



THE CASE AGAINST BLANKET FIRST
AMENDMENT PROTECTION OF SCIENTIFIC
RESEARCH: ARTICULATING A MORE LIMITED
SCOPE OF PROTECTION

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* J.D., Stanford Law School, 2006. Special thanks are due to Nancy Keane for her unending support, to the editors of the *Stanford Law Review* for their keen eyes and dedication, and to Hank Greely and Eugene Volokh for their guidance and inspiration.

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INTRODUCTION

In November 2004, California voters approved Proposition 71, establishing a state constitutional right to conduct stem cell research.¹ By guaranteeing scientists a right to conduct their research unfettered by government intervention, the state intends to attract an army of researchers who will ultimately boost the state's economy with lucrative stem cell applications. For scientists, the opportunity is especially appealing in light of the \$3 billion in government funding that California has earmarked for stem cell research over the next ten years. Indeed, other states have scrambled to enact similar measures in the hopes of preventing an exodus of scientists to more research-friendly jurisdictions.²

But no state has the power to provide a safe harbor for scientific research if Congress decides to make such research illegal. Rather, the researcher would need to attack the federal ban with an argument grounded in the U.S. Constitution and rely on judicial intervention to overrule Congress. Although due process³ and equal protection⁴ arguments for a scientific right to research have been suggested, the constitutional basis that has received the most attention is the Free Speech Clause of the First Amendment.⁵ Many

1. See CAL. CONST. art. XXXV, § 5. The text of Proposition 71 is available at http://www.ss.ca.gov/elections/bp_nov04/prop_71_text_of_proposed_law.pdf.

2. Editorial, *The Stem Cell Race*, N.Y. TIMES, Mar. 20, 2005, § 14, at 13.

3. See, e.g., Richard Delgado & David R. Millen, *God, Galileo, and Government: Toward Constitutional Protection for Scientific Inquiry*, 53 WASH. L. REV. 349, 392-98 (1978); Roger H. Taylor, *The Fear of Drawing the Line at Cloning*, 9 B.U. J. SCI. & TECH. L. 379, 389-90 (2003).

4. See, e.g., Delgado & Millen, *supra* note 3, at 399-402.

5. See generally Michael Davidson, *First Amendment Protection for Biomedical Research*, 19 ARIZ. L. REV. 893, 918 (1977) (concluding, based on theories of academic freedom and expressive conduct, that "most biomedical research is speech"); Delgado & Millen, *supra* note 3, at 378 (analogizing scientific research to newsgathering and arguing that scientists should receive at least as much free speech protection as journalists); Richard Delgado et al., *Can Science Be Inopportune? Constitutional Validity of Governmental Restrictions on Race-*Q* Research*, 31 UCLA L. REV. 128, 161 (1983) (arguing that scientific inquiry is an essential link in the process of scientific communication and should be protected accordingly); James R. Ferguson, *Scientific Inquiry and the First Amendment*, 64 CORNELL L. REV. 639, 651 (1979) (arguing that restrictions on scientific research would suppress constitutionally protected expression because scientists would be unable to communicate the results of their research); Gary L. Francione, *Experimentation and the Marketplace Theory of the First Amendment*, 136 U. PA. L. REV. 417 (1987) (critiquing the argument that marketplace theory accommodates special First Amendment protection for scientific research); Dana Remus Irwin, *Freedom of Thought: The First Amendment and the Scientific Method*, 2005 WIS. L. REV. 1479, 1481 (relying on "the First Amendment's guarantee of free thought" to argue that scientific experimentation should receive

commentators have painted the First Amendment as an obvious protection for cloning research,⁶ stem cell research,⁷ and even bioweapons research.⁸ In contrast, in its 1997 report, the National Bioethics Advisory Commission claimed that “society recognizes that the freedom of scientific inquiry is not an absolute right and scientists are expected to conduct their research according to widely held ethical principles.”⁹ At least one scholar has implied that there is not even a threshold First Amendment problem with restrictions on scientific research.¹⁰ Unfortunately, however, no court has squarely addressed the issue.

constitutional protection “to the extent necessary to protect the underlying thought”); Barry P. McDonald, *Government Regulation or Other “Abridgements” of Scientific Research: The Proper Scope of Judicial Review Under the First Amendment*, 54 EMORY L.J. 979, 986 (2005) (concluding that “while the ideal of free scientific inquiry has been accepted and respected for much of the past century, it is not a practice or tradition that is so deeply engrained in our political history or culture that the recognition of a special constitutional right would be warranted”); John A. Robertson, *The Scientist’s Right to Research: A Constitutional Analysis*, 51 S. CAL. L. REV. 1203, 1217-18 (1978) (concluding that “[i]f the First Amendment serves to protect free trade in the dissemination of ideas and information, it must also protect the necessary preconditions of speech, such as the production of ideas and information through research”); Roy G. Spece, Jr. & Jennifer Weinzierl, *First Amendment Protection of Experimentation: A Critical Review and Tentative Synthesis/Reconstruction of the Literature*, 8 S. CAL. INTERDISC. L.J. 185, 213, 218 (1998) (arguing that scientific experimentation should enjoy First Amendment protection on the basis that the scientific method fits uniquely within the marketplace of ideas or, alternatively, on the basis that experimentation is “uniquely and powerfully facilitative of highly valued thought”); ABA Section of Individual Rights and Responsibilities, Report and Recommendation to the House of Delegates, Report No. 117B, at 4 (Aug. 2002), available at <http://www.abanet.org/irr/policies/committees/health/0802scientificknowledge.pdf> (claiming that First Amendment protection is warranted for scientific inquiry because such inquiry is “essential to the advancement of knowledge and the discovery of truth”). For a discussion of this issue under Canadian law, see Barbara Billingsley & Timothy Caulfield, *The Regulation of Science and the Charter of Rights: Would a Ban on Non-Reproductive Human Cloning Unjustifiably Violate Freedom of Expression?*, 29 QUEEN’S L.J. 647 (2004), which also discusses international bases for freedom of scientific research. *Id.* at 660-61.

6. See, e.g., Elizabeth Price Foley, *The Constitutional Implications of Human Cloning*, 42 ARIZ. L. REV. 647, 677-87 (2000); Matthew B. Hsu, *Banning Human Cloning: An Acceptable Limit on Scientific Inquiry or an Unconstitutional Restriction of Symbolic Speech?*, 87 GEO. L.J. 2399, 2410-16 (1999); Taylor, *supra* note 3 at 386-89. *But see* Lori B. Andrews, *Is There a Right to Clone? Constitutional Challenges to Bans on Human Cloning*, 11 HARV. J.L. & TECH. 643, 663 (1998) (arguing that “government may regulate the researcher’s methods in order to protect the rights of research subjects and community safety”).

7. See, e.g., Atossa M. Alavi, Note, *The Stem Cell Compromise: A Wolf in Sheep’s Clothing, Constitutional Implications of the Bush Plan*, 13 HEALTH MATRIX 181, 194-202 (2003); June Coleman, Comment, *Playing God or Playing Scientist: A Constitutional Analysis of State Laws Banning Embryological Procedures*, 27 PAC. L.J. 1331, 1360 (1996).

8. See, e.g., Brian P. Anton, *The First Amendment and Scientific Freedom in the Era of Bioterrorism*, 7 J. BIOLAW & BUS., No. 2, at 27 (2004); John A. Robertson, *Bioterrorism and the Right to Research*, 4 NATURE REVIEWS GENETICS 248 (2003).

9. NAT’L BIOETHICS ADVISORY COMM’N, CLONING HUMAN BEINGS: REPORT AND RECOMMENDATIONS OF THE NATIONAL BIOETHICS ADVISORY COMMISSION 6 (1997).

10. See Eugene Volokh, *Crime-Facilitating Speech*, 57 STAN. L. REV. 1095, 1155

An important distinction that needs to be made at the outset is that of scientific research versus scientific expression. The latter includes scientific publishing and communication and is entitled to normal free speech protection.¹¹ In fact, the Supreme Court and lower courts have repeatedly indicated, in dicta, that scientific *works* and scientific *expression* are protected by the First Amendment.¹² Protection of scientific research, on the other hand, is the thornier question.¹³

Scientific research is not mentioned anywhere in the Constitution¹⁴ and has no obvious textual link to the First Amendment, which provides that “Congress shall make no law . . . abridging the freedom of speech, or of the press”¹⁵ Proponents of a First Amendment right to research derive that right from the Free Speech Clause.¹⁶ Yet “speech” under the First Amendment is an elusive term whose meaning has been debated for over 200 years. Advocates on either side of the right-to-research debate can cite leading constitutional scholars to support their position.¹⁷ One scholar has even argued that science might be

(2005) (“There is no First Amendment problem with legislators using . . . moral and ideological perspectives as justifications for restricting what scientists *do* But the government shouldn’t be trusted to use these perspectives as justifications for restricting what scientists *say* about science, any more than for restricting what people say about politics.”) (emphasis added).

11. Some commentators have devoted significant energy to the question of whether scientific expression is subject to First Amendment protection, essentially equating expression with communication. *See, e.g.*, Delgado et al., *supra* note 5, at 156-60. But, as I point out *infra* in Parts II and III, once expression has been identified as communicative, the question is not whether the expression is protected but to what extent. Although the extent of protection is certainly a key component to most of the previous work on this topic, dwelling on whether communicative scientific expression is *prima facie* protected does little to further the analysis. *See infra* Part I.C for examples of traditional forms of scientific communication that might nonetheless be restrictable because of their content.

12. *See Miller v. California*, 413 U.S. 15, 34 (1973) (“The First Amendment protects works which, taken as a whole, have serious literary, artistic, political, or scientific value”); *Roth v. United States*, 354 U.S. 476, 484 (1957) (stating that the First Amendment embraces “[a]ll ideas having even the slightest redeeming social importance,” including the “advancement of truth, science, morality, and arts in general” (quoting 1 JOURNALS OF THE CONTINENTAL CONGRESS 108 (1774))); *Bd. of Trs. of Leland Stanford Junior Univ. v. Sullivan*, 773 F. Supp. 472, 474 (D.D.C. 1991) (“It is . . . settled . . . that the First Amendment protects scientific expression and debate just as it protects political and artistic expression.”).

13. In this Note, the term “scientific research” simply refers to activities that follow the scientific method.

14. The only mention of science, or its derivative words, is in Article 1, Section 8: “The Congress shall have Power . . . [t]o 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” U.S. CONST. art. 1, § 8.

15. U.S. CONST. amend. I.

16. *See supra* note 5.

17. At the expansive end of the speech protection spectrum are Emerson and Meiklejohn. *See* THOMAS I. EMERSON, THE SYSTEM OF FREEDOM OF EXPRESSION 6-7 (1970) (proposing that the First Amendment is designed to protect four expressive freedoms:

entitled to more First Amendment protection than political or literary speech, noting that the framers were men of the Enlightenment, who viewed scientific freedom as essential to democracy.¹⁸

While it is true that the Supreme Court has construed “speech” quite broadly, protecting such things as prescription drug information,¹⁹ the right to make campaign contributions,²⁰ the right to exclude members from an organization,²¹ and the right to burn an American flag,²² the Court has never stated that scientific research falls within the ambit of the Free Speech Clause. The closest the Court has come to such a statement was in *Griswold v. Connecticut*,²³ where the majority noted:

The right of freedom of speech and press includes not only the right to utter or to print, but the right to distribute, the right to receive, the right to read and freedom of inquiry, freedom of thought, and freedom to teach. . . . Without those peripheral rights the specific rights would be less secure.²⁴

In 1969, in *Henley v. Wise*,²⁵ a federal district court construed the “freedom of inquiry” from *Griswold* to mean “the right of scholars to do research and advance the state of man’s knowledge.”²⁶ Based on this interpretation, the *Henley* court struck down a state law that penalized academic researchers for possessing or using obscene materials. But there is a distinct lack of subsequent case law to support this interpretation of *Griswold*’s freedom of inquiry and certainly none higher than at the district court level.²⁷ Moreover, whatever

individual self-fulfillment, advancement of knowledge and discovery of truth, participation in decision making, and achievement of a more adaptable and stable community); Alexander Meiklejohn, *The First Amendment Is an Absolute*, 1961 SUP. CT. REV. 245, 255 (arguing that unfettered access to information and opinion is essential to self-government). At the opposite end of the spectrum is Bork, who argues that “[c]onstitutional protection should be accorded only to speech that is explicitly [sic] political. There is no basis for judicial intervention to protect any other form of expression, be it scientific, literary or . . . obscene or pornographic.” Robert Bork, *Neutral Principles and Some First Amendment Problems*, 47 IND. L.J. 1, 20 (1971).

