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Cloning Policy in the United States

American cloning policy is something of a patchwork. There is no federal law prohibiting human cloning; as of today, federal laws and regulations only address funding and other issues indirectly connected to cloning. At the state level, however, there are laws directly prohibiting or explicitly permitting different forms of cloning.

The controversies relating to federal and state cloning policies have focused on three main issues: first, whether different kinds of cloning should be governed differently; second, whether taxpayer dollars should be used to fund cloning-related research; and finally, whether women may be paid by scientists for supplying eggs, and other questions related to the regulation of egg procurement. In this chapter, we survey the efforts of policymakers to regulate cloning in the United States and we analyze some of the relevant legal and constitutional arguments. We begin with an overview of the history of attempts to pass cloning laws at the national level.

Congressional Cloning Legislation

Following the cloning of Dolly the sheep, there was a flurry of legislative activity as members of Congress from both parties sought to restrict the practice of human cloning. None of the proposed bills was enacted into law.

The first congressional effort to prohibit human cloning was introduced in the House of Representatives in early March 1997, just days after the Dolly news broke. Sponsored by Representative Vernon Ehlers (R.-Mich.), the short bill proposed to make it "unlawful for any person to use a human somatic cell for the process of producing a human clone," with violators liable to a civil penalty of up to $5,000.[1] A second bill, introduced in late January 1998 by Senator Ben Nighthorse Campbell (R.-Col.), proposed to make it "unlawful for any person to…clone a human being," whether for research, therapy, or to initiate a pregnancy.[2] The bill would also have made it illegal to "conduct research for the purpose of cloning a human being or otherwise creating a human embryo," suggesting that it would have strictly limited IVF research as well.[3] This bill, too, proposed a civil penalty of up to $5,000.[4] Just a few days later, Senator Dianne

Feinstein (D.-Cal.) introduced a bill that would have made it "unlawful for any person or other legal entity, public or private" to "implant or attempt to implant the product of somatic cell nuclear transfer into a woman's uterus."[5] The bill, which would have sunset after ten years, included a $1,000,000 fine.[6] It also explicitly carved out a protection for the use of human cloning techniques for research or therapy.[7]

None of these bills even came up for a vote in the House or Senate. But their differing answers to the question of how best to restrict cloning prefigured the divide that to this day has prevented any such legislation from achieving enough support to become law. Some bills, generally supported by Republicans, have sought to outlaw the use of cloning techniques whether for research or to produce children. Other bills, generally supported by Democrats, have sought to outlaw the use of cloning to produce children while ignoring or expressly permitting the creation of cloned human embryos for research. As in Feinstein's proposal, these latter bills have usually sought to prohibit not the *creation* of cloned human embryos, but rather the act of transferring cloned embryos to women's uteri. Critics have condemned these as "clone-and-kill" laws, since the only thing researchers could do after creating a cloned embryo if they could not implant it in a womb would be to freeze it in perpetuity or destroy it. Such legal arrangements would, as Gilbert Meilaender pointed out in 2002, "create a class of human beings whose destruction is mandated by law."[8]

Over the years, support for a few cloning bills did not break down along the usual party lines. For example, in 2001, Representative James Greenwood (R.-Penn.) sponsored a bill that would have prohibited cloning-to-produce-children for ten years while permitting registered researchers to engage in cloning-for-biomedical-research; the bill, which garnered support from several Democrats, never came up for a vote.[9] Senator Orrin Hatch (R.-Utah) repeatedly introduced unsuccessful bills that would have banned cloning-to-produce-children but approved, with some restrictions, cloning-for-biomedical-research.[10] His legislation attracted significant support from Senate Democrats but was never voted on. In 2009, Representative Bart Stupak (D.-Mich.) put forth a bill banning both cloning-to-produce-children and cloning-for-biomedical-research; it was cosponsored by sixty Republicans and only two of his fellow Democrats.[11] It, too, never reached the House floor for a vote.

