabling cells to replicate would be available to scientists employing the technique for reproductive purposes.<sup>69</sup> It should be noted that ACT's cloned embryo only advanced to a six-cell stage before dying.<sup>70</sup> That stage of development is too early for stem cells to be harvested.<sup>71</sup> Nonetheless, ACT's work seems to indicate that the technology and savvy needed to clone human embryos exists, and a more advanced

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59. CNN Access, *Christopher Reeve on Politics and Stem Cell Research*, July 20, 2001, at <http://www.cnn.com/2001/ALLPOLITICS/07/29/reeve.cnn/> (last visited October 15, 2002). This is the transcript of a conversation between Christopher Reeve and John King on CNN's television program, *Late Edition with Wolf Blitzer*.

60. *Cf. President's Speech*, *supra* note 58.

61. *Cf. id.*

62. *See id.*

63. *Id.*

64. *Id.*

65. *See President's Speech*, *supra* note 58.

66. Rick Weiss, *Mass. Firm's Disclosure Renews Cloning Debate*, WASHINGTON POST, Nov. 27, 2001, available at <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A19225-2001Nov26> (last visited Jan. 17, 2002). *See* note 5 for an explanation of the term cloned embryo.

67. *Id.*

68. *Cf. id.*

69. *Cf. id.*

70. *Id.*

71. *See Id.*



cloned embryo could be created in the near future.<sup>72</sup>

### III. Cloning Laws in the United States and Abroad

#### A. *Legislation in the United States*

Recently a cloning bill was passed in the House of Representatives; another bill was under consideration contemporaneously. An examination of these two bills will provide a useful example of the typical issues and concerns that arise when regulating cloning with legislation. These bills are also good examples of how views regarding cloning often do not fall along the party lines.

##### 1. The Weldon-Stupak Bill

The House of Representatives passed a human cloning prohibition bill by a vote of 265 to 162.<sup>73</sup> Republican Representative David Weldon of Florida and Democrat Bart Stupak of Michigan co-sponsored the bill named the Human Cloning Prohibition Act of 2001.<sup>74</sup> The bill passed on July 31, 2001.<sup>75</sup> There have been over ten bills proposed that should regulate cloning, yet none have been enacted. It is quite possible that the Weldon-Stupak will never be enacted. This flurry of legislation began after Dolly was cloned in 1997.

The Weldon-Stupak bill is simple and conservative; it blocks the production of an embryonic clone.<sup>76</sup> This bill would prohibit therapeutic cloning entirely. The bill does not restrict research using the nuclear transfer technique "or other cloning techniques to produce molecules, DNA, cells other than human embryos, tissues, organs, plants or animals."<sup>77</sup> Fines or imprisonment up to ten years, or some combination of both, are imposed against violators of this proposed law.<sup>78</sup>

Opponents to the bill spoke against it in remarks on the House floor.

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72. Cf. Weiss, *supra* note 66.

73. CNN News, *Democrat Blocks Senate Debate of Cloning Ban*, Nov. 21, 2001, at <http://www.cnn.com/2001/ALLPOLITICS/11/27/cloning.senate/index.html> (last visited Nov. 21, 2002) [hereinafter *Democrat Blocks*].

74. The Human Cloning Prohibition Act of 2001, H.R. Con. Res. 2505, 107th Cong. (2001).

75. *Democrat Blocks*, *supra* note 73.

76. See *id.* § 302. The bill makes it illegal to perform or to attempt to perform human cloning. The bill defines human cloning as, "human asexual reproduction, accomplished by introducing nuclear material from one or more human somatic cells into a fertilized or unfertilized oocyte whose nuclear material has been removed or inactivated so as to produce a living organism (at any stage of development) that is genetically virtually identical to an existing or previously existing human organism." *Id.*

77. *Id.* § 302(d).

78. *Id.* § 302(c).