18. Steven Goldberg, *The Constitutional Status of American Science*, 1979 U. ILL. L.F. 1, 1-7.

19. *Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council, Inc.*, 425 U.S. 748, 763 (1976) (noting that “prescription drug price information” is speech because a consumer’s interest in “the free flow of commercial information” may be “keener by far” than “his interest in the day’s most urgent political debate”).

20. *Buckley v. Valeo*, 424 U.S. 1 (1976).

21. *Boy Scouts of Am. v. Dale*, 530 U.S. 640 (2000).

22. *Texas v. Johnson*, 491 U.S. 397 (1989).

23. 381 U.S. 479 (1965).

24. *Id.* at 482-83 (emphasis added) (citations omitted).

25. 303 F. Supp. 62 (N.D. Ind. 1969).

26. *Id.* at 66.

27. One recent case addresses the chilling effect that litigation could have on the freedom of scientific inquiry if scientists’ results are routinely called into question but does not address the issue of directly regulating scientific inquiry. *See McMillan v. Togus Reg’l Office*, 294 F. Supp. 2d 305 (E.D.N.Y. 2003), *aff’d*, 2005 U.S. App. LEXIS 444 (2d Cir.

precedential value *Henley* has is likely limited to its facts, especially given that the research the trial court was protecting more than three decades ago bears no resemblance to the complex scientific research that might be restrictable today. Because of the changed nature of science since the *Griswold* era, there is reason today to eschew unquestioning approval of all scientific lines of inquiry.²⁸

Until modern courts address the issue directly, we are left with speculation and creative debate over the proper scope of free speech rights with respect to scientific research. But as creative as legal scholars might be, it is the creativity and resourcefulness of modern biologists that is really driving most of the debate. Breathtaking developments in our understanding of human genetics, neuroscience, and pathogen proteomics²⁹ are forcing the legal system to play catch-up, as ethics panels struggle with the implications of new discoveries and potential applications. Stem cell research, including the use of cloned embryos, promises to play a major role in regenerative medicine and will potentially benefit millions of Americans. Likewise, investigation of the structure, behavior, and modification of virulent pathogens may ultimately protect us from bioterrorism. At the same time, however, these areas of scientific investigation carry risks of abuse and demand at least some form of regulation.

This Note explores the question of whether and to what extent scientists are shielded by the First Amendment when government attempts to regulate scientific inquiry. Part I highlights important scientific research that legislatures have attempted to or may wish to restrict. Part I also looks at restrictions on scientific publishing, though the analysis will be confined to that Part, since, unlike research, there is no question about whether such activity qualifies as speech.

Part II sets forth the doctrinal foundation for treating scientific research as speech, using the *Spence* test³⁰ as a threshold for expressive conduct. Despite most prior scholarship to the contrary, I argue that framing scientific research as expressive conduct provides the strongest doctrinal footing for securing a First Amendment right.³¹ This approach has the virtue of not requiring an

2005).

28. Richard Delgado has characterized the perception of science that had arisen even by the late 1970s: “Prompted by concerns over a deteriorating environment, weapons research, and the specter of genetic engineering, and heightened by a growing perception of science and scientists as parts of an amoral, if not immoral, Establishment . . . , a new mood, much more critical of institutional science, developed.” Delgado et al., *supra* note 5, at 129; *see also* NAT’L BIOETHICS ADVISORY COMM’N, *supra* note 9, at 6.

29. Pathogen proteomics is a burgeoning field of study that endeavors to understand pathogen protein content, structures and functions in order to predict virulence level and discover specific signatures for pathogen detection systems. *See* Lawrence Livermore Nat’l Lab., Biodefense Proteomics (last updated Aug. 16, 2005), http://www.llnl.gov/bio/groups/biodefense_proteomics.

30. *Spence v. Washington*, 418 U.S. 405 (1974).

31. Most previous scholarship on this subject has focused on some version of the precondition theory described in Part II.B *infra*. *See, e.g.*, Robertson, *supra* note 5, at 1217-18. Commentators who have supported an expressive conduct theory of First Amendment

independent assessment of what qualifies as scientific research, a judgment that would be fraught with difficulty and bias. Moreover, expressive conduct is firmly rooted in First Amendment jurisprudence and offers predictability over competing theories of protection for scientific research. Part II also discusses two other justifications that commentators have proposed for First Amendment protection of scientific research, both of which I conclude are unpersuasive and misguided in their attempt to secure blanket constitutional protection for scientific research.

Part III explores the circumstances under which government may restrict scientific research that qualifies for prima facie First Amendment protection. Unlike most previous commentators, I argue that the tailoring of a statutory restriction on research as well as the specific governmental interest should be evaluated under the *O'Brien* test, with significant deference to the legislature on the proffered interest but no deference on the adequacy of tailoring.³² Hypothetical statutes discussed in Part III will illuminate the importance of careful drafting in this arena.

Because I conclude that scientific research merits prima facie protection under the First Amendment only when it qualifies as expressive conduct, it becomes inappropriate to discuss a freedom of scientific inquiry, per se. Rather, research that meets the expressive conduct threshold will be treated like any other kind of expressive conduct, subject to either intermediate or strict scrutiny. The importance of the science in a particular case may very well be dispositive, but under existing doctrine, the First Amendment affords no blanket protection to scientific inquiry.

I. WHAT TYPES OF SCIENTIFIC RESEARCH MIGHT SUFFER RESTRICTION?

Intellectual freedom is virtually unquestioned in a liberal democracy such as the United States. But few would argue that the pursuit of knowledge should reign supreme over all other human interests. If the Preamble to the Constitution is any indication, then our highest rung of interests includes

protection for scientific research have been fewer in number and have either adopted the view that all research should be protected, i.e., blanket protection, *see, e.g.*, Foley, *supra* note 6, at 682-83; Hsu, *supra* note 6, at 2411-12, or have argued that expressive conduct theory should protect only conduct that is directly linked to some other form of expressive activity, *see, e.g.*, Spece & Weinzierl, *supra* note 5, at 215; McDonald, *supra* note 5, at 1090. Conversely, I argue in this Note that although expressive conduct theory offers the best foundation for First Amendment protection of scientific research, the protection is warranted only in specific circumstances dictated by existing First Amendment doctrine. The protection is neither limitless nor based on downstream publication. *See* Part II.A *infra*.

32. Commentators who have advocated expressive conduct theory as a means of First Amendment protection for scientific research, *see supra* note 31, have provided insufficient analysis of the four-part *O'Brien* test and its relationship to specific research restrictions and underlying government interests. In addition, previous commentators have provided little or no discussion of the importance of judicial deference in this context.

justice, domestic tranquility, national defense, and general well-being. These goals are essential to democratic self-preservation and implicate human self-preservation as well. Therefore, the fact that we place *some* limits on scientific knowledge, or at least scientific methods of obtaining such knowledge, should not be controversial when more essential interests appear to be threatened. This Part will examine the major areas of scientific research that have been subject to regulatory limits or may face limitation in the near future. I have divided the types of research into two sections: research primarily objectionable on safety grounds and research primarily objectionable on moral grounds. Although many areas of controversial research face both safety and moral resistance, treating the safety and moral objections separately is useful in identifying the interests that the government might offer to justify scientific restriction. Those government interests will be analyzed individually in Part III.

It is worth noting that there are at least two alternative divisions one might choose instead of the safety/moral categorization. First, controversial research could be classified according to whether it involves actual or potential harm. Human experimentation, at least in its extreme form, is objectionable because of the actual harm it causes human subjects. With unrestricted biological weapons research, however, we are worried about potential for harm in the future. Second, research might be restricted because of the methods it uses versus the knowledge it seeks. For example, using mice to study the likely effects of high-energy radiation on the human body may be acceptable, while using children would not be. Objections to human cloning, on the other hand, are less grounded in the particular method of cloning than in the fear of what might happen with cloning knowledge. These alternative categorizations are not as useful as the safety/morality division, but may be helpful in formulating a narrowly tailored restriction for certain types of research.

The issue of restrictions on scientific publishing more directly implicates the First Amendment and will be discussed in Part I.C. The government interests that might support a ban on publishing would likely be the same as those invoked to support a ban on research, so there is no need for a special discussion of that subtopic. Because communication of scientific results is more squarely protected by free speech rights, I will not deal with this issue at any great length. However, there are some unique problems that arise in this context, and they warrant discussion since they cannot be accommodated by existing First Amendment jurisprudence.

A. Research that Is Primarily Objectionable on Safety Grounds

The United States already has a significant body of regulations that restrict what scientists can do. Most, if not all, of these restrictions are based primarily on human safety concerns. Protecting health and safety is the most obvious justification for government regulation, because unlike other possible justifications, such as protecting the environment, promoting the economy, or

preventing immorality, safety and well-being are universal concerns. This Subpart will briefly discuss two examples of scientific research that warrant safety-based regulations: experimentation on human subjects and research that facilitates weapons of mass destruction.

1. *Experimentation on human subjects*

Biological research with human subjects³³ unquestionably provides a great number of benefits, among them effective drugs and safe medical procedures. But due to the nature of medical experimentation, human subjects are vulnerable to exploitation, including physical and mental harm. Federal regulation of human experimentation is codified at 45 C.F.R. § 46 and provides specific guidelines. Most importantly, Institutional Review Boards (IRBs) must approve all government-funded research that involves human subjects.³⁴ The IRBs determine whether proposed research will provide benefits that are reasonable in relation to the risk of harm,³⁵ ensure that informed consent is obtained,³⁶ and ensure that additional safeguards are in place for experiments with potentially vulnerable subjects (e.g., children, prisoners, fetuses).³⁷

A specific area of human experimentation that has a considerable body of case law is fetal experimentation. Courts have confronted challenges to state laws that prohibit or restrict fetal experimentation, and although some courts have found such restrictions valid,³⁸ many courts have invalidated them on the

33. Experimentation on nonhuman animal subjects will not be discussed in this Note, except to point out that regulation of such experimentation is codified at 7 U.S.C. §§ 2131-59 and is enforced by the USDA. For the constitutional arguments pertaining to this type of scientific research, see Thomas G. Kelch, *Animal Experimentation and the First Amendment*, 22 W. NEW ENG. L. REV. 467 (2001), and Gary L. Francione, *The Constitutional Status of Restrictions on Experiments Involving Nonhuman Animals: A Comment on Professor Dresser's Analysis*, 40 RUTGERS L. REV. 797 (1988). Research with nonhuman animals threatens to become much more problematic with the introduction of human-derived chimeras (beings with human and non-human tissue). See Jamie Shreeve, *The Other Stem-Cell Debate*, N.Y. TIMES, April 10, 2005, § 6 (Magazine), at 42. Indeed, one Senate bill seeks to head off the controversy by banning the creation of such chimeras altogether. See Human Chimera Prohibition Act of 2005, S. 659, 109th Cong. (2005).

34. 45 C.F.R. § 46.101(a)(2) (2006). This Note will not discuss, in any detail, the constitutionality of restrictions on research that is government-funded. The two most important cases addressing the relationship between government funding and free speech rights are *Rust v. Sullivan*, 500 U.S. 173 (1991), and *FCC v. League of Women Voters of Cal.*, 468 U.S. 364 (1984); see also *Bd. of Trs. of Leland Stanford Junior Univ. v. Sullivan*, 773 F. Supp. 472, 478 (D.D.C. 1991) ("The *Rust* decision opened the door to government review and suppression of speech and publication in areas which had theretofore been widely thought immune from such intrusion."); Byron V. Olson, Note, *Rust in the Laboratory: When Science is Censored*, 58 ALB. L. REV. 299 (1994).