A unique proposal in 2001 by Representative Brian D. Kerns (R.-Ind.) sought to find a middle ground between a complete ban and the so-called "clone-and-kill" measures, stating that, "It shall be unlawful for a person

to engage in a human cloning procedure with the intent of implanting the resulting cellular product into a uterus."[12] Kerns's legislation therefore did not speak to what must be done with cloned embryos—their destruction by scientists would not have been prohibited, but unlike in the "clone-and-kill" bills, their destruction would not have been *required*.

Although President Bill Clinton had called for swift congressional action following the Dolly announcement[13] (and the subsequent declaration of a Harvard-educated physicist that he wanted to open a cloning-based fertility clinic),[14] it was not until July 2001 that either chamber of Congress approved any kind of human cloning ban. Representative Dave Weldon (R.-Fla.) sponsored a bill that would have entirely banned the creation of cloned embryos.[15] It passed in the House by a vote of 265 to 162, with 63 Democrats joining the "yeas" and 19 Republicans voting with the "nays."[16] However, the counterpart to Weldon's bill, drafted by Senator Sam Brownback (R.-Kans.), never made it the Senate floor for a vote.[17] The House passed Weldon's bill once again in 2003, but again the Senate took no action.[18] Attempts by Weldon and Brownback to pass the legislation in 2005[19] and 2007[20] made even less progress.

Meanwhile, bills resembling the one originally proposed by Senator Feinstein (except without the sunset provision) were proposed by Senator Tom Harkin (D.-Iowa) in 2001,[21] Senator Byron Dorgan (D.-N.D.) in 2002,[22] and Representative Diana DeGette (D.-Col.) in 2007.[23] Of these, only DeGette's bill was voted on; it was defeated 204 to 213 in the House.[24]

As of this writing, the most recent congressional bill proposed to address human cloning directly was introduced by Representative Andy Harris (R.-Md.) in May 2013. Like Weldon's proposal, it would prohibit both cloning-to-produce-children and cloning-for-biomedical-research.[25]

Even without specific legislation addressing human cloning, the Food and Drug Administration asserted its regulatory authority over cloning in a 1998 guidance letter.[26] The letter stated that existing federal law gives the FDA jurisdiction over cloning-to-produce-children, and that any researcher wishing to use "cloning technology to create a human being" must apply to the agency for permission—which it would deny, on the grounds that "there are major unresolved safety questions" relating to cloning.[27] The FDA's letter was only addressed to institutional review boards associated with research institutes and medical centers, and it resulted in no follow-up action.

The lack of a comprehensive national policy restricting cloning puts the United States behind the curve compared with many other

countries.[28] In 2002, the German government forbade, "as a matter of principle, the importation and utilization of embryonic stem cells" as well as the derivation of stem cells.[29] A 2004 Canadian law declared, "No person shall knowingly create a human clone by using any technique," and barred payment to providers of sperm, eggs, or embryos.[30] Italy has some of the strictest cloning and embryo laws in Western Europe. It is illegal there to create human embryos for the purpose of research or experimentation, and all embryos created through IVF in Italy are required to be implanted in the recipient mother—thus preventing any leftover embryos from being used in research laboratories.[31] By 2005, over thirty countries around the world had banned all forms of human cloning.[32] That year, the United Nations General Assembly adopted a declaration calling on its member nations to "prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life."[33] The declaration was ratified by 84 countries, including the United States, Mexico, Italy, and Germany. Notable countries to vote against the measure included the United Kingdom, which in 2001 became the first country explicitly to permit (with regulations) cloning-for-biomedical-research;[34] India, where national guidelines for the accreditation of fertility clinics state that "stem cell cloning and research on embryos (less than 15 days old) needs to be encouraged";[35] and South Korea, where women were coerced into donating their eggs for Hwang Woo Suk's fraudulent cloning research.[36]

Proposed language for laws prohibiting cloning in the United States almost always uses a technical definition of human cloning, focusing on restricting specific procedures, in contrast to the more expansive, conceptual definitions often found in other countries. The recent Harris bill, to choose just one representative example, defines the term "human cloning" as