The opponents were primarily concerned that the bill was too harsh because it eliminated research that could result in “therapeutic” medical advances and could possibly limit stem cell research.<sup>79</sup> Representative Sheila Jackson-Lee criticized the bill for the above reasons and because of the possible criminal penalties for those who engage in cloning for reproductive purposes.<sup>80</sup> The representative especially disliked the imposition of criminal penalties on scientists conducting infertility and stem cell research.<sup>81</sup> Opponents to the Weldon-Stupak bill often identify certain ailments researchers believe could eventually be eliminated by advances in therapeutic cloning, such as Alzheimer’s, Parkinson’s, diabetes, kidney disease, heart disease, stroke, and spinal cord injury.<sup>82</sup> Furthermore, opponents believe that this legislation would stifle potential advances that could obviate the need for organ transplant through regeneration of failing organs or generation of whole organs.<sup>83</sup>

The opponents also addressed ethical considerations of cloning. Jim Greenwood asserted that many supporters of the Weldon-Stupak bill believe that embryos are human life and should not be tampered with.<sup>84</sup> He pointed out that society accepts in vitro fertilization yet in the process of in vitro fertilization many embryos are created which are never implanted and are eventually destroyed.<sup>85</sup> Thousands of unwanted embryos, possibly hundreds of thousands, are destroyed every year.<sup>86</sup> Mr. Greenwood contends that in vitro fertilization is a situation where human desire to have children overcame religious dogma.<sup>87</sup> He asserts that because society has accepted in vitro fertilization, which does result in the destruction of embryos, the point that cloning procedures destroy embryos is moot.<sup>88</sup>

## 2. The Greenwood-Deutsch Bill

In contrast, a less conservative bill was considered at the same time

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79. See CONG.REC. E1527 (extension of remarks Aug. 3, 2001) (statement by Rep. Jackson-Lee). Favoring the Greenwood-Deutsch bill, Rep. Jackson-Lee asserted that the Weldon-Stupak bill would undermine stem cell research. Mr. Weldon addressed the issue in his remarks stating that the bill would have no detrimental effect on such research. *Id.*

80. *Id.*

81. *Id.*

82. See The Human Cloning Prohibition Act of 2001: Hearing Before the Committee of Energy and Commerce, 107th Cong. (2001).

83. See *id.*(statement of Rep. Brown, Member, House Committee on Energy and Commerce).

84. See *id.*(statement of Rep. Greenwood, Member, House Committee on Energy and Commerce).

85. *Id.*

86. *Id.*

87. *Id.*

88. *Id.*

as the Weldon-Stupak bill. The bill was introduced by Republican Jim Greenwood of Pennsylvania and Democrat Peter Deutsch of Florida, but ultimately it did not pass. The Greenwood-Deutsch bill would have banned reproductive cloning but allowed the cloning of embryos for research.<sup>89</sup> This bill looked to the intent of the individual in initiating a pregnancy.<sup>90</sup> The bill contained a provision for the licensing of companies that manufacture embryos.<sup>91</sup> An individual wishing to conduct nuclear transfer technology would have been required to register with the Food and Drug Administration. The individual's information would have been kept confidential.<sup>92</sup> The bill would have sunset in ten years, and contained a provision preempting state law.<sup>93</sup>

Opponents criticized the Greenwood-Deutsch bill because it was too weak.<sup>94</sup> Opponent Pete Sessions of Texas criticized the bill claiming that it would create an industry to manufacture and traffic embryos.<sup>95</sup> He and others further criticized the bill because of the provision that looked to an individual's intent in initiating a pregnancy because such a provision would be difficult to enforce.<sup>96</sup> Mr. Sessions argued that the bill would license the creation of embryos solely for research purposes.<sup>97</sup> He saw the bill as protective of the biotech industry's interests and believed that it would lead to "clonal embryo farming and trafficking in clones."<sup>98</sup> He and other opponents pointed out the difficulty in enforcing the proposed law. Once embryos are cloned, it would be difficult to enforce the provision prohibiting implantation into the uterus.<sup>99</sup>

### 3. Proposed Moratorium in the Senate

Republicans in the Senate attempted to pass a six-month moratorium on cloning by adding an amendment to a popular bill involving railroad retirement.<sup>100</sup> Republicans abandoned the attempt

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89. Cloning Prohibition Act of 2001, H.R. Con. Res. 2608, 107th Cong. (2001).

90. See § 1011(a)(1)(A) The language of the bill is as follows: "it shall be unlawful for any person—(A) to use or attempt to use human somatic cell nuclear transfer technology, or the product of such technology, to initiate a pregnancy or with the intent to initiate a pregnancy." *Id.*

91. See *id.* §§ 1001(a)(1)(A), 1001(c).

92. *Id.*

93. *Id.* at § 2001(g).