35. 45 C.F.R. § 46.111(a)(2) (2006).

36. *Id.* § 46.111(a)(4).

37. *Id.* §§ 46.201-06, 46.301-06, 46.401-09.

38. See, e.g., *Wynn v. Scott*, 449 F. Supp. 1302, 1322 (N.D. Ill. 1978) (holding that the

grounds that “experimentation” was poorly defined. For example, in *Forbes v. Napolitano*,³⁹ the Ninth Circuit affirmed a lower court ruling that an Arizona statute was unconstitutionally vague, because the statute provided no guidance as to where the line between experiment and treatment was to be drawn.⁴⁰ Such cases highlight the importance of careful legislative drafting with respect to scientific research restrictions. This issue will be further explored in Part III.

2. *Research that facilitates weapons of mass destruction*

Perhaps the most obvious form of research that poses health and safety risks is that which involves experimentation with nuclear, chemical, and biological weapons. Although most of this research is not geared toward the production of a weapon, the work nonetheless raises serious safety concerns. The U.S. government has long been concerned with the effects of unregulated weapons research.⁴¹ In 1946, Congress passed the Atomic Energy Act,⁴² which prohibited non-government scientists from engaging in certain types of nuclear energy research and instituted licensing for all uses of radioactive materials. Thus, the Act provides a clear example of regulation of scientific research in the name of public safety. Indeed, one commentator has observed that “[a]lthough there is no precedent for use of government security controls to impose prior restraints upon scientific freedom, the Atomic Energy Act is pregnant with a statutory foundation for such action.”⁴³

The weapons of mass destruction that loom large in the American psyche since 9/11 relate more to biological and chemical agents than to the traditional nuclear weapons envisioned by the Atomic Energy Act. Yet there is no comprehensive law that regulates biological and chemical weapons research. Although government regulation of bioweapons research has certainly been

government has a legitimate interest in regulating social and health matters and could, therefore, regulate or prohibit nontherapeutic scientific experiments on living fetuses).

39. 236 F.3d 1009 (9th Cir. 2000).

40. *Id.* at 1013; *see also* *Jane L. v. Bangerter*, 61 F.3d 1493 (10th Cir. 1995), *rev'd and remanded on other grounds sub. nom.*, *Leavitt v. Jane L.*, 518 U.S. 137 (1996); *Margaret S. v. Edwards*, 794 F.2d 994 (5th Cir. 1986); *Lifchez v. Hartigan*, 735 F. Supp. 1361 (N.D. Ill. 1990), *aff'd mem.*, 914 F.2d 260 (7th Cir. 1990).

41. I will use the label “weapons research” as shorthand for research that illuminates the ingredients or processes that are necessary to develop weapons of mass destruction, regardless of whether the research actually focuses on making a weapon.

42. Pub. L. No. 79-585, 60 Stat. 755 (1946) (codified at 42 U.S.C. §§ 1801-19). The Act was superseded by the Atomic Energy Act of 1954, Pub. L. No. 83-703 (codified at 42 U.S.C. §§ 2011-2296).

43. Harold P. Green, *Constitutional Implications of Federal Restrictions on Scientific Research and Communication*, 60 UMKC L. REV. 619, 634 (1992).

considered,⁴⁴ the primary approach has been contractual, limiting foreign personnel from working on sensitive government-funded projects.⁴⁵

Outside of the funding context, restrictions on weapons research have essentially been left to the discretion of scientists, who have been aided by recommendations from colleagues and advisory groups that have considered the issue. Following the bioterrorism scares of late 2001, for example, one pair of scientists warned that “[e]very researcher, whether in academia, in government research facilities, or in industry, needs to be aware of the potential unintended consequences of their own and their colleagues’ research.”⁴⁶

In 2004, the Department of Health and Human Services (DHHS) announced the creation of the National Science Advisory Board for Biosecurity (NSABB) to address the problem of legitimate scientific research that, if misused, could seriously threaten public health or national security (so called “dual use” research).⁴⁷ The role of the NSABB is to advise governmental agencies on policies related to public disclosure and to develop guidelines for the identification and conduct of research that may require security surveillance.⁴⁸ The ill-defined scope of the NSABB authority, however, leaves plenty of room for weapons research to proceed with impunity. Thus, regulation of weapons research, impinging on the freedom of scientific inquiry in the name of public safety, remains a distinct possibility for the near future.

B. Research that, Even if Safe, Is Still Objectionable on Moral Grounds

Justifying scientific research restrictions solely on moral grounds does not have a strong pedigree in the United States. Nonetheless, there are several rapidly developing fields of biology that, if left unregulated, would challenge our conventional notions of humanity. For this reason, research restrictions grounded at least in part on morality are likely to become more prominent.

It is important to note that there are two categories of research that might raise moral objections. The first category is research that aims solely to reveal some scientific, cultural, or social fact that is itself morally questionable. An example would be race-IQ research or ethnic migration studies.⁴⁹ With both of

44. See Rick Weiss, *Engineered Virus Related to Smallpox Evades Vaccine*, WASH. POST, Nov. 1, 2003, at A1.

45. See Megan Twohey, *National Security Restrictions Crimp University Research*, MILWAUKEE J. SENTINEL (Wisconsin), Dec. 1, 2003, at A1.

46. Bruce Alberts & Robert M. May, *Scientist Support for Biological Weapons Controls*, 298 SCIENCE 1135 (2002).

47. See Press Release, U.S. Dep’t of Health and Human Servs. (Mar. 4, 2004), available at http://www.biosecurityboard.gov/NSABB_press_release.pdf.

48. See National Science Advisory Board for Biosecurity, <http://www.biosecurityboard.gov/index.asp>.

49. “Ethnic migration studies” refers to research, typically DNA research, that attempts to trace the migration histories of certain ethnicities in order to draw conclusions about the true geographic origins of those ethnicities. See, e.g., Michael D. Brown, et al.,

these examples, uncovering the hidden knowledge may be morally objectionable because it may reinforce racial stereotypes or fuel ethnic entitlement. The second category involves morally objectionable research that is resisted not because of any secret knowledge that it reveals but because of its application. Human cloning is the most obvious example, where the moral red flag is not raised by the discovery of a cloning technique but by the implementation of that technique (i.e., the creation of a cloned embryo).

Although restrictions on the first category of morally objectionable research equally implicate the First Amendment,⁵⁰ this Note focuses on the second category, because it is more relevant to the cutting-edge science that is driving the free speech debate. This Subpart will highlight human reproductive cloning, embryonic stem cell research and genetic engineering as examples of research that is resisted on moral grounds.

1. *Human reproductive cloning*

For a technology that is unproven and still largely theoretical, the debate over reproductive cloning has been voluminous. Although much of the opposition is based on concerns for the health and safety of the cloned child, moral opposition would persist regardless of dramatic improvements in safety. The primary moral objection to human reproductive cloning is that reproductive cloning turns nascent human life into an experimental resource, thereby commodifying and devaluing life itself.⁵¹ Subsumed in this position is the notion that cloning threatens to upset the core belief of human equality, since cloned individuals may face discrimination or exploitation. A related objection is that cloning will degrade the human family. Here, opponents argue that cloning will poison the normal familial structure with offspring who are genetically equivalent to one member of the family, rather than a mixture of

mtDNA Haplogroup X: An Ancient Link Between Europe/Western Asia and North America?, 63 AM. J. HUM. GENETICS 1852 (1998); see also The Genographic Project, Atlas of the Human Journey, <https://www3.nationalgeographic.com/genographic/atlas.html> (interactive ethnic migration atlas).

50. Under a marketplace of ideas or search for truth theory, one could argue that this type of research should receive more protection than applied scientific research, if either receives any protection. Moreover, race-IQ or ethnic migration research is not likely to be objectionable at all until it is *published*. The same is not true for human reproductive cloning, where the existence of cloned individuals (e.g., the presence of identical octuplets on national television) would make publication of scientific results somewhat irrelevant from a moral standpoint. Thus, publication of scientific results may, in general, be restricted on both safety (nuclear weapons research) and moral (ethnic migration research) grounds. See *infra* Part I.C for further discussion of scientific publication.

51. See Leon R. Kass, *The Wisdom of Repugnance*, NEW REPUBLIC, June 2, 1997, at 17. For a discussion on a constitutional right to clone that is grounded in procreative liberty, see Cass Sunstein, *Is There a Constitutional Right to Clone?*, 53 HASTINGS L.J. 987 (2002), and John A. Robertson, *Procreative Liberty in the Era of Genomics*, 29 AM J.L. & MED. 439 (2003).

two.⁵² Exploitation of women is also a commonly invoked objection, since women are needed as egg donors and as vessels for the cloned embryo but have little stake in the well-being of the cloned child once it is born.⁵³ In its 2002 report, the President's Council on Bioethics raised each of these objections, in addition to safety concerns, and ultimately recommended a complete ban on reproductive cloning.⁵⁴

Despite the recommendation of the Council and despite complete bans on reproductive cloning in more than thirty countries,⁵⁵ there is currently no federal law prohibiting human reproductive cloning. Although federal funding for cloning research has been unavailable since 1997, scientists in the United States remain free to undertake cloning research with funds from other sources. However, for practical purposes, many scientists are not free to perform such research because some state laws prohibit it. Although certain states allow non-reproductive cloning (e.g., California),⁵⁶ reproductive cloning enjoys no statutory support. The fifteen states that have enacted cloning legislation have either prohibited funding for reproductive cloning or have banned the technology altogether.⁵⁷

At the federal level, disagreement in Congress over the extent of cloning regulation has stalled legislation. Despite the House having twice passed legislation to ban the cloning of human embryos for any purpose, the bills have foundered in the Senate because of strong support for therapeutic cloning.⁵⁸

2. *Human embryonic stem cell research*

Human embryonic stem cell (hESC) research is believed to hold tremendous potential for the treatment of serious medical disorders, such as diabetes and Parkinson's disease.⁵⁹ However, because collection of embryonic stem cells requires the destruction of human embryos,⁶⁰ fierce moral resistance

52. See Kass, *supra* note 51; see also David Luban, *A Theory of Crimes Against Humanity*, 29 *YALE J. INT'L L.* 85, 110-11 (2004) (arguing that human reproductive cloning is a "crime against humanity" if we regard genotypic uniqueness as a defining aspect of humanity").

53. See PRESIDENT'S COUNCIL ON BIOETHICS, *HUMAN CLONING AND HUMAN DIGNITY: AN ETHICAL INQUIRY* 95 (2002) [hereinafter *COUNCIL REPORT ON CLONING*], available at <http://www.bioethics.gov/reports/cloningreport/fullreport.html>.

54. *Id.*

55. See MBBNet, *Stem Cell Policy: World Stem Cell Map*, <http://www.mbbnet.umn.edu/scmap.html>.

56. See CAL. HEALTH & SAFETY CODE §§ 24,185-24,187 (West 2006).

57. See National Conference of State Legislatures, *State Human Cloning Laws* (Apr. 18, 2006), <http://www.ncsl.org/programs/health/genetics/rt-shcl.htm>.

58. See Rick Weiss, *Conservatives Draft a 'Bioethics Agenda' for President*, *WASH. POST*, Mar. 8, 2005, at A06.

59. See Tina Kelley, *In Race Toward First Stem Cell Research Institute, New Jersey Stalls*, *N.Y. TIMES*, July 31, 2005, at 25.