> human asexual reproduction, accomplished by introducing the nuclear material of a human somatic cell into a fertilized or unfertilized oocyte whose nucleus has been removed or inactivated to produce a living organism (at any stage of development) with a human or predominantly human genetic constitution.[37]

Contrast that technical language with Canada's Assisted Human Reproduction law, which makes it a crime to

> create a human clone by using any technique, or transplant a human clone into a human being or into any non-human life form or artificial device.[38]

"Human clone" is defined in the Canadian law as

> an embryo that, as a result of the manipulation of human reproductive material or an *in vitro* embryo, contains a diploid set of chromosomes obtained from a single—living or deceased—human being, foetus or embryo.[39]

This definition does not specify the technique of somatic cell nuclear transfer for prohibition, so the law encompasses other existing cloning technologies like induced twinning, as well as more speculative cloning technologies that might arise in the future.

Embryo Research and Federal Funding

While there are no federal laws that prohibit human cloning, there are some restrictions on the use of taxpayer dollars for cloning and related research. In December 1994, President Clinton used his executive authority to bar federal funding for embryos created specifically for research purposes.[40] Congress followed the next year by passing the Dickey-Wicker Amendment, which prohibited federal funding for "the creation of a human embryo or embryos for research purposes" or for research "in which embryos are created or destroyed."[41] The original text of the Dickey-Wicker Amendment included embryos produced through "cloning" in its funding prohibition; in 1997, the law's language was tweaked to address even more specifically the cloning technique used to make Dolly.[42] The Dolly announcement also prompted President Clinton to send a memorandum to the heads of executive departments and agencies in which he directed that no federal funds "shall be allocated for cloning of human beings."[43]

A congressional effort to write President Clinton's executive policy into law was never voted on.[44] Another legislative approach, which would have prohibited the federal government from entering into any contract whatsoever with organizations that performed cloning-for-biomedical-research in the preceding year, was repeatedly proposed by Representative Ron Paul (R.-Tex.), but it went nowhere.[45]

In 2001, President George W. Bush announced that his administration would permit federal funding of research conducted on human embryonic stem cell lines that had already been derived before his policy was announced.[46] This meant that even if privately funded researchers succeeded in deriving stem cells through cloning, research using those stem cells would have been ineligible for federal funding during the Bush

administration. In 2005 and again in 2007, Congress passed legislation, primarily with Democratic support, that would have overturned the Bush policy and made federal funds available for research on embryonic stem cells (including stem cells derived from privately funded cloning research), but President Bush vetoed both bills.[47]

In March 2009, President Barack Obama put in place a new policy authorizing the director of the National Institutes of Health (NIH) to "support and conduct responsible, scientifically worthy human stem cell research, including human embryonic stem cell research, to the extent permitted by law."[48] In announcing his policy, President Obama stated that cloning-to-produce-children "is dangerous, profoundly wrong, and has no place in our society or any society."[49] A few months later, the NIH spelled out the details of the new policy, including a stipulation that research using stem cells derived from human cloning would not be eligible for government funding.[50] Of course, when President Obama crafted his stem cell funding policy there were no embryonic stem cell lines from cloned embryos, and it was not clear at that time if there ever would be. Their exclusion from eligibility for funding was therefore relatively easy. If, however, a president someday sought to fund research on stem cell lines derived from human embryos created through privately funded cloning, there is at present no legal obstacle preventing such a move.[51]

It is worth noting that the NIH currently has no restrictions on funding for cloning research involving non-human primates. According to the Center for Research Integrity, the NIH gave out over three dozen grants from 1991 to 2004 for cloning-related research on non-human primates.[52] Such research is one of the last steps on the road to cloning humans. Though one of Shoukhrat Mitalipov's close colleagues said in 2004 that "I wouldn't buy the argument that establishing cloning technology in monkeys is going to impact reproductive human cloning technology,"[53] after the 2007 breakthrough that allowed Mitalipov's team to make cloned embryos from adult monkeys, that same researcher declared, "It's proof of principle for human therapeutic cloning"[54]—and indeed this work did provide the foundation for "therapeutic cloning" in 2013. Recall, too, that Mitalipov and his colleagues have also sought to perform "reproductive cloning" with non-human primates, and announced some partial successes in that research in 2010, when they reported that a cloned rhesus monkey embryo developed enough for the scientists to detect a heartbeat before the pregnancy miscarried after 81 days.[55] Each incremental discovery can be understood as bringing us closer to cloning-to-produce-children.