94. See CONG. REC. E1509(Aug. 12, 2001)(extension of remarks).

95. *Id.*

96. *Id.*

97. *Id.*

98. *Id.*

99. *Supra* note 94.

100. Helen Dewar, *Energy Cloning Fights Sidetracked*, WASHINGTON POST, Dec. 4, 2001, available at <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A52424-2001Dec3> (last visited Jan. 19, 2002). Attaching unrelated amendments to popular bills is common practice in the Senate. *Id.*

after realizing they did not have the votes to support the anti-cloning amendment.<sup>101</sup> This bill would have halted all cloning for six months until comprehensive legislation could be considered.<sup>102</sup> In the end, the vote was ninety-four to one against adding the cloning amendment to the railroad retirement bill.<sup>103</sup>

## B. Cloning Laws in Other Countries

### 1. Laws of the United Kingdom

Britain has regulated cloning for over a decade.<sup>104</sup> In the Human Fertilisation and Embryology Act, enacted in 1990, Britain banned cloning.<sup>105</sup> The Human Fertilisation and Embryology Authority was created to oversee the implementation of the act.<sup>106</sup> Because of criticism that the existing law was too harsh of an impediment to scientific research, British lawmakers amended the law in January 2001.<sup>107</sup> The amended cloning law has garnered criticism from other European countries because of its liberal policy toward embryo research, which departs from the traditionally conservative approach other European countries have taken in drafting cloning bans. The 2001 law allows for legalized cloning of stem cells from human embryos and permits research for therapeutic purposes.<sup>108</sup>

On November 15, 2001, the British High Court determined that the existing law did not actually outlaw cloning, not even reproductive cloning.<sup>109</sup> A pro-life group challenged the law to demonstrate that the law was wrought with loopholes.<sup>110</sup> The group, Pro-Life Alliance, asserted that the cloning regulations, which were intended to ban reproductive cloning, only applied to embryos created by the union of sperm and egg.<sup>111</sup> The Pro-Life Alliance thought that pointing out the loopholes in the law would encourage Parliament to quickly adopt legislation that would outlaw the somatic cell nuclear transfer technique

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101. *Id.*

102. *Id.*

103. *Id.*

104. Adam Greene, *The World After Dolly: International Regulation of Human Cloning*, 33 GEO. WASH. INT'L. L. REV. 341, 353 (2001).

105. *Id.* at 354.

106. *Id.*

107. *Id.*

108. *See id.*

109. *See generally* BBC NEWS, *Court Backs Cloning Challenge*, Nov. 15, 2001, at [http://news.bbc.co.uk/hi/english/sci/tech/newsid\\_1657000/1657750.stm](http://news.bbc.co.uk/hi/english/sci/tech/newsid_1657000/1657750.stm) (last visited Jan 17, 2002).

110. *Id.*

111. *Id.*

and; therefore, end all cloning.<sup>112</sup>

Parliament intended to update the 2001 revisions to allow for therapeutic cloning prior to the High Court's decision, but Parliament believed the 1990 laws did not need to be otherwise changed.<sup>113</sup> Since 1990, there have been significant advancements in science.<sup>114</sup> Because of advancements in the understanding of cloning, the language of the 1990 law does not apply when an embryo develops after an enucleated egg is injected with a somatic cell.<sup>115</sup> Worried that scientists would exploit the loophole in the British law, Parliament passed emergency legislation.<sup>116</sup> Soon after the High Court's decision, a United States firm, ACT, announced they had cloned the first human embryo; this announcement played a role in Parliament's decision to adopt emergency legislation.<sup>117</sup> Fear of attracting a maverick-cloning advocate who would move in quickly to exploit the absence of a ban also motivated Parliament to adopt the legislation.<sup>118</sup> This decision illustrates how difficult it is for lawmakers to draft laws that fit their intentions, because of the complex science involved with cloning.<sup>119</sup>

## 2. Laws of Japan

Japan has been at the forefront of animal cloning and has made some significant advancements in this area.<sup>120</sup> The Japanese, however, have not as quickly accepted medical advances that concern human beings. For example, it was not until May 2001 that Japan experienced the first birth by a surrogate mother, and only recently were the first organs taken from a patient with no brain activity for transplant.<sup>121</sup> Despite slow public acceptance of Japan's available cloning technology, Japan has adopted a very liberal policy regarding therapeutic cloning while prohibiting reproductive human cloning.