60. Embryonic stem cells are derived from the inner cell mass of a blastocyst.

to the technology is found in the United States and elsewhere. The major objection to hESC concerns the use of human embryos for research purposes. Opponents argue that destroying embryos in order to extract stem cells is tantamount to murder and unethically treats human life as a commodity.⁶¹ Proponents of stem cell research generally claim that blastocyst-stage embryos do not deserve rights equal to fully developed humans and that the embryos amount to little more than a handful of cells.⁶² Proponents argue that any rights of such embryos are vastly outweighed by the rights of suffering patients who stand to benefit from breakthroughs in stem cell research.⁶³

The general consensus among researchers is that experimentation with human embryos is permissible, at least until the fourteenth day of existence when the “primitive streak” develops, signifying the creation of a unique, potential human.⁶⁴ In recommending that hESC research not be permitted beyond the fourteen-day window, the President’s Council on Bioethics noted, “there is a point of development beyond which research on nascent human life is morally intolerable no matter what the potential medical benefits.”⁶⁵ Thus, both sides of the debate generally agree that destruction of human embryos in the name of scientific research is morally objectionable beyond a certain stage of development; disagreement persists over when that stage has been reached.

At least eleven countries have approved hESC research using cloned embryos, while several others have approved it under the condition that in vitro fertilization (IVF) embryo donations from fertility clinics be used.⁶⁶ Current federal policy limits government funding to research conducted on embryonic stem cell lines created before August 2001, provided the lines were created from leftover IVF embryos.⁶⁷ More aggressive regulation of hESC research, such as a total ban, is unlikely in light of the Council on Bioethics’s

61. For a comprehensive discussion of the arguments in favor of and against hESC, see PRESIDENT’S COUNCIL ON BIOETHICS, MONITORING STEM CELL RESEARCH (2004) [hereinafter STEM CELL REPORT], available at <http://www.bioethics.gov/reports/stemcell/index.html>.

62. See, e.g., John Herskovitz & Jack Kim, *S. Korea Cloning Expert Criticizes Bush Policy*, REUTERS, May 29, 2005, available at http://www.publicbroadcasting.net/ncpr/news.newsmain?action=article&ARTICLE_ID=777964 (describing South Korean scientist’s belief that embryonic stem cell research should be permitted).

63. See *id.*

64. See COUNCIL REPORT ON CLONING, *supra* note 53, at 143; see also Human Fertilisation and Embryology Act, 1990, c. 37, § 3(4) (Eng.) (reflecting the acceptance of the fourteen-day window of experimentation).

65. COUNCIL REPORT ON CLONING, *supra* note 53, at 143.

66. See MBBNet, *supra* note 55.

67. See STEM CELL REPORT, *supra* note 61, at 28-29. The Dickey Amendment, P.L. No. 104-99, § 128, 110 Stat. 26 (1996), which was passed as a rider in 1995 and has been renewed ever since, bans the use of federal funding to create hESC lines.

recommendations,⁶⁸ the pro-hESC trend in individual states,⁶⁹ and the recent pro-hESC guidelines from the National Academy of Sciences (NAS).⁷⁰

3. *Human genetic engineering*

Although human genetic engineering is, in some respects, a catch-all phrase, it is used here to indicate the deliberate enhancement or manipulation of genes in human germinal cells (i.e., eggs and sperm) in order to control the traits of human offspring. The process has been euphemistically referred to as germinal choice technology (GCT).⁷¹ Although altering our germinal cells via GCT is not currently feasible, and is arguably fantastic, there is momentum to make it possible, primarily because the desire to control our genetic future is a prospect too appealing for many to resist. Indeed, some even view human genetic engineering as the natural culmination of our hard-won progress in biological science. As one scientist/futurist put it, "We have spent billions to unravel our biology, not out of idle curiosity, but in the hope of bettering our lives. We are not about to turn away from this."⁷²

Since 1985, the Recombinant DNA Advisory Committee of the National Institutes of Health (NIH) has maintained an informal moratorium on germline engineering proposals.⁷³ Nonetheless, in 1998, a major GCT conference was convened at UCLA, sparking fresh calls for removal of the NIH moratorium.⁷⁴ If the technology does become available, it will revolutionize the way we think about human reproduction. The extent to which the human genome can be manipulated is not known and any adverse effects are difficult to predict. Those who benefit from GCT, however, will undoubtedly enjoy significant advantages in the areas of health, beauty, and intellect over those who were conceived and gestated by traditional means.

The moral arguments against GCT are similar to those discussed above for cloning and hESC, but there is one important difference: GCT, perhaps more than any other technology, risks exacerbating the socioeconomic stratification in the United States.⁷⁵ Unless the technology is immediately cheap and

68. See STEM CELL REPORT, *supra* note 61.

69. See *supra* text accompanying notes 1-2.

70. See Nicholas Wade, *Scientists Draft Rules on Ethics for Stem Cells*, N.Y. TIMES, Apr. 27, 2005, at A1.

71. GREGORY STOCK, REDESIGNING HUMANS: OUR INEVITABLE GENETIC FUTURE 110-11 (2002).

72. *Id.* at 13.

73. See Center for Genetics and Society, *History of Human Genetic and Reproductive Technologies* (July 21, 2004), <http://genetics-and-society.org/technologies/history.html>.

74. See Center for Genetics and Society, *Engineering the Human Germline* (May 30, 2003), <http://genetics-and-society.org/analysis/promoencouraging/ucla.html>; see also Gina Kolata, *Scientists Brace for Changes in Path of Human Evolution*, N.Y. TIMES, Mar. 21, 1998, at A1.

75. The effects of GCT on the global rich-poor gap are likely to be even more

widespread, there will be a period of inequitable distribution of genetic enhancement that will reflect this class divide.⁷⁶ To the extent that preventing such an outcome is a government interest, it is best classified as a moral argument. Lastly, unlike cloning and hESC, GCT does not carry with it any substantial or obvious threat to health and safety.⁷⁷ The grounds for objection to this technology are more purely moral than are those for any other research discussed in this Part.

C. *A Few Words on Restricting Scientific Publication*

Because scientific publication is clearly speech for purposes of the First Amendment, it already has a leg up on scientific research in terms of defeating government restriction. There is little question that scientific expression, such as journal publication or communication at meetings, is as valuable as political speech.⁷⁸ Without First Amendment protection for scientific communication, there would undoubtedly be a chilling effect on the underlying scientific research.⁷⁹

Nonetheless, there are certain types of scientific publications that may warrant restriction in the name of public safety.⁸⁰ But vague assertions that a

pronounced when one considers the ineffectiveness of most international legal instruments, particularly the TRIPs agreement, in promoting meaningful technology transfer. *See* Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments—Results of the Uruguay Round, 33 I.L.M. 1197 (1994); *see also* COMM’N ON INTELLECTUAL PROP. RIGHTS, INTEGRATING INTELLECTUAL PROPERTY RIGHTS AND DEVELOPMENT POLICY (2002), available at http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf.

76. For further discussion of this point, see Michael J. Sandel, *The Case Against Perfection: What’s Wrong with Designer Children, Bionic Athletes, and Genetic Engineering*, ATLANTIC MONTHLY, Apr. 2004, at 50.

77. The health and safety of the GCT-enhanced individual would be potentially threatened if the technology were underdeveloped when the enhancement took place and genetic complications ensued. Indirect threats may also be present, such as physical harm to the enhanced individual by those who vigorously oppose or cannot afford the technology. Both types of threats, however, are less serious than those associated with cloning and hESC.

78. *See* *Miller v. California*, 413 U.S. 15, 22-23 (1973) (“[I]n the area of freedom of speech and press the courts must always remain sensitive to any infringement on genuinely serious literary, artistic, political, or scientific expression.”); *see also* *Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 447 (2d Cir. 2001); *Junger v. Daley*, 209 F.3d 481, 484-85 (6th Cir. 2000); *Bd. of Trs. of Leland Stanford Junior Univ. v. Sullivan*, 773 F. Supp. 472, 477 (D.D.C. 1991).

79. For example, one scientist at the University of Pennsylvania School of Medicine said that she felt conflicted about publishing her work on smallpox proteins: “I’m worried that if we eliminate our ability to freely express our research results, we will end up saying it’s just not worth it.” Erika Check, *US Officials Urge Biologists To Vet Publications for Bioterror Risk*, 421 NATURE 197, 197 (2003).

80. Morality-based restrictions on scientific publication are also plausible. *See supra* note 50.

publication imperils public safety do not meet constitutional scrutiny. For example, in *Board of Trustees of the Leland Stanford Junior University v. Sullivan*,⁸¹ a federal court struck down a publication restriction in a government contract with Stanford University, because the reason for the restriction was poorly articulated. The NIH, in providing funding to Stanford for artificial heart research, forbade the recipients from publishing anything on artificial heart devices without prior government approval in order to prevent the public from acting on the information to their detriment. In addition to finding the restriction vague and overbroad,⁸² and thus violative of the scientists' First Amendment rights, the court found the proffered state interest was only remotely related to public safety.⁸³

In contrast, one category of scientific publication that carries serious and direct safety concerns is that which facilitates crime.⁸⁴ There is no general exception to the First Amendment for crime-facilitating speech, as there is for, say, obscenity⁸⁵ or libel.⁸⁶ However, Professor Eugene Volokh has argued that crime-facilitating speech should be excepted from First Amendment protection when one of three conditions is satisfied: 1) the speaker knows that certain individuals are likely to commit a crime, 2) the speech has virtually no noncriminal uses, or 3) the speech facilitates "extraordinarily serious harms, such as nuclear or biological attacks."⁸⁷ For scientific publications, Volokh's first and second conditions are unlikely to apply, but the third condition will apply in certain cases.

Whether there needs to be an explicit free speech exception for scientific publications that facilitate extraordinarily serious harms is debatable. But, at least on a case-by-case basis, the communicative value of such works could easily be outweighed by public safety concerns. Indeed, dissemination of nuclear weapons information has already been challenged on First Amendment

81. 773 F. Supp. 472 (D.D.C. 1991).

82. *Id.* at 477 ("Because of the vagueness and subjectivity of the administrative regulation, a responsible grantee could be certain of not being in violation only if it refrained from publishing any preliminary findings not endorsed by the contracting officer.").

83. *Id.* at 477 n.16 ("Defendants' stated goal of protecting prospective patients from unwarranted hope . . . constitutes a strange and attenuated way of protecting health and safety. Neither these defendants nor any other public officials have statutory or other authority to regulate citizens' hopes.").

84. See Volokh, *supra* note 10. Although some restrictions on crime-facilitating speech might be justified entirely on safety grounds, many such restrictions may have the added justification of banning only low-value speech. See, e.g., *United States v. Raymond*, 228 F.3d 804, 815-16 (7th Cir. 2000) (holding that the First Amendment does not protect instructions for violating tax laws); *United States v. Featherston*, 461 F.2d 1119, 1122-23 (5th Cir. 1972) (holding that the First Amendment does not protect instructions for building an explosive device).

85. See *Miller v. California*, 413 U.S. 15 (1973).

86. See *N.Y. Times Co. v. Sullivan*, 376 U.S. 254 (1964).

87. Volokh, *supra* note 10, at 1217 (emphasis omitted).

grounds in *United States v. Progressive*.⁸⁸ A magazine called *The Progressive* proposed to publish an article describing how hydrogen bombs work and how they are made, and the government sought an injunction, citing “immediate, direct and irreparable harm to the interests of the United States.”⁸⁹ The court concluded that the article was probably not a “do-it-yourself guide for the hydrogen bomb,” but that it could “possibly provide sufficient information to allow a medium size nation to move faster in developing a hydrogen weapon.”⁹⁰ Moreover, the court found “no plausible reason why the public needs to know the technical details about hydrogen bomb construction to carry on an informed debate.”⁹¹ Importantly, the court placed the facts of the case squarely within the “extremely narrow”⁹² national security exception enunciated in *Near v. Minnesota*,⁹³ the leading case that outlines the acceptable scope of prior restraints on speech.

Because there is a “heavy presumption” against the constitutional validity of any prior restraint,⁹⁴ most scientific publications, even those that facilitate crime, appear safe from government restriction. *The Progressive* illuminates the height of the bar the government must clear to win an injunction against a publication with scientific value and indicates the importance of a carefully tailored regulation that avoids banning speech that does not implicate national security.