Regulation of Egg Collection

Federal law prohibits the buying and selling of human organs.[56] However, this restriction does not apply to bodily materials such as blood, sperm, and eggs. While blood donors are typically uncompensated, gamete providers are typically compensated by IVF clinics, with egg providers typically paid around $5,000 per cycle.[57]

Two broad questions can be separated regarding egg collection: whether it should be outlawed because of the risks it poses to women, and whether remuneration should be allowed. With respect to the former, Japan fully bans collecting eggs from women because of the risks involved.[58] Most countries, however, permit egg collection for research and reproductive purposes as long as informed consent and other procedural conditions are satisfied.

Regarding the question of whether egg providers ought to be paid, some countries (such as Sweden[59]) prohibit remuneration for egg donation for anything other than direct expenses, and some states (as noted below) similarly prohibit payment when the eggs are used for research rather than reproductive purposes. Additionally, some national and state scientific funding agencies require that funded research be performed only using eggs from donors who did not receive payment for anything other than direct expenses, a policy endorsed by the National Academy of Sciences.[60]

State Policies Related to Cloning

Cloning policies at the state level vary widely, ranging from generous funding for cloning-for-biomedical-research to criminal prohibitions against it to no official policy whatsoever. As we describe in detail in the Appendix to this report, seven states (Arizona, Arkansas, Michigan, North Dakota, Oklahoma, South Dakota, and Virginia) ban all forms of human cloning, while ten states (California, Connecticut, Illinois, Iowa, Maryland, Massachusetts, Missouri, Montana, New Jersey, and Rhode Island) have so-called "clone-and-kill" laws. More than half of the fifty states currently have no laws addressing cloning.

Numbers do not tell the whole story, however, because arcane or unspecific language leaves laws in several states open to interpretation. For example, a 1973 statute in Minnesota would seem to forbid the destruction of cloned human embryos for research. It reads:

> Whoever uses or permits the use of a living human conceptus for any type of scientific, laboratory research, or other experimentation except

> to protect the life or health of the conceptus, or except as herein provided, shall be guilty of a gross misdemeanor.[61]

Although that law is on the books, it is not understood by the state's research community to prohibit embryo-destroying research.[62]

Funding practices also vary widely across the states. Five states (Arizona, Indiana, Louisiana, Michigan, and Nebraska) ban public funding for any kind of cloning research. Some states officially authorize public funding for cloning-for-biomedical-research, such as California (where a 2004 initiative created a ten-year, $3 billion commitment to stem cell research, including cloning-for-biomedical-research)[63] and New York (where the state government has given more than $300 million to fund stem cell research since 2007).[64] Meanwhile, other states have not passed funding bans simply because the legislatures there would be unlikely to approve such expenditures anyway, so a ban would be considered unnecessary. Missouri does not have a permanent statutory ban on funding for cloning research, but since 2007, the legislature has regularly included language in each appropriations bill restricting funding for human cloning.[65]

Oregon, where the first successful human cloning experiments were conducted in 2013, has no laws restricting, explicitly permitting, or funding human cloning.

State laws regarding compensation for egg collection also vary widely, even among states that strongly support cloning-for-biomedical-research. California prohibits compensation beyond reimbursement for direct expenses to women who provide eggs for research.[66] For this reason, publicly funded labs in California have not been able to use the cell lines created by Mitalipov's lab, which paid egg providers up to $5,000.[67] Massachusetts has also adopted a policy that prohibits any payments to women providing eggs for research.[68] New York, by contrast, permits compensation to egg providers in its publicly supported facilities.[69]

As described in the previous sections, opponents of human cloning in the United States have understandably been inclined to pursue a federal law prohibiting cloning nationally. However, it is important to pursue similar laws at the state level as well, in case federal courts strike down federal laws on constitutional or other grounds.