The Japanese Parliament, named the Diet, passed the Human

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112. *Id.*

113. BBC NEWS, *Lords Back Human Cloning Ban*, Nov. 26, 2001, at [http://news.bbc.co.uk/hi/english/uk\\_politics/newsid\\_1677000/1677488.stm](http://news.bbc.co.uk/hi/english/uk_politics/newsid_1677000/1677488.stm) (last visited October 16, 2002) [hereinafter *Lords Back Ban*].

114. *Id.*

115. *Id.*

116. *Id.*

117. *See id.*

118. *See Lords Back Ban*, *supra* note 113.

119. *Cf. id.*

120. *See* Guardian Unlimited, Jonathan Watts, *Japanese to Halt Advance into Human Cloning*, March 8, 2000, at <http://www.guardian.co.uk/international/story/0,3604,230516,00.html> (last visited November 21, 2002).

121. BBC News, *Japan Set to Embrace Stem Cell Research*, August 1, 2001, at <http://news.bbc.co.uk/2/hi/science/nature/1468518.stm> (last visited Nov. 21, 2002).

Cloning Regulation Act (the Act) of November 30, 2000.<sup>122</sup> In the Act, the Diet notes its concern for “human dignity . . . biological safety of the human body, and the maintenance of social order.”<sup>123</sup> Apparently, the Diet feels that almost any research, short of implanting an embryo into a woman’s uterus, poses no threat to these values. The Act prohibits reproductive human cloning by prohibiting the implanting of embryos into the uterus.<sup>124</sup> Nevertheless, general cloning experimentation is allowed.<sup>125</sup> Violators of the Act face imprisonment of up to ten years or a fine of approximately \$93,000 U.S. dollars.<sup>126</sup>

The Japanese legislation is detailed in comparison to the Weldon-Stupak bill. In Article 2, there is an extensive section of definitions pertaining to the specifics of cloning research techniques.<sup>127</sup> Article 3, which lists the prohibited acts, is only one sentence long.<sup>128</sup> Article 4, provides that the Minister of Education, Culture, Sports, Science and Technology will set guidelines when there is a situation where a prohibited type of embryo is transplanted into a uterus or there is some other type of threat to human dignity, bodily safety or social order.<sup>129</sup>

One interesting, and somewhat shocking, aspect of the Japanese Human Cloning Regulation Act is the language regarding human-animal amphimictic embryos<sup>130</sup> and human animal hybrid embryos. Scientists would be allowed to create animal-human embryos as long as the cells used to create the embryo are not from human embryos or fertilized eggs.<sup>131</sup> It is forbidden to implant such an embryo into the uterus of a woman or animal.<sup>132</sup> A Japanese scholar, Masahiro Morioka, expressed his concern that the law permits scientists to do just about anything with

122. *Japanese Law, supra* note 29.

123. *Id.*

124. *Id.*

125. See Jiro Nudeshima, EUBIOS JOURNAL OF ASIAN AND INTERNATIONAL BIOETHICS, *Human Cloning Legislation in Japan*, 2001, at <http://www.biol.tsukuba.ac.jp/~macer/EJ111/ej111b.htm> (last visited Nov. 25, 2001).

126. *Japanese Law, supra* note 29, at 11.

127. See *id.* at 6.

128. *Id.* “No person shall transfer a somatic clone embryo, a human-animal amphimictic embryo, a human-animal hybrid embryo or a human-animal chimeric embryo into the uterus of a human or an animal.” *Id.*

129. *Id.* at 7.

130. *Id.* at 3. A human-animal amphimictic embryo is an embryo produced by having a human germ cell and an animal germ cell fertilize with each other or an embryo produced by having a human enucleated egg and a embryo specified as embryo produced by having a human germ cell and an animal germ cell fertilize with each other or an embryonic cell with a nucleus of an embryo specified as embryo produced by having a human germ cell and an animal germ cell fertilize with each other.

131. EUBIOS ETHICS INSTITUTE DAILY NEWS TOTAL LIST, *Japanese Researchers Allowed to Create Human-Animal Embryos, But Not to Implant*, Nov. 6, 2001, at <http://www.biol.tsukuba.ac.jp/~macer/DAILY/eed58.htm> (last visited Nov. 25, 2001).