Another scientific discipline whose publications could directly impact national security is microbiology. Specifically, publications on resistant viruses or novel pathogens could facilitate creation and dissemination of biological weapons. For example, in February 2001, Australian researchers demonstrated that altering a mousepox protein enabled it to kill animals that had been vaccinated against the virus.⁹⁵ In another case, in August 2002, scientists at the State University of New York at Stony Brook published a method for synthesizing poliovirus from scratch.⁹⁶ The fear of bioterrorism has become especially acute since September 11th and the subsequent anthrax scares in the

88. 467 F. Supp. 990 (W.D. Wis. 1979), *appeal dismissed*, 610 F.2d 819 (7th Cir. 1979).

89. *Id.* at 991; *see also* N.Y. Times Co. v. United States, 403 U.S. 713, 730 (1974) (Stewart, J., concurring).

90. *Progressive*, 467 F. Supp. at 993.

91. *Id.* at 994.

92. *Id.* at 996.

93. 283 U.S. 697 (1931).

94. *Bantam Books v. Sullivan*, 372 U.S. 58, 70 (1963).

95. Ronald J. Jackson et al., *Expression of Mouse Interleukin-4 by a Recombinant Ectromelia Virus Suppresses Cytolytic Lymphocyte Responses and Overcomes Genetic Resistance to Mousepox*, 75 J. VIROLOGY 1205 (2001); *see also* Scott Shane, *Building a Stronger Mousepox to Guard Nation Against Terror; Some Scientists Decry Efforts to Alter Viruses to Make Them Deadlier*, BALT. SUN, Nov. 1, 2003, at 1A.

96. Jeronimo Cello et al., *Chemical Synthesis of Poliovirus cDNA: Generation of Infectious Virus in the Absence of Natural Template*, 297 SCIENCE 1016 (2002).

nation's capital. Consequently, scientific publications that exacerbate this fear may provoke public and legislative calls for censorship.

Increasingly, either out of legitimate concern or to head off government intervention, scientists are self-policing the suitability of sensitive publications.⁹⁷ In 2003, editors of seventeen leading scientific journals announced a new policy under which they will weigh the potential harm of a publication against its scientific benefits and decide, on that basis, whether to modify an article or avoid publishing it altogether.⁹⁸ As long as self-policing by scientists appears effective, the federal government is unlikely to attempt any serious restrictions on publication of biological research. The creation of the NSABB in 2004 has not yet proven to be a significant hurdle to publication of potentially dangerous research.⁹⁹ Hard restrictions would likely satisfy constitutional scrutiny, however, if they were narrowly tailored and were driven by a demonstrable threat to national security. In this era of bioterrorism, the presence of such a threat may be quite easy for courts to accept.

II. UNDER WHAT THEORY CAN SCIENTIFIC RESEARCH BE PROTECTED BY THE FIRST AMENDMENT?

The scope of protection for scientific research under the First Amendment cannot be evaluated without first determining whether free speech rights are even implicated. Supporters of the right to research have taken at least three approaches to clear this initial hurdle. The first approach characterizes scientific research as expressive conduct. This approach has the most merit, insofar as expressive conduct theory is clearly grounded in First Amendment doctrine. In addition, the expressive conduct approach has the important virtue of not requiring an upfront assessment of what qualifies as scientific research, a judgment that is certain to be laden with difficulty and bias. The second theory that is commonly advanced is that scientific research is an essential precondition to protected scientific speech such as publication. Analogizing research to newsgathering, proponents of this theory believe that the underlying research should be as protected as the publication that it enables. The third approach attempts to place scientific research under the protective umbrella of

97. See Bruce Alberts & Robert M. May, *Scientist Support for Biological Weapons Controls*, 298 SCIENCE 1135 (2002).

98. See Editorial, *Statement on the Consideration of Biodefence and Biosecurity*, 421 NATURE 771 (2003), which grew out of a one-day workshop at the National Academy of Sciences on January 9, 2003. See also Diana J. Schemo, *Scientists Discuss Balance of Research and Security*, N.Y. TIMES, Jan. 10, 2003, at A12.

99. The role of the NSABB in the publication of controversial research involving the 1918 influenza virus was described in a *Science* editorial in 2005 as "reassuring." The NSABB apparently concluded that the scientific benefit of the future use of the published research far outweighed the potential risk of misuse. See Philip A. Sharp, *1918 Flu and Responsible Science*, 310 SCIENCE 17 (2005).

academic freedom. This approach relies more on general principles of First Amendment jurisprudence than on a specific doctrinal foundation.

The problem with the second and third approaches is twofold: neither has a clear doctrinal basis and both require an *ex ante* determination of what kinds of activities qualify as scientific research. Because the expressive conduct approach suffers from neither of these shortcomings, it offers the strongest basis for First Amendment protection of scientific research. Furthermore, the precondition and academic freedom theories are based on blanket First Amendment protection for scientific research, while expressive conduct theory takes a more individualized approach. That is, proponents of the precondition and academic freedom arguments envision broad and uniform constitutional protection for scientific research, since research is merely one element in a larger framework of scientific/academic communication. By contrast, expressive conduct theory concerns itself with individual acts of expression without reference to the constitutional status of any framework within which those acts may lie. For this reason, an expressive conduct theory does not involve blanket First Amendment protection for scientific research; it serves only to provide potential First Amendment protection to sufficiently expressive research conduct.

This Part will explore why expressive conduct, and not precondition theory or academic freedom, is the proper doctrine for establishing that the First Amendment should apply to scientific research. Although the expressive conduct theory links scientific research to the First Amendment in a way that the other two theories cannot, the ultimate constitutionality of a research restriction depends on much more than whether research qualifies on expressive conduct. That is, expressive conduct serves as a point of attachment to the First Amendment; it does not end the inquiry. Part III will set forth the full First Amendment analysis a court must undertake once free speech rights are implicated via expressive conduct theory.

A. *Scientific Research as Expressive Conduct*

The most plausible theory for protection of scientific research under the First Amendment is that research is a form of expressive conduct.¹⁰⁰ In general, conduct falls within the ambit of the First Amendment if it is “sufficiently imbued with elements of communication.”¹⁰¹ Specifically, the conduct must satisfy the two-part test enunciated in *Spence v. Washington*.¹⁰² First, the conduct must have been undertaken with an “intent to convey a particularized

100. Expressive conduct is often used interchangeably with “symbolic speech.” *See, e.g., Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 567 (1991) (plurality opinion) (equating the two terms).

101. *Spence v. Washington*, 418 U.S. 405, 409 (1974).

102. *Id.*

message,” and second, the “likelihood [must be] great that the message [will] be understood” by those who receive it.¹⁰³ Thus, only certain types of conduct can be reframed as speech for purposes of constitutional protection.¹⁰⁴ Moreover, conduct that may qualify for protection in one context may fail to qualify in another.¹⁰⁵ For example, in *Tinker v. Des Moines Independent Community School District*,¹⁰⁶ Iowa students who donned black armbands in 1965 conveyed the message that they were upset about the Vietnam War, but wearing the same armband in Iowa today may not convey anything but a preference for black.

Importantly, the person seeking First Amendment protection has the burden of proving that his conduct rises to the level of protected speech under the *Spence* test.¹⁰⁷ This requirement is atypical in First Amendment doctrine, where the burden is usually on the government to justify encroachment on free speech rights. Therefore, a scientist who seeks free speech protection for her research activities must affirmatively establish that the First Amendment applies to those activities. That is, she must demonstrate not only that she intends to convey a particularized message by engaging in the research, but also that her target audience will receive her message the way she intended it. If she fails to prove either of these, then the research is not expressive conduct and is not protected under the First Amendment.

Approaching the freedom of scientific inquiry from the expressive conduct angle has intuitive appeal. Moreover, the Supreme Court has characterized seemingly less deserving activities as expressive conduct.¹⁰⁸ Some commentators, however, simply dismiss this potential protection of scientific research as unpromising. For example, one group of scholars argued that “[r]esearch activities do not ordinarily constitute intentional communications of

103. *Id.* at 410-11. *But see* *Hurley v. Irish-American Gay, Lesbian & Bisexual Group of Boston*, 515 U.S. 557, 569 (1995) (stating that a particularized message is “not a condition of constitutional protection” at least not as applied to traditional expressive media such as poetry, paintings, and music).

104. *See* *United States v. O’Brien*, 391 U.S. 367, 376 (1968) (“We cannot accept the view that an apparently limitless variety of conduct can be labeled ‘speech’ whenever the person engaging in the conduct intends thereby to express an idea.”); *see also* *City of Dallas v. Stanglin*, 490 U.S. 19, 25 (1989) (“It is possible to find some kernel of expression in almost every activity a person undertakes—for example, walking down the street or meeting one’s friends at a shopping mall—but such a kernel is not sufficient to bring the activity within the protection of the First Amendment.”).

105. *See* *Spence*, 418 U.S. at 410 (“[T]he context in which a symbol is used for purposes of expression is important, for the context may give meaning to the symbol.”).

106. 393 U.S. 503 (1969).

107. *See* *Clark v. Cmty. for Creative Non-Violence*, 468 U.S. 288, 294 n.5 (1984) (“[I]t is the obligation of the person desiring to engage in assertedly expressive conduct to demonstrate that the First Amendment even applies.”).

108. *See, e.g.,* *Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 566 (1991) (plurality opinion) (concluding that “nude dancing . . . is expressive conduct within the outer perimeters of the First Amendment”).

information from a research scientist to an audience,” concluding that “the symbolic speech analysis offers only minimal support for protecting scientific research.”¹⁰⁹ Others, though, perhaps too readily adopt the idea that scientific research is always expressive.¹¹⁰

Scientific research is such a vast concept that neither of these extremes is likely to be correct. Asking whether scientists, in general, intend to convey a message with their research is a poorly framed question that is impossible to answer. It is similar to asking whether baseball players generally enjoy performing in front of a crowd. For some, the presence of the crowd may be a primary motivator or at least give additional meaning to the game. Others might be exclusively interested in the self-fulfillment that comes from pursuing one’s calling. Still others might be indifferent and just be showing up for the paycheck. Research scientists are likely to fall into versions of these three categories as well, with motivations shifting and overlapping as the research varies from the mundane to the exhilarating to the highly controversial. A case-by-case assessment of whether scientific research satisfies the *Spence* test is therefore warranted, as would be expected.

For many research experiments,¹¹¹ it seems indisputable that a scientist is not seeking to convey a message to an audience. The intent to publish does not change this conclusion. Although the scientist may very well intend to publish the results of an experiment, publication enjoys protection independent of the conduct that precedes it.¹¹² In addition, the trite notion that one expresses oneself through one’s art is inadequate for purposes of the *Spence* test, unless that expression conveys a particularized message that is likely to be understood. Lastly, a message such as “here are the experimental parameters I believe most suitable for this task”¹¹³ is not likely to be sufficient nor would it meet a normative definition of expression. Allowing such messages to satisfy the *Spence* test would open the door to a “limitless variety of conduct” and

109. Delgado et al., *supra* note 5, at 161; *see also* Irwin, *supra* note 5, at 1499 (concluding that expressive conduct theory cannot be successfully applied to scientific research because “scientific experimentation consists of the application, not communication, of scientific ideas”).

110. *See, e.g.*, Foley, *supra* note 6, at 683 (“Through experimentation, scientists express their creativity and intellectuality in much the same way that musicians express themselves through music or artists express themselves through art.”).

111. Experimentation and research will be used interchangeably. The distinction between experimentation and nonexperimental research is an illusory one, unless the research is purely observational with no manipulation or chemical/physical testing. Similarly, it would be unwise to draw a bright line between basic research and applied research for purposes of First Amendment protection. Such a line would prove unworkable, since a clear distinction rarely exists in the real world. *See* Francione, *supra* note 5, at 453-57.

112. *See supra* Part I.C.