Cloning and the Constitution

Before turning to our policy recommendations in Part Five, it is important to consider the matter of legal and constitutional authority. Prohibiting

private individuals from engaging in scientific or medical activities, even a project as morally unacceptable as human cloning, requires constitutional justification. What provisions of the United States Constitution give the national government power to prohibit cloning-to-produce-children and cloning-for-biomedical-research? We here briefly consider several constitutional mechanisms for prohibiting human cloning and for legislating on human embryo research more generally.

Regulating commerce.

> The Congress shall have Power…To regulate Commerce with foreign Nations, and among the several States…[70]

Congress's broad enumerated power to regulate interstate commerce could be used to prohibit human cloning. That power has been interpreted by the Supreme Court to permit the regulation not only of the "channels" and "instrumentalities" of interstate commerce, but also of "activities that substantially affect interstate commerce."[71] To satisfy the requirement of "substantially" affecting interstate commerce, an activity that Congress wishes to regulate must be economic in nature and must be linked to interstate commerce through a causal chain that is not attenuated.[72] Cloning-to-produce-children would involve transactions with clients; cloning-for-biomedical-research would involve funding (even in nonprofit, educational research settings); both would presumably involve purchases of equipment from out-of-state vendors.[73]

There are precedents under the commerce clause for national regulation of activities related to reproduction. In 1994, Congress passed and President Clinton signed into law the Freedom of Access to Clinic Entrances Act, which restricts the ability of activists to protest near abortion clinics.[74] The U.S. Court of Appeals for the Seventh Circuit upheld the law, rejecting the argument that "Congress lacked authority to regulate activities affecting reproductive health services" and concluding that "the finding that reproductive health facilities are engaged in interstate commerce is rational" since such clinics "obviously purchase, use, and distribute goods from other States."[75] This rationale would also be applicable in the case of human cloning. Another relevant precedent is the Partial-Birth Abortion Ban Act, passed by Congress and signed into law by President Bush in 2003.[76]

Cloning could also be prohibited under Congress's enumerated power to regulate foreign commerce. Although this power has been the subject

of less judicial analysis than the interstate commerce power, "there is little reason to think that the meaning of 'commerce' should change across clauses."[77] While cloning-to-produce-children might not be said to be an activity that substantially affects commerce with foreign nations, cloning-for-biomedical-research, and indeed many other forms of research on human embryos, certainly would: embryonic stem cell lines derived from cloned embryos could be sold or shipped across the country and around the world (as stem cell lines derived from non-cloned sources already are), where they could be used for a variety of medical and commercial purposes.

Conditional funding.

> The Constitution empowers Congress to "lay and collect Taxes, Duties, Imposts, and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States."…Incident to this power, Congress may attach conditions on the receipt of federal funds, and has repeatedly employed the power "to further broad policy objectives by conditioning receipt of federal moneys upon compliance by the recipient with federal statutory and administrative directives."[78]

Another mechanism by which a nationwide prohibition on cloning could be implemented would be for the federal government to withhold certain forms of funding from states that engage in or do not forbid human cloning. Congress has used its spending power in this way to achieve a wide range of policy aims, most famously to create what amounted to a national 55-mile-per-hour speed limit[79] and a national minimum age for purchasing or possessing alcohol.[80] Such restrictions must be in pursuit of the general welfare, must be unambiguous, must be constitutional, must not be coercive, and must be reasonably related to the purpose of the expenditure.[81]

In the case of cloning, Congress could require that the Department of Health and Human Services (HHS) not approve funding through the National Institutes of Health for biomedical research projects in states in which cloning is being practiced or in which cloning or other forms of embryo-destroying research have not been expressly forbidden by law. By limiting the funding restriction to biomedical research through NIH (instead of also restricting funding for state-level work related to the Food and Drug Administration, the Centers for Disease Control and Prevention, or other agencies of HHS), Congress could ensure that the law would satisfy the requirements of not being coercive and of being reasonably related to the expenditure.