132. *Id.*

embryos as long as they are not implanted into the uterus.<sup>133</sup> The scholar feels the Diet was more interested in catching up with the advances that biotechnology companies in the United States have made rather than considering the ethics of the broad legislation.<sup>134</sup> Morioka points out that some of the issues that were part of the legislation, such as human-animals, were not discussed with scientists working in the field of cloning.<sup>135</sup> Furthermore, he asserts that the public would not accept the law if they were made aware of its details.<sup>136</sup>

### 3. Laws of Germany

In 1991, Germany enacted the Embryo Protection Law.<sup>137</sup> This law forbids all genetic research on embryos.<sup>138</sup> More specifically, the law forbids: (1) manipulating germ cells, creating or transplanting into the uterus embryos with the genetic makeup of another embryo, fetus, or human being, either living or dead; and (2) creating or transplanting into an uterus a human-chimera, also referred to as a human-animal hybrid.<sup>139</sup> Violation of the law results in a fine or imprisonment of five years.<sup>140</sup> Probably because of some national anxiety about the shadows of Nazism and eugenics, the Germans were quick to adopt a conservative policy and were reluctant to adapt to a more moderate policy.<sup>141</sup>

Recently President Gerhard Rau, and Chancellor Johannes Schroeder, were engaged in a debate concerning modifying the Embryo Protection Law.<sup>142</sup> The debate was sparked when the United Kingdom adapted their policy on human cloning early in 2001.<sup>143</sup> President Rau strongly opposes any change in the existing law that would make it easier to conduct cloning research.<sup>144</sup> He is a devout Christian and holds very

133. See Masahiro Morioka, EUBIOS JOURNAL OF ASIAN AND INTERNATIONAL BIOETHICS, *Commentary on Nudeshima*, 2001 at <http://www.biol.tsukuba.ac.jp/~maccer/EJ111/ej111c.htm> (last visited Nov. 25, 2001).

134. *Id.*

135. *Id.*

136. *Id.*

137. THE EUROPEAN CENTRE FOR LAW AND JUSTICE, *France and Germany Seek International Cloning Ban*, at [http://www.eclj.org/news/euro\\_news\\_010823\\_intl\\_cloning.asp](http://www.eclj.org/news/euro_news_010823_intl_cloning.asp) (last visited Nov. 25, 2001).

138. *Id.*

139. A. Bonnicksen, POLITICS AND LIFE SCIENCES, *National and International Approaches to Human Germ-line Gene Therapy*, 1994, at <http://research.mednet.ucla.edu/pmts/Germline/Gov%20Regulation/gralb2.htm> (last visited Nov. 25, 2001).

140. *Id.*

141. John Hooper, GUARDIAN UNLIMITED, *Germany Fears a "Master Race"*, May 22, 2001, at <http://www.guardian.co.uk/genes/article/0,2763,494737,00.html> (last visited Nov. 25, 2001) [hereinafter *Germany Fears*].

142. *Id.*

143. *Id.*

144. *Id.*

strict views opposing human cloning.<sup>145</sup> He fears cloning could result in people engineering their children and the re-emergence of eugenics.<sup>146</sup> Chancellor Schroeder, though, calls for a change in the existing law to allow for medical advances and economic advancement.<sup>147</sup> He advocates stem cell research and therapeutic cloning and would like to see Germany catch up to other countries in the biotechnology area.<sup>148</sup> Scientists began discussing a loophole in the law that could allow embryos to be imported into Germany for research purposes.<sup>149</sup> Persuaded by Chancellor Schroeder, the German Parliament voted, by a large majority, to allow importation of embryonic stem cells for research with strict government control.<sup>150</sup>

#### IV. Analysis

##### A. *The Need for Emergency Legislation Banning Human Reproductive Cloning*

The United Kingdom, Japan, and Germany all have laws in place that ban human reproductive cloning. The lack of reproductive cloning laws, along with the availability of advanced scientific resources, make the United States a very attractive location for a scientist to undertake human cloning operations. It is important that Congress quickly follow the lead of the United Kingdom, Japan, Germany, and other countries, and put a ban in place that would outlaw human reproductive cloning. The recent advancements that ACT accomplished made it an imminent possibility that a cloned embryo will develop to a stage at which it could be implanted into an uterus. Therefore, the consequences could be serious if Congress fails to pass a human cloning ban soon.<sup>151</sup>

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145. *Germany Fears*, *supra* note 141.