113. *See, e.g.*, Hsu, *supra* note 6, at 2411 (arguing that “the ability of a scientist to engage in conduct in the form of experiments should also be protected, because experiments themselves express ideas”).

contravene the scope of protected conduct envisioned by the Supreme Court.¹¹⁴ Thus, the mere act of carrying out an experiment will not be protected in many cases, at least not as expressive conduct.¹¹⁵

The types of research that are likely to rise to the level of expressive conduct are those with significant public resistance, especially when undertaken with full awareness of the controversy. For controversial science, such as human reproductive cloning, the very act of initiating research sends a message to the world that the importance of pursuing this line of scientific inquiry outweighs any moral or safety objection.¹¹⁶ In some cases, the intent of the scientist may even be expressly indicated, as with Dr. Richard Seed, the scientist who announced his intentions to establish a human cloning clinic. In an interview with National Public Radio, Seed forthrightly stated: "God intended for man to become one with God Cloning and the reprogramming of DNA is the first serious step"¹¹⁷

For science that has not yet become controversial because the public is not aware of it, an ironic result might occur. Research involving the creation of human-ape chimeras for therapeutic purposes provides a hypothetical example. The possibility of such research may escape public consciousness and therefore not generate any controversy *ex ante*. In addition, the first scientist who undertakes the research may not intend to convey any articulable message, since he is merely looking for better tools in the treatment of disease. However, once the research becomes known and generates controversy, the matter changes. Now, the scientist who engages in the chimera research will be aware that the research is objectionable and by proceeding will convey the message that he believes it to be important enough to outweigh public objection. Members of the public are certain to understand this message as conveyed when they witness the scientist proceed. Thus, the scientist's actions would qualify as expressive conduct under *Spence*, with the expression owing its existence to the external factor of public disapproval. This example highlights the importance of public or governmental disapproval in cases where the scientist has not expressly stated the message that he wishes his research to convey. Such disapproval may actually benefit the scientist by providing him with *prima facie* First Amendment protection.

A critically important feature of expressive conduct theory is that it does not require a judgment about what qualifies as science. Moreover, there is no

114. See *supra* note 104.

115. See *infra* Parts II.B and II.C for the other theories of protection for this type of conduct.

116. See Hsu, *supra* note 6, at 2414 (arguing that "[i]n the present climate surrounding the ethics of cloning, a scientist who attempts to clone a human being would be expressing the idea that she has the right to explore this area through scientific experimentation").

117. See *Human Cloning Within 2 Years? Chicago Scientist Talks of 'Becoming One With God,'* S.F. EXAMINER, Jan. 7, 1998, at A1 (quoting National Public Radio interview with Dr. Richard Seed).

need to assess whether particular research is experimental or observational, nor whether it is basic or applied science. Rather, the expressive conduct theory simply requires that the conduct be intended to convey a specific message that is likely to be understood by a relevant audience. This simplicity provides expressive conduct theory with a big advantage over the other two theories of First Amendment protection for scientific research and, along with the doctrinal foundation of the theory, renders expressive conduct the only viable approach to protecting scientific research under the First Amendment. As will be discussed in Part III, however, expressive conduct theory does not provide automatic free speech protection for scientific research; it provides only a point of attachment to the First Amendment.

B. *Scientific Research as an Information-Gathering Precondition to Speech*

Many commentators have supported the idea that scientific research should be given blanket First Amendment protection based on the theory that research is a precondition to scientific publication.¹¹⁸ Success of such a theory would obviate the need to prove that a particular research activity was communicative under *Spence*, because the argument bypasses the expressive conduct threshold altogether. The basic syllogism is that because scientists have a right to communicate their data and because this right would be emasculated if there were restrictions on the type of data that could be collected, the right must also extend to the data collection, that is, the scientific research.¹¹⁹ But the two premises in this logic are faulty, undermining the conclusion.

The first premise, that scientists have a right to communicate their data, is clearly not universally true. As noted in Part I.C, certain scientific publications may threaten public health and safety or national security. The communicative value of such publications could be outweighed by these other interests. Not surprisingly, the publications that might suffer restriction often will involve research that is also subject to public resistance. For example, the publication of

118. See, e.g., Delgado et al., *supra* note 5, at 162 (arguing that “as with news-gathering and political spending, science’s noncommunicative elements are necessary preconditions for the full exercise of the right of free expression”); see also Davidson, *supra* note 5, at 899 (“[T]he right of the researcher to communicate in the biomedical sciences would be emasculated if the ability to do research is significantly impaired.”); Ferguson, *supra* note 5, at 651 (“[I]f scientists are precluded from pursuing lines of investigation, they are restrained in their ability to engage in free expression.”); Robertson, *supra* note 5, at 1217 (“As an essential step in the process of dissemination of ideas and information, research should have the same constitutional status as dissemination itself.”).

119. A variation on the precondition theory is that the entire scientific process, from idea to dissemination of results, should be protected. See, e.g., Spece & Weinzierl, *supra* note 5, at 215 (“Although considered alone experimentation might not be communicative and entitled to First Amendment coverage, when considered with other parts of the pursuit of science which are clearly communicative, both they and it are entitled to constitutional coverage.”). However, the distinction between the precondition theory and this variation is slight, and does not warrant separate treatment.

how to create poliovirus from scratch¹²⁰ is the type of communication that might be restrictable in the name of public safety, and the underlying research itself might be restrictable on the same grounds.

The second premise, that the right to communicate would be trampled if data collection were restricted, puts the cart before the horse. The right to communicate is conditioned on whether you actually have something to communicate. That is, it is only a *theoretical* right until you have information to disseminate, at which point it becomes an *enforceable* right. Thus, until a scientist has collected her data, there is no right of communication that can be trampled. The scientist is on her own to obtain the data in some legal way.¹²¹ Only then is it appropriate to discuss her First Amendment right to communicate, which in any event may be subject to the restrictions just noted.

Some proponents of the precondition theory analogize scientific research to newsgathering, arguing that just as newsgathering is a protected and necessary precondition to news publication, so should research be a protected precondition to scientific publication.¹²² However, as some proponents of this analogy recognize, newsgathering, let alone general information gathering, is by no means fully protected in First Amendment jurisprudence. For example, in *Zemel v. Rusk*,¹²³ one of the first cases to address the issue, the U.S.

120. See Cello et al., *supra* note 96.

121. One scholar suggests that “[i]f the state could not prohibit publication of an article or book describing the results of research, then it could not prohibit production or acquisition of that knowledge in the first place.” Robertson, *supra* note 5, at 1249. This argument ignores the importance of whether the government’s prohibition is directed at the communicative impact of the research. Although a publication ban that does not concern itself with the communicative impact would be difficult to explain, the same is not true for a ban on the underlying research. The research ban might arise out of noncommunicative concerns such as the health and safety or moral concerns discussed in Part I, *supra*. As will be discussed in Part III, *infra*, restrictions on speech that target the communicative aspects of speech are subject to strict scrutiny, while those that target the noncommunicative aspects are subject to only intermediate scrutiny. Thus, even when a ban on publication is held unconstitutional, a ban on the underlying research could easily be upheld.

122. See, e.g., Delgado et al., *supra* note 5, at 162; Robertson, *supra* note 5, at 1237-40. One commentator has suggested that because news reporters receive protection for merely *gathering* information, and because scientific researchers *create* information, First Amendment research protection is warranted given the fundamental importance of new information in the marketplace of ideas. Davidson, *supra* note 5, at 900. However, this is an impossible distinction. The work of research scientists can just as easily be characterized as information gathering; research scientists are just using different tools than the news reporter. For example, when a reporter asks someone what he witnessed at a crime scene, the tool he uses is verbal questioning to elicit information that already exists in the mind of the witness. It can be argued that the world did not have this knowledge until the reporter was able to get it. Similarly, when a scientist creates a new technique for, say, changing the gender of an embryo, he is not creating information, only discovering, through experimentation, information that was already there. In other words, the world did not have this information until the scientist was able to get it. The scientist merely used different tools and asked a different question compared to the news reporter.

123. 381 U.S. 1 (1965).

government refused to allow travel to Cuba by an American citizen who claimed a right to gather information about life in that country. The Supreme Court upheld the restriction, noting that “there are few restrictions on action which could not be clothed by ingenious argument in the garb of decreased data flow. . . . The right to speak and publish does not carry with it the unrestrained right to gather information.”¹²⁴

The leading case that provides some support for the newsgathering protection is *Branzburg v. Hayes*,¹²⁵ in which the Court held that newspapers were not immune from incidental speech burdens at the hand of generally applicable laws. Although the outcome of the case was unfavorable to the right to gather news, the Court noted that newsgathering “is not without its First Amendment protections”¹²⁶ and that “without some protection for seeking out the news, freedom of the press could be eviscerated.”¹²⁷ However, these dicta from *Branzburg* have not been extended, and even supporters of a more general right to gather information recognize the limiting effect that *Branzburg* and *Zemel* likely have on such a right.¹²⁸ Moreover, subsequent cases have severely circumscribed the *Branzburg* language such that even in the newsgathering context, it is unlikely that a general right exists to gather information.¹²⁹ Arguably the only context in which the Court has endorsed a constitutional right to gather information is the public right of access to criminal proceedings.¹³⁰ Thus, the newsgathering analogy provides little support for the contention that scientific research deserves general protection as a precondition to speech.

An alternative construction of precondition theory, as applied to scientific research, is that the initial stages of research *facilitate* downstream protected speech and therefore deserve to be included in the ambit of protection. This construction, however, directly conflicts with *Clark v. Community for Creative*

124. *Id.* at 16-17.

125. 408 U.S. 665 (1972).

126. *Id.* at 707.

127. *Id.* at 681.

128. See Barry P. McDonald, *The First Amendment and the Free Flow of Information: Towards a Realistic Right to Gather Information in the Information Age*, 65 OHIO ST. L.J. 249, 329 (2004) (“*Zemel* and *Branzburg* could be viewed as establishing a general principle that information gathering is not protected by the First Amendment except in the limited area of gathering and reporting the ‘news.’”).

129. See, e.g., *Houchins v. KQED*, 438 U.S. 1, 12 (1978) (plurality opinion) (refusing to recognize the press’s right to access a prison to gain information about its conditions and stating that such a right is “not essential to guarantee the freedom to communicate or publish”); *Pell v. Procunier*, 417 U.S. 817 (1974) (upholding government restrictions on the information the press could gather when visiting prisons); *Saxbe v. Wash. Post Co.*, 417 U.S. 843 (1974) (companion case with same result).

130. See *Richmond Newspapers, Inc. v. Virginia*, 448 U.S. 555 (1980) (plurality opinion); see also *Globe Newspaper Co. v. Superior Court*, 457 U.S. 596, 604-06 (1982) (implying that the right of access is narrow and limited to criminal trials). See generally McDonald, *supra* note 128, at 290-96 (discussing *Richmond Newspapers* and its progeny).

Non-Violence.¹³¹ In *Clark*, protestors in Washington D.C.'s Lafayette Park engaged in overnight sleeping in the park, an activity they claimed facilitated their ability to protest effectively. The Court rejected the claim that the government ban on overnight sleeping in the park infringed the protestors' First Amendment rights because the sleeping merely facilitated their protected conduct and was not itself expressive. The Court strongly suggested that purely facilitative conduct, devoid of any concomitant communicative purpose, would not be protected.¹³² Thus, in the context of scientific research, the argument that the initial stages of research should be protected because they are facilitative of protected speech contradicts *Clark*, undermining any doctrinal basis for this version of precondition theory.

The final and perhaps most serious problem with the precondition theory is that it requires an ex ante assessment of which activities qualify as science. Research that is a precondition to pseudoscience is presumably not covered.¹³³ Relying on judges or even advisory committees to separate the wheat from the chaff in order to determine which activities were entitled to prima facie First Amendment protection would be problematic if not completely inappropriate. As one scholar observed, "[e]ven if courts were able to make such determinations, the result would be the canonization of particular forms of experimentation over those forms practiced by dissident scientists not working within the prevailing paradigm."¹³⁴

The better approach is to subject experimentation/research to the *Spence* threshold test to determine whether it qualifies as expressive conduct. That approach does not require an inquiry into the merits of the particular research and, more importantly, has strong doctrinal support.