Such a law would not guarantee that all states would prohibit human cloning; some might elect to forgo NIH funding in order to continue permitting cloning. But states with major research universities—such as California, which received $3.4 billion from NIH in fiscal year 2014, Massachusetts, which received $2.4 billion, and New York, which received $2.1 billion—might be inclined to prohibit cloning in order to keep the federal dollars flowing.[82] Oregon, where the 2013 cloning experiments were performed, received $300 million from NIH in 2014,[83] a figure likely sufficient for the state's government to consider halting early forays into this unethical area of research.

Intellectual property.

> The Congress shall have Power…To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.…[84]

Congress's enumerated power over the instruments of intellectual property could be used to prohibit patents relating to human cloning, thereby reducing the financial incentive to engage in cloning activities. The United States Patent and Trademark Office (USPTO) is already forbidden, under a measure that has been approved in each congressional appropriations cycle since 2004, from issuing patents "directed to or encompassing" human organisms (including embryos).[85] There has been some confusion about whether this provision might apply to human cloning. Representative Lamar Smith (R.-Tx.) has said that "It's directed at preventing the [USPTO] from approving inventions related to human cloning."[86] But the author of the provision, Representative Dave Weldon (R.-Fla.), has specified that while it prohibits patents directly on human organisms, it "should not be construed" to prohibit patents on "methods for creating, modifying, or treating human organisms, including but not limited to methods for creating human embryos through in vitro fertilization, somatic cell nuclear transfer, or parthenogenesis."[87] Congress could expand this provision by prohibiting USPTO from issuing patents for methods of creating human embryos through cloning techniques like somatic cell nuclear transfer, or even by prohibiting USPTO from issuing patents for *any* methods of creating human embryos. Such a prohibition could also apply to the products of cloning or of embryo-destroying research, including embryonic stem cell lines.

(Interestingly, a recent ruling suggests that specific cloned *animals*, too, may not be patentable. The U.S. Court of Appeals for the Federal

Circuit ruled in 2014 that "Dolly's genetic identity to her donor parents renders her unpatentable," since the cloned sheep is not "markedly different" from sheep found in nature.[88] However, the *method* used to clone Dolly was legitimately patented.[89] In general, the legality of biological patents is governed by a still-evolving body of policy promulgated by the USPTO in response to several court rulings—a complicated subject beyond the scope of this report.)

Prohibiting patents on human cloning methods would likely reduce the incentive for those who might hope to profit from the adoption of cloning by the fertility industry. And prohibiting patents on the products of cloning would likely reduce the incentives to engage in cloning-for-biomedical-research. As of this writing, human embryonic stem cell lines can be patented,[90] and U.S. patents have been granted for embryonic stem cells derived through cloning (including, ironically, the stem cell line falsely claimed to have been derived from cloned embryos made by Korean stem cell fraudster Hwang Woo Suk).[91]

One could argue that prohibiting patents on human cloning methods might have the unintended effect of encouraging some parties to engage in cloning, since they will not have to pay to use others' intellectual property related to cloning. This argument assumes that the cost of licensing patented methods would represent a significant barrier to entering the field, which seems unlikely to us. However, this argument does suggest that the intellectual-property approach to restricting cloning ought to be seen as an addition, not an alternative, to the other approaches described here.

Equal protection.

> [N]or shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.… The Congress shall have power to enforce, by appropriate legislation, the provisions of this article.[92]

The Fourteenth Amendment gives Congress power to enact laws ensuring that states do not deprive "any person" of life without due process, and that states do not deny to "any person" the equal protection of the laws.[93] Since human embryos (cloned or otherwise) are human organisms at the earliest stage of life, and so can arguably be considered "persons" deserving of this protection, Congress could pass laws forbidding the intentional destruction of human embryos by states.[94] Using this power, Congress could prevent embryo-destructive research, including

cloning research, from being conducted in state-operated laboratories and from being conducted with state funds. Congress could also use this power to strike down the "clone-and-kill" laws now on the books in ten states, laws that legally prohibit cloned embryos from being implanted in a woman's uterus, thereby depriving persons of life.