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.*

150. BBC News, *Germany Tightens Stem-Cell Imports*, February 1, 2002, at <http://www.csmonitor.com/2002/0201/p08s01-woeu.html> (last visited October 15, 2002).

151. *Cf.* Rick Weiss, *First Human Embryos are Cloned in U.S.*, WASH. POST, Nov. 26, 2001, at <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contentId=A14231-2001Nov25> (last visited Jan. 17, 2002). Generally supports proposition that ACT made a significant advancement in creating an embryo of only a few cells and that ACT and other researchers who believe that such research could be beneficial will continue experimenting.



## 1. Grounds for Banning Human Reproductive Cloning

### *a. The safety implications of cloning human beings are unknown.*

The long-term health effects of cloned animals are not known. Some cloned animals have experienced unusual health problems that may be associated with their non-traditional origins.<sup>152</sup> For example, it was just recently reported that Dolly has been experiencing arthritis.<sup>153</sup> Dr. Wilmut stated that he may have to consider euthanasia, and that he hopes this puts the nail in the coffin of any ideas to clone human beings.<sup>154</sup> Scientists have noticed other disturbing ailments afflicting cloned animals such as obesity, malformation, and damaged immune systems.<sup>155</sup>

### *b. Public opposition to human cloning.*

Although there is support for therapeutic cloning, reproductive cloning is extremely unpopular. A recent poll by the Gallup organization showed that about nine in ten Americans are opposed to human cloning.<sup>156</sup> The reasons for opposition vary.<sup>157</sup> One of the most popular reasons is religious beliefs.<sup>158</sup> Other reasons cited in the poll include: cloning hinders individuality, cloning could be used for questionable purposes, and cloning is dangerous.<sup>159</sup> There also seems to be a baseless, yet prevalent, idea that cloning is bizarre and distasteful.<sup>160</sup>

### *c. The National Bioethics Advisory Commission's recommendation to ban human cloning.*

The National Bioethics Advisory Commission (NBAC) studied cloning at the request of President Clinton for several years and made reports regarding the use of federal funds for cloning and broader safety issues concerning cloning.<sup>161</sup> Before the commission expired, the Chair of the NBAC, Harold Shapiro, wrote a letter to President Bush.<sup>162</sup> The

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152. BBC News, *Cloned Sheep Has Arthritis*, Jan 4, 2002, at [http://news.bbc.co.uk/1/hi/english/sci/tech/newsid\\_1741000/1741559.stm](http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_1741000/1741559.stm) (last visited Jan 17, 2002) [hereinafter *Cloned Sheep*].

153. *See id.*

154. Camillo Fracassini, *Dolly the Sheep's Creator Admits She May Have to be Put Down*, SCOTLAND ON SUNDAY, Jan. 6, 2002, at <http://www.scotlandonsunday.com/index.cfm?id=18032002> (last visited Jan 17, 2002).

155. *Cloned Sheep*, *supra* note 152.

156. Gallup Poll, *supra* note 4.

157. *Id.*

158. *Id.*

159. *Id.*

160. *Id.*

161. *See Clinton Bars Federal Funds*, *supra* note 12.

162. *See* Letter from Harold Shapiro, Ph.D., Chair, National Bioethics Advisory

letter stated that the NBAC unanimously concluded that, "given the current state of science, any attempt to create a human being through somatic cell nuclear transfer would be terribly premature and unacceptably dangerous."<sup>163</sup> The letter stated that reproductive cloning is risky for cloned children and that cloning is morally unacceptable due to safety concerns.<sup>164</sup> The NBAC's letter encouraged the President to take the researchers plans to clone a human seriously.<sup>165</sup> Mr. Shapiro urged the President to support a prohibition of somatic cell nuclear transfer to create human beings.<sup>166</sup>

President Bush also appointed a group, The President's Council on Bioethics, to look into human cloning.<sup>167</sup> This Council, like the NBAC, concluded that cloning to produce children is unsafe, morally unacceptable, and; therefore, should be banned.<sup>168</sup> The Council was not unanimous on the biomedical research issue.<sup>169</sup> The majority voted for a four-year moratorium on cloning for biomedical research with a federal review of current and projected practices of embryo research, and the minority voted to allow biomedical research with regulation.<sup>170</sup>