C. Scientific Research as Academic Freedom

The third theory of First Amendment protection for scientific research is premised on academic freedom and, like the preconditions argument, envisions blanket protection for scientific research. The Supreme Court in *Regents of the University of California v. Bakke* noted that "[a]cademic freedom, though not a specifically enumerated constitutional right, long has been viewed as a special concern of the First Amendment."¹³⁵ In *Sweezy v. New Hampshire*, Justice Frankfurter opined that "[academic] inquiries . . . must be left as unfettered as

131. 468 U.S. 288 (1984).

132. *Id.* at 296; see also Francione, *supra* note 5, at 438-39 (discussing the holding of *Clark*).

133. Treating research as one part of the entire scientific process rather than an explicit precondition to protected speech, see *supra* note 119, does not avoid the problem of judging which science deserves protection.

134. Francione, *supra* note 5, at 511.

135. 438 U.S. 265, 312 (1978).

possible.”¹³⁶ Seizing upon this language, some scholars believe extending the academic freedom concept to scientific research would be perfectly logical,¹³⁷ although the Court has never so held.

There are two major problems with using academic freedom as a shield for scientific research. The first is that any academic freedom precedent stems from cases involving traditionally protected speech, such as lectures in front of an audience or the content of classroom teaching.¹³⁸ At least one lower court was not bothered by that fact and argued, in dicta, that although “[t]he precise contours of . . . academic freedom are difficult to define[,] . . . whatever constitutional protection is afforded by the First Amendment extends as readily to the scholar in the laboratory as to the teacher in the classroom.”¹³⁹ Nonetheless, no court has extended free speech protection to research activities in the laboratory and such protection seems overly broad. A bare assertion that research of a “scholar in the laboratory” is protected, without looking into what the scholar is actually doing and why, is not likely to withstand scrutiny, especially in light of the expressive conduct doctrine. It is likely that any such research would have to meet a threshold showing of communicative intent under the *Spence* test rather than be entitled to general protection tacked on to the traditional speech protection under academic freedom.

The second problem is a definitional one. As with the preconditions argument, there would be great difficulty deciding which research deserves protection. Labeling certain research as “academic” could only be accomplished by drawing arbitrary lines. Attempts at drawing bright lines, such as protection only for research conducted on university property or protection only for work conducted under the supervision of a university professor, would prove unworkable. In the modern university context, much research is carried out away from campus in private or government laboratories. More importantly, scientific research in universities often has a strong link to the corporate world via funding, licensing, and consulting contracts. For these reasons, the line between academic and non-academic is irretrievably blurred. Thus, the concept of academic freedom is ill-equipped to provide blanket protection for scientific research under the First Amendment.

136. 354 U.S. 234, 262 (1957) (Frankfurter, J., concurring).

137. See, e.g., Goldberg, *supra* note 18, at 12 (arguing that “when regulation occurs in an academic setting, concerns of scientific freedom overlap with considerations of academic freedom”).

138. See, e.g., *Sweezy*, 354 U.S. 234 (plurality opinion) (holding that questions posed by a state attorney general to a university professor about the contents of his lecture invaded the professor’s academic freedom).

139. *Dow Chem. Co. v. Allen*, 672 F.2d 1262, 1275 (7th Cir. 1982). The court then recognized that “academic freedom, like other constitutional rights, is not absolute, and must on occasion be balanced against important competing interests.” *Id.*

III. IF SCIENTIFIC RESEARCH QUALIFIES AS PROTECTED SPEECH, WHEN MAY THE GOVERNMENT RESTRICT IT?

Of the theories presented in Part II, only expressive conduct has the strong doctrinal foundation on which to base prima facie First Amendment protection for scientific research. However, even if scientific research falls within the ambit of the First Amendment because it satisfies the *Spence* threshold test for expressive conduct, that is by no means the end of the analysis. More specifically, expressive conduct theory does not provide blanket First Amendment protection for scientific research, because the expressive conduct approach is merely a threshold inquiry into whether free speech rights are even implicated. As the Supreme Court has noted, “the right of free speech is not absolute at all times and under all circumstances.”¹⁴⁰ The constitutionality of a statutory restriction on scientific research deemed expressive under *Spence* must be evaluated under the *O’Brien* test.¹⁴¹ The Court articulated the four-part *O’Brien* test to provide a means of balancing the need of individuals to express themselves through conduct with the need of government to regulate in the name of substantial societal interests. The test holds that a particular regulation is sufficiently justified if: 1) it is “within the constitutional power of the government”; 2) it “furthers an important or substantial governmental interest”; 3) the asserted interest is “unrelated to the suppression of free expression”; and 4) “the incidental restriction on alleged First Amendment freedoms is no greater than is essential to the furtherance of that interest.”¹⁴² The *O’Brien* test is applicable to expression having both speech and non-speech elements and has been held equivalent to the time/place/manner test frequently employed by the Court in pure speech cases.¹⁴³ Assuming that government restrictions on research are within the scope of the Commerce Clause or some other Article I power, the *O’Brien* test reduces to the final three prongs, each of which will be discussed in this Part. Because the level of scrutiny applicable to both the government interest and the tailoring of the statute will depend on whether the intent of the government is to suppress free expression, the analysis must begin with the government intent prong.

A. What Is the Intent of the Government Regulation?

The motivation of the legislature in enacting a law that restricts expressive conduct will illuminate whether the law is content-neutral or content-based.

140. *Chaplinsky v. New Hampshire*, 315 U.S. 568, 571 (1942).

141. *United States v. O’Brien*, 391 U.S. 367 (1968).

142. *Id.* at 377.

143. *See Clark v. Cmty. for Creative Non-Violence*, 468 U.S. 288, 298 (1984) (concluding that “the four-factor standard of *United States v. O’Brien* . . . is little, if any, different from the standard applied to time, place, or manner restrictions”).

Because content-based laws are subject to strict scrutiny¹⁴⁴ and rarely upheld,¹⁴⁵ it is normally in the best interest of the government to craft speech restrictions that are content-neutral. In determining content neutrality, the “principal inquiry . . . is whether the government has adopted a regulation of speech because of disagreement with the message it conveys.”¹⁴⁶ Specifically, “[a] regulation that serves purposes unrelated to the content of expression is deemed neutral, even if it has an incidental effect on some speakers or messages but not others.”¹⁴⁷ Thus, in the context of conduct that has both expressive and nonexpressive elements, a government restriction on such conduct may be described as content-neutral, so long as the restriction is not driven by a desire to suppress the communicative impact of the conduct. In other words, as long as there is some aspect of the conduct that would remain offensive to government when all expressive components were stripped away, the government can potentially formulate a content-neutral restriction. Importantly, a content-neutral restriction on conduct can legitimately suppress the expressive portions of that conduct¹⁴⁸ if the regulation satisfies the remaining two prongs of the *O’Brien* test, discussed below in Parts III.B and III.C.¹⁴⁹

Applying this doctrine to scientific research yields the following question: can a restriction on expressive research be justified without reference to the communicative impact of the research? The answer is almost certainly yes. Although there are a variety of messages that a scientist may intend to convey when she performs controversial research, such as the belief that the research must go forward in spite of the risks or the sentiment that scientists achieve personal fulfillment through research of their choosing, research restrictions are

144. The two main elements of strict scrutiny were succinctly articulated in *Sable Commc'ns, Inc. v. FCC*: “The Government may . . . regulate the content of constitutionally protected speech in order to promote a compelling interest if it chooses the least restrictive means to further the articulated interest.” 492 U.S. 115, 126 (1989).

145. Eugene Volokh has pointed out that *Austin v. Michigan Chamber of Commerce*, 494 U.S. 652 (1990), is the only case in which a majority of the Supreme Court upheld a speech restriction under strict scrutiny. See Volokh, *supra* note 10, at 1132 n.153. *Austin* was reaffirmed in *McConnell v. FEC*, 540 U.S. 93 (2003).

146. *Ward v. Rock Against Racism*, 491 U.S. 781, 791 (1989).

147. *Id.*

148. See *United States v. O'Brien*, 391 U.S. 367, 376 (1968).

149. Certain members of the Court apparently would apply only a rational basis test to a regulation that does not target the communicative aspects of conduct. See *Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 572 (1991) (Scalia, J., concurring) (arguing that such a regulation would not implicate *O'Brien* because “as a general law regulating conduct and not specifically directed at expression, it is not subject to First Amendment scrutiny at all”). However, the Court has clearly indicated that such an approach would be inappropriate and that even restrictions unrelated to suppressing communication are still subject to First Amendment analysis if communication is incidentally restricted. See *Texas v. Johnson*, 491 U.S. 397, 403 (1989) (“If the State’s regulation is not related to expression, then the less stringent standard we announced in *United States v. O'Brien* for regulations of noncommunicative conduct controls.”).

not likely to be directed at suppressing such messages. Rather, regulations of controversial research are likely to be aimed at suppressing the detrimental effects of the research itself, regardless of whether the researcher is touting the benefits.¹⁵⁰

Regulation of human reproductive cloning illustrates this point. A ban on reproductive cloning would presumably be concerned with the health and safety of cloned babies and with the protection of traditional means of human conception. Even if cloning researchers expressly conveyed a message about the meaning of their research, as did Dr. Richard Seed,¹⁵¹ suppression of that message would be incidental to the purpose of the regulation, not central to it. Such a scenario is akin to the situation in *O'Brien*. O'Brien burned his draft card on the steps of a Boston courthouse and was convicted for the "noncommunicative impact of his conduct, and for nothing else."¹⁵² The Court reasoned that even though O'Brien may have been expressing a message with his conduct, the federal law that prohibited the destruction of draft cards did so without the purpose of suppressing speech. Similarly, in *Clark v. Community for Creative Non-Violence*, the Court assumed that protestors sleeping in Lafayette Park was expressive under *Spence*, but nonetheless found the government's sleeping ban to be content-neutral, because the ban did not seek to curtail the communicative impact of the expressive conduct.¹⁵³ These cases demonstrate that restrictions on expressive conduct can be prompted by concerns unrelated to suppression of speech.

For this reason, restrictions on research are decidedly different from restrictions on scientific publication. Restricting the publication of information about how to clone a human being *would* be driven by fear of its communicative impact and would be subject to strict scrutiny. Such a restriction, in seeking to prevent someone from using the published information to create a clone, would likely be invalidated, unless the government could demonstrate a compelling interest and an absence of less-restrictive alternatives. Any proffered interests could presumably be furthered more effectively with a restriction on the cloning research that led to the publication. Striking down the publication ban would validate the assumption that

150. Although some scientific research may have direct commercial applications, it is doubtful that expressive scientific conduct would be subject to commercial speech doctrine. The Court has long held that commercial speech "does 'no more than propose a commercial transaction'" such that it "is so removed from any 'exposition of ideas' and from 'truth, science, morality, and arts in general' . . . that it lacks all protection." *Va. State Bd. of Pharmacy v. Va. Citizens Consumer Council*, 425 U.S. 748, 762 (1976) (internal citations omitted). It is difficult to imagine commercial scientific research that is purely commercial with no scientific value. Thus, commercial speech doctrine is unlikely to apply.

151. *See supra* note 117 and accompanying text.

152. *O'Brien*, 391 U.S. at 382.

153. 468 U.S. 288, 293-95 (1984).

traditional scientific communication enjoys more protection than scientific conduct.¹⁵⁴

Of course, if a ban on conduct could not be justified without reference to communicative impact, then it too would likely be struck down under strict scrutiny. In *Texas v. Johnson*, the Court invalidated such a ban.¹⁵⁵ The Court found a state law that criminalized flag desecration to be motivated by suppression of expression.¹⁵⁶ The Court suggested that the solution to objectionable speech was not restriction but more speech,¹⁵⁷ and noted that “[i]f there is a bedrock principle underlying the First Amendment, it is that the government may not prohibit the expression of an idea simply because society finds the idea itself offensive or disagreeable.”¹⁵⁸

Legislative restrictions motivated by suppression of expression, as in *Texas v. Johnson*, would be unusual in the context of scientific research, however. Even research restrictions that are driven primarily by moral objections are likely to be less concerned with the communicative impact of the scientific research than with the actual effects of the research in the physical world. With hESC research, for example, the destruction of blastocyst-stage embryos is something that is integral to the technology. Restricting hESC research out of moral concern for early embryos would create only an incidental, as opposed to an intentional, burden on expressive conduct. Such a restriction is therefore distinguishable from the regulation struck down in *Texas v. Johnson*, which was more concerned with the effect flag burning would have on those who witnessed it than with the isolated loss of a flag or two.