We mention in passing one other possible constitutional mechanism for legislation: the Thirteenth Amendment's prohibition of slavery and involuntary servitude.[95] While not directly relevant to human cloning as it seems likely to develop in the near future, this prohibition could be used as justification for legally proscribing some of the scenarios we described in Part Three, such as the intentional creation of human beings for the purpose of harvesting their organs.

Potential Constitutional Challenges to a National Cloning Prohibition

Supporters of human cloning might claim that a prohibition on cloning violates putative constitutional rights. Here we proleptically address two such potential objections.

Would prohibiting cloning violate a right to "reproductive freedom"? Now that human embryos have been successfully created through cloning, we may be approaching a day—perhaps in just the next few years—when some fertility clinics might choose to offer cloning as a reproductive option to clients, or when would-be parents might request cloning as a reproductive service. In such circumstances, judicial challenges to restrictions on human cloning may become a serious policy matter, so it is worth reviewing previous court decisions that may bear on the question of whether cloning may be protected under a constitutional right to reproductive freedom.

Federal jurisprudence in this area is notoriously contentious. In 1965, the Supreme Court struck down a state contraception ban on the grounds that it violated the "right to marital privacy."[96] A subsequent ruling, also related to contraception, was even more expansive: "If the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child."[97] *Roe v. Wade* in 1973 placed "a woman's decision whether or not to terminate her pregnancy" under the same "right of privacy."[98] In *Planned Parenthood v. Casey*, a 1992 case that reaffirmed the "essential holding" of

Roe, the Court put an individual's decisions over procreative matters in the broadest possible context:

> These matters, involving the most intimate and personal choices a person may make in a lifetime, choices central to personal dignity and autonomy, are central to the liberty protected by the Fourteenth Amendment. At the heart of liberty is the right to define one's own concept of existence, of meaning, of the universe, and of the mystery of human life. Beliefs about these matters could not define the attributes of personhood were they formed under compulsion of the State.[99]

Lower courts have drawn on the Supreme Court's jurisprudence about contraception and abortion (technological ways to not have a baby) in deciding cases related to assisted reproduction (technological ways to have a baby). In the first American court case addressing surrogacy arrangements, the Supreme Court of New Jersey declared in 1988 that "the right to procreate very simply is the right to have natural children, whether through sexual intercourse or artificial insemination."[100] A federal court in Illinois ruled in 1990 that IVF is constitutionally protected, stating "It 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… the right to submit to a medical procedure that may bring about, rather than prevent, pregnancy."[101] In 1991, a federal court in Ohio ruled in favor of a teacher who sued her school district after being fired for using artificial insemination, noting, "A woman has a constitutional privacy right to control her reproductive functions. Consequently, a woman possesses the right to become pregnant by artificial insemination."[102] These and many other precedents are often taken together to suggest that there exists a constitutionally protected right to reproductive freedom; they could be used to support an argument for permitting a right to cloning-to-produce-children.

However, even today reproductive freedom is not unlimited. For example, under current Supreme Court jurisprudence, Congress and the states can enact laws restricting abortion so long as those laws do not impose an "undue burden" on access to abortion.[103] And, in an intriguing analogy to cloning suggested by law professor Lori B. Andrews, we also restrict incest.[104] Incest involves some risk of physical harm to offspring, as well as the confounding and perversion of generational and other familial relationships. Restrictions on cloning-to-produce-children can be defended on both those same grounds.

Would prohibiting human cloning infringe on the "right of scientific inquiry"? Some policymakers and legal analysts have argued that prohibiting cloning-for-biomedical-research would violate an amorphous right under the First Amendment to engage in scientific experimentation.