*d. Need for consistency of United States' policy with international policies.*

The NBAC recognized the importance of the United States passing a human cloning law that is consistent with other nations and international organizations. Mr. Shapiro noted that a moratorium on human cloning would place the United States in line with the Council of Europe, encourage other countries to do the same, and encourage international cooperation for a solution as was recommended by the G-8 Nations.<sup>171</sup> Some scholars believe that an international regulatory organization would be the most effective way to regulate cloning.<sup>172</sup> As a superpower and leader in science, the United States often sets an

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Commission, to President George W. Bush, 1-2 (Mar. 16, 2001), at [http://bioethics.georgetown.edu/nbac/cloning\\_letter.pdf](http://bioethics.georgetown.edu/nbac/cloning_letter.pdf) (last visited Oct. 28, 2001) [hereinafter Shapiro Letter].

163. *Id.* at 1.

164. *Id.*

165. *Id.* at 1-2.

166. *Id.* at 2.

167. See The President's Council on Bioethics, Human Cloning and Human Dignity: An Ethical Inquiry- Executive Summary, (July 2002), at <http://www.bioethics.gov/cloningreport/execsummary.html> (last visited October 15, 2002).

168. *Id.*

169. *Id.*

170. *Id.*

171. Shapiro Letter, *supra* note 162, at 2.

172. See Greene, *supra* note 104, at 357.

example for other nations to follow. Although the United States clearly has not taken a leading role in cloning laws, it is important that Congress does not flounder over a solution any longer. The delay makes the United States an attractive site for reproductive cloning and presents a weak image of our Congress to the international community. Furthermore, it is important that the United States has a clear position to ensure active participation in shaping an international treaty or forming an international regulatory organization.

*B. A Temporary Moratorium on Therapeutic Cloning as the Most Tempered Solution to a Difficult Issue*

Scientists who believe that therapeutic cloning could result in treatments for sick people cannot be ignored, yet it is important to look at the whole picture. A moratorium on therapeutic cloning for four or five years as the majority of President Bush's Council on Bioethics recommended, is a reasonable solution to the problem.<sup>173</sup> It is possible that in this situation the ends do not justify the means. Congress needs to take time to assess therapeutic cloning issues thoroughly and determine if it is necessary to create human embryos when there are other promising options that may lead to the same types of treatments.<sup>174</sup> It is conceivable that there is little or no added benefit of using embryonic stem cells, rather than umbilical cord cells or somatic stem cells in developing treatments. After some additional studies, scientists should be able to inform Congress if the research conducted on embryos left over from in vitro fertilization shows that embryos have any special potential greater than the potential of umbilical cord cells or adult stem cells. If embryonic stem cell research shows no significant added benefit, then Congress should pass a permanent ban on therapeutic cloning. If there is a benefit to embryonic stem cell research it will have to be weighed against the following grounds for banning therapeutic cloning.

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173. The Australian government appointed a panel to consider stem cell and cloning issues. That panel recommended a three-year moratorium on human cloning. Australia is quite advanced in the areas of genetics and stem cell science. In June the Prime Minister and state premiers will tackle the issue of national policy and will take under consideration the panel's findings and recommendations. See BBC NEWS, *Australia Edges Forward on Stem Cells*, Sept. 21, 2001, at [http://news.bbc.co.uk/1/hi/english/sci/tech/newsid\\_1555000/1555914.stm](http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_1555000/1555914.stm) (last visited Jan. 19, 2002).

174. Cf. President's Speech, *supra* note 58. The president said, "At its core, this issue forces us to confront fundamental questions about the beginnings of life and the ends of science."

1. Grounds for a Moratorium on Therapeutic Cloning

a. *Embryonic stem cells are not the only option for therapeutic treatment research.*

There are other stem cell sources, which include: adult tissue, umbilical cord blood, embryos created for in vitro fertilization, and germ cells or organs of aborted fetuses.<sup>175</sup> Although scientists speculate that embryonic stem cells have special potential, the dimension of the potential is not clear.<sup>176</sup> The choice is not between all or nothing; if the United States chooses to refrain from cloning for therapeutic reasons, the United States is not closing the door on the potential treatments for debilitating diseases.<sup>177</sup>

b. *Egg industry.*

Eggs, or ovum, are necessary ingredients to the somatic cell nuclear transfer process. Recall that a cell from an adult is transferred into a enucleated egg, which develops into the clonal embryo. Samuel Brownback, the Senator who proposed the six-month moratorium on cloning, spoke of this matter on the Senate floor.<sup>178</sup> In order to harvest eggs to be used in the nuclear transfer process, the women must undergo hormone treatments.<sup>179</sup> An evasive surgical procedure is then needed to remove the eggs.<sup>180</sup> Women undergo the hormone therapy and surgery for in vitro fertility treatments, but the procedures are not without health risks. ACT paid women \$4,000 for their eggs to use in nuclear transfer experiments.<sup>181</sup> It is easy to see how such a situation could lead to an exploitative situation for women with low incomes.<sup>182</sup> Senator Brownback believes this will turn eggs into commodities, and this argument has support from conservatives and feminists alike.<sup>183</sup>

c. *Creation of embryos for eventual destruction.*

In therapeutic cloning, scientists create embryos in order to destroy

175. See STEM CELL RESEARCH, *supra* note 49, at 4.

176. See President's Speech, *supra* note 58. Several years ago scientists were very excited about the potential for fetal tissue research but the research has not been as successful as scientists hoped. *Id.*

177. President Bush believes that research on existing stem cell lines, umbilical cords, adult and animal stem cells is promising. He also stated that the government will support these types of research with \$250 million. See *id.*

178. CONG. REC. S12299 (remarks Dec. 3, 2001) (statement by Sen. Samuel Brownback).

179. *Id.*

180. *Id.*

181. *Id.*

182. *Id.*

183. *Supra* note 178.

them so that stem cells can be removed.<sup>184</sup> The destruction of embryos is in conflict with some people's religious beliefs that embryos are human life. These people believe that destruction of embryos is morally reprehensible despite the fact that research may someday result in therapeutic treatments.

*d. The gravity of the issue calls for caution, not concern about being left behind in the scientific community.*

Often it is brought up that if a nation does not support a liberal policy regarding therapeutic cloning that nation will be at a financial disadvantage should other nations succeed in their research. Chancellor Schroeder made this type of argument in support of a more liberal German policy. Also, some people believe that if a nation does not allow scientists to pursue research freely then a "brain drain" will occur and scientists will migrate to places where they can freely pursue their research interests.<sup>185</sup> These types of arguments about financial gain and maximizing scientific resources are convincing in some circumstances but not in this situation. These concerns should be secondary to choosing the path that is really in the best interests of the citizens when considering cloning and destruction of embryos. Furthermore, if the United States had taken a firmer stand, other nations such as Germany and Japan may not have felt threatened to adopt liberal policies.

## V. Conclusion

Congress has a duty to pass a federal ban on human reproductive cloning as quickly as possible. The consequences of the birth of a human clone would be devastating. Such a birth would certainly challenge the moral and ethical notions of most Americans. More importantly, cloning human beings likely is scientifically irresponsible because we do not know enough about cloning in relation to human beings to understand what the consequences could be. What scientists do know is that cloned nonhuman animals often suffer from health problems that may be linked to cloning.<sup>186</sup> Congress has put the issue off long enough, and the United States is now one of the powerful nations lacking a reproductive cloning ban. Every day the potential for a human clone is becoming even more likely; therefore, it is important that Congress shirk their responsibility no longer.

A moratorium on therapeutic cloning would be a reasonable and

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184. *Taking Sides*, *supra* note 31.

185. *Contra* BBC News, *US Warned of Cloning Brain Drain*, August 2, 2001, at <http://news.bbc.co.uk/1/hi/world/americas/1470155.stm> (last visited October 15, 2002).

186. MSNBC News, *Dolly the Cloned Sheep has Arthritis*, Jan. 4, 2002, at <http://www.msnbc.com/news/681969.asp> (last visited Nov. 21, 2002).

tempered solution to a contentious debate. It would be far more difficult to enforce the ban on human reproductive cloning and police scientists if scientists were permitted to clone embryos for biomedical research. It is important to understand that scientists can still progress with promising research into treatments involving stem cells without using somatic cell nuclear transfer to create cloned embryos. If research shows a significant benefit of using embryonic stem cells exists, then Congress can carefully assess those benefits against the negatives of allowing therapeutic cloning. If research shows no advancement in the area of stem cells for use in therapies to treat debilitating diseases, then Congress should adopt a permanent ban on human cloning. Therapeutic cloning should not be accepted because of pressure to make money or pressure to lead in scientific research. The possible consequences are far too serious.