During the first wave of cloning debates in the late 1990s, Senator Tom Harkin (D.-Iowa) argued that there are no "appropriate limits to human knowledge. None, whatsoever.... To my friends Senator Bond and President Clinton who are saying 'Stop, we can't play God,' I say 'Fine. Take your ranks alongside Pope Paul V, who in 1616 tried to stop Galileo.'"[105] According to law professor R. Alta Charo, some experiments can be protected under the First Amendment. "If the questions you ask and the science you do really challenges or explores cultural or religious or political norms," she has said, "that in itself is an act of rebellion, and this is exactly the sort of thing that fits comfortably in the spirit of the First Amendment."[106] An extreme version of the argument for a constitutionally protected right to research was articulated in 1978, by law professor John A. Robertson. If the First Amendment "serves to protect free trade in the dissemination of ideas and information," he wrote, "it must also protect the necessary preconditions of speech, such as the production of ideas and information through research."[107]

These arguments in favor of a First Amendment right to research conflate science's role as a source of and a way of communicating knowledge with the actions that scientists take in pursuit of knowledge. Some actions can indeed be counted as speech and therefore protected under the First Amendment; they must be "sufficiently imbued with elements of communication," which can be determined by asking whether "an intent to convey a particularized message was present, and [whether] in the surrounding circumstances the likelihood was great that the message would be understood by those who viewed it."[108] It is difficult to imagine cases when scientific research *qua* research could justifiably be considered that kind of expressive conduct. However, as scientist and attorney Steve Keane has argued, the presence of "public or governmental disapproval" could ironically create a situation in which a scientist could claim that engaging in certain kinds of scientific research might qualify as expressive conduct, "with the expression owing its existence to the external factor of public disapproval."[109] Yet (as Keane himself notes), that is not the end of the story: even scientific research that is expressive can be restricted so long as the restriction is "within the constitutional power of the government"; "furthers an important or substantial governmental interest"; the asserted interest is "unrelated to the suppression of free

expression"; and "the incidental restriction on alleged First Amendment freedoms is no greater than is essential to the furtherance of that interest."[110] It is unlikely that any of those criteria could be used to challenge on First Amendment grounds the sorts of proposed laws and regulations prohibiting human cloning that we discuss in these pages.

Finally, it is worth noting that there are already many examples of restrictions on scientific research today, most obviously laws and regulations protecting human research subjects and the welfare of animals used in experiments.[111]

The Moratorium Option and Its Flaws

A measure sometimes suggested for legislating on human cloning—and often suggested as a compromise between doing nothing and passing a law prohibiting cloning outright—is a moratorium set to expire ("sunset") after some length of time. If, the argument goes, a moratorium on all forms of human cloning could be passed, this would put a stop to ongoing research, without the troubling moral consequences of "clone-and-kill" laws that some states have adopted. The distinction between a temporary moratorium and a permanent prohibition is not clear-cut, since Congress can revisit and overturn past laws or can indefinitely renew any temporary moratorium.

Some policymakers may find a cloning moratorium attractive because it would imply that the justification for a prohibition may change in the future. But the most important reasons for outlawing human cloning are not historically relative. The chief arguments against cloning—that it would warp the relationship between the generations and that it is an unjust and destructive exploitation of human life—will not lose their force no matter what scientific or cultural developments take place in the coming years, and the first experimental use of cloning-to-produce-children will always be an unethical form of human experimentation. Furthermore, there is no reason to suppose that we will have better conditions for reasoning about the morality of human cloning in the future than we do today.

Conclusion: Cloning Policy

Despite widespread agreement in the wake of the Dolly announcement that at least cloning-to-produce-children should be prohibited, and despite many efforts from legislators to enact such a prohibition, there is no nationwide prohibition on cloning in the United States. But laws

and regulations prohibiting cloning can be crafted to comport with the Constitution, and to overcome objections related to reproductive freedom and the First Amendment. In the final section of this report, we recommend policies that can be implemented to put a stop to human cloning.