In sum, government restrictions of science are not likely to be motivated by suppression of expression and will consequently be classified as content-neutral, avoiding strict scrutiny altogether. Importantly, laws that restrict the means of carrying out scientific research rather than the content of the research will also be classified as content-neutral.¹⁵⁹ Thus, most restrictions on scientific research will only need to satisfy the remaining two prongs of the *O’Brien* test, namely, that the law further a substantial government interest and be narrowly tailored.

B. *What Are the Government Interests?*

For a content-neutral restriction on expressive conduct to be justified, *O’Brien* requires that the restriction further an important or substantial

154. See *supra* Part I.C.

155. 491 U.S. 397 (1989).

156. *Id.* at 407.

157. *Id.* at 419.

158. *Id.* at 414.

159. See Robertson, *supra* note 5, at 1253.

governmental interest.¹⁶⁰ Moreover, “when ‘speech’ and ‘nonspeech’ elements are combined in the same course of conduct, a sufficiently important governmental interest in regulating the nonspeech element can justify incidental limitations on First Amendment freedoms.”¹⁶¹ Whether a purported interest is substantial and sufficiently important will usually depend on the circumstances of each case. Government interests that the Court has found to be substantial, in the context of expressive conduct, include residential privacy,¹⁶² prevention of public indecency,¹⁶³ and preservation of issued draft cards.¹⁶⁴ This Subpart will evaluate the government interests likely to underlie restrictions on scientific research to determine whether they would meet the substantiality requirement of *O’Brien*. As outlined in Part I, regulations of scientific research would be driven primarily by health and safety interests, moral interests, or both.

1. *Health and safety-based interests*

Health and safety interests provide the strongest footing for government restrictions of scientific research, a fact recognized even by staunch proponents of scientific freedom.¹⁶⁵ Not only has the Supreme Court explicitly held the government interest in protecting health and safety to be substantial,¹⁶⁶ but it has also repeatedly held the interest to be compelling.¹⁶⁷ In general, therefore,

160. 391 U.S. 367, 376-77 (1968).

161. *Id.* at 376.

162. *Frisby v. Schultz*, 487 U.S. 474, 484 (1988).

163. *Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 567 (1991) (plurality opinion).

164. *O’Brien*, 391 U.S. at 377-78.

165. *See, e.g., Robertson, supra* note 5, at 1279 (“The first amendment will not tolerate the persecutions of scientists because of their ideas or research, unless they directly threaten health and safety or the rights of nonconsenting persons.”).

166. *See Bill Johnson’s Rests., Inc. v. NLRB*, 461 U.S. 731, 742 (1983) (recognizing “the substantial state interest ‘in protecting the health and well-being of its citizens’” (quoting *Farmer v. United Bhd. of Carpenters & Joiners Local 25*, 430 U.S. 290, 303 (1977))).

167. *See, e.g., Lorillard Tobacco Co. v. Reilly*, 533 U.S. 525, 564 (2001) (acknowledging that “[t]he governmental interest in preventing underage tobacco use is substantial, and even compelling,” given the detrimental effects of tobacco on minors’ present and future health); *Sable Commc’ns, Inc. v. FCC*, 492 U.S. 115, 126 (1989) (“[T]here is a compelling interest in protecting the physical and psychological well-being of minors.”); *Nat’l Treasury Employees Union v. Von Raab*, 489 U.S. 656, 677 (1989) (recognizing the government’s “compelling interests in safeguarding our borders and the public safety”); *Simopoulos v. Virginia*, 462 U.S. 506, 519 (1983) (acknowledging the State’s “compelling interest” in protecting the health and safety of women in the context of abortions); *Goldfarb v. Va. State Bar*, 421 U.S. 773, 792 (1975) (“States have a compelling interest in the practice of professions within their boundaries, and that as part of their power to protect the public health, safety, and other valid interests they have broad power to establish standards for . . . regulating the practice of professions.”).

health and safety-based regulations of scientific research easily meet the second prong in the *O'Brien* analysis.

A bare assertion of health and safety protection, however, is not likely to be sufficient in the context of scientific restrictions. Rather, the interest must be linked to a provable harm from a specific chemical, process, or technology. In some cases, that link will be obvious, as with unregulated nuclear weapons research. Such research creates issues of national security, clearly a compelling government interest.¹⁶⁸ The link may be less evident with new technologies such as human reproductive cloning, where likelihood and type of harm is more speculative. In such cases, the government will need some evidentiary basis to establish that the physical well-being of its citizens is truly threatened.

These evidentiary requirements will be nontrivial but slight. In the commercial speech context, lower courts have required concrete evidence of harm, even when the government merely attempted, for example, to institute mandatory labeling of products created with controversial techniques or containing suspect chemicals.¹⁶⁹ It is likely that the government will face a similar burden when attempting an upstream restriction on the research itself. Nonetheless, when the government is compelled to take the drastic action of regulating scientific research out of concern for public health, it is probable that the evidentiary burdens about health and safety will be easily surmounted. In fact, it is likely to be the case that scientific evidence of harm prompts the legislature to take action in the first place, at least for technologies with insignificant moral resistance. Therefore, the primary battleground for safety-based research restrictions will be the narrow tailoring prong of the *O'Brien* test, discussed below in Part III.C.

2. *Morality-based interests*

Unlike health and safety interests, moral interests do not provide a solid basis for restrictions on scientific research, unless they are expressed in broad and general terms. The primary difference between the two types of interests is that health and safety risks can typically be measured objectively and are of near-universal concern while moral interests are subjective in nature and are usually shared only by like-minded individuals. As one right-to-research advocate characterized moral objections to science, “Such subjective notions

168. See *Haig v. Agee*, 453 U.S. 280, 307 (1981) (“It is ‘obvious and unarguable’ that no governmental interest is more compelling than the security of the Nation.” (quoting *Aptheker v. Sec’y of State*, 378 U.S. 500, 509 (1964))).

169. See, e.g., *Nat’l Elec. Mfrs. Ass’n v. Sorrell*, 272 F.3d 104, 115 (2d Cir. 2001) (upholding mandatory labeling of lamps containing mercury because the deleterious effects of mercury poisoning were well documented); *Int’l Dairy Foods Ass’n v. Amestoy*, 92 F.3d 67, 73 (2d Cir. 1996) (invalidating a state law that mandated labeling of milk products derived from cows treated with synthetic growth hormone rBST, after finding “no human safety or health concerns”).

should not provide the sort of important or compelling interest sufficient to justify infringement of constitutional rights.”¹⁷⁰ The probability is low, however, that a government restriction on scientific research would be based solely on moral grounds; an accompanying health and safety interest would be likely, as discussed in Part I.B. Nonetheless, certain objectionable research, such as human genetic engineering, carries with it no direct health and safety concerns, and a purely moral interest would be the basis for the statutory restriction of such research.

In its 2002 report, the President’s Council on Bioethics argued that moral restrictions on research were par for the course, claiming that “[s]cientists already accept important moral boundaries in research on human subjects, and they do not regard such boundaries as unwarranted restrictions on the freedom of scientific research.”¹⁷¹ The report continued by arguing that “the scientific enterprise is a moral one not only because of the goals scientists seek but also because of the limits they honor. Indeed, it is precisely the acceptance of limits that stimulates creative advance, that forces scientists to conceive of new and morally acceptable ways of conducting research.”¹⁷² The picture of moral science painted by the Council leads one to believe that scientists have no legitimate basis for expecting an unfettered right to research, because the importance of morality trumps the importance of science. Clearly, the moral beliefs of research scientists will often differ wildly from those of lawmakers and their constituents, requiring the intervention of courts when scientists assert First Amendment rights to proceed.

The Supreme Court has been decidedly mixed on the role that moral interests should play in justifying government regulations. At times, the Court has clearly rejected morality-based intrusions on constitutional rights. In *Carey v. Population Services International*, the Court refused to uphold a morality-driven state law that prohibited advertisements or displays of contraceptives.¹⁷³ In striking the law, the Court concluded that “the fact that protected speech may be offensive to some does not justify its suppression.”¹⁷⁴ In *Lawrence v. Texas*, the Court invalidated a state law that criminalized homosexual sodomy, noting that “[o]ur obligation is to define the liberty of all, not to mandate our own moral code.”¹⁷⁵ The Court explicitly adopted Justice Stevens’s dissenting analysis in *Bowers v. Hardwick*,¹⁷⁶ including the argument that “the fact that the governing majority in a State has traditionally viewed a particular practice

170. Foley, *supra* note 6, at 730.

171. COUNCIL REPORT ON CLONING, *supra* note 53, at 169.

172. *Id.*

173. 431 U.S. 678 (1977).

174. *Id.* at 701.

175. 539 U.S. 558, 571 (2003) (quoting *Planned Parenthood of Se. Pa. v. Casey*, 505 U.S. 833, 850 (1992)).

176. 478 U.S. 186 (1986).

as immoral is not a sufficient reason for upholding a law prohibiting the practice.”¹⁷⁷

There were strong dissenting opinions in both *Carey* and *Lawrence* on the importance of morality as a state interest. In *Carey*, Justice Rehnquist took issue with the majority’s rejection of public morality as a basis for government regulation, arguing that “[t]he Court’s denial of a power so fundamental to self-government must, in the long run, prove to be but a temporary departure from a wise and heretofore settled course of adjudication to the contrary.”¹⁷⁸ Similarly, in his *Lawrence* dissent, Justice Scalia recognized that the overturning of *Bowers* put morality-based regulations on shaky ground, noting that “[c]ountless judicial decisions and legislative enactments have relied on the ancient proposition that a governing majority’s belief that certain sexual behavior is ‘immoral and unacceptable’ constitutes a rational basis for regulation.”¹⁷⁹

One such judicial decision is *Barnes v. Glen Theatre, Inc.*,¹⁸⁰ in which the Court upheld a public indecency statute in the context of nude dancing. In *Barnes*, the Court observed that “[t]he traditional police power of the States is defined as the authority to provide for the public health, safety, and morals, and we have upheld such a basis for legislation.”¹⁸¹ Importantly, the Court relied on *Bowers* for this proposition, potentially undermining its utility, given the rejection of *Bowers* by *Lawrence*. However, the Court based its observation more specifically on *Paris Adult Theatre I v. Slaton*,¹⁸² a case whose precedential value was not directly affected by *Lawrence*, where it was not cited by either the majority or dissent. Thus, the impact of *Lawrence* on the importance of morality-based interests remains far from clear. Indeed, at least one lower court has refused to read the holding of *Lawrence* in the ominously broad manner construed by Justice Scalia.¹⁸³

Additional guidance on the legitimacy of morality-based regulations, in the First Amendment context, comes from *Virginia v. Black*.¹⁸⁴ In striking down a state law that banned cross burning, the Court noted that “[t]he First Amendment permits ‘restrictions upon the content of speech in a few limited areas, which are of such slight social value as a step to truth that any benefit

177. *Id.* at 216 (Stevens, J., dissenting).

178. 431 U.S. 678, 719 (1977) (Rehnquist, J., dissenting).

179. 539 U.S. at 589 (Scalia, J., dissenting).

180. 501 U.S. 560 (1991) (plurality opinion).

181. *Id.* at 569.

182. 413 U.S. 49 (1973).

183. See *Williams v. Atty. Gen. of Ala.*, 378 F.3d 1232, 1238 (11th Cir. 2004) (citing both *Barnes* and *Paris Adult Theatre* for the continuing viability of morality-based laws and arguing that any restriction from *Lawrence* on public morality as a legitimate state interest applies only to restrictions on private consensual sexual conduct), *cert. denied sub nom. Williams v. King*, 543 U.S. 1152 (2005).

184. 538 U.S. 343 (2003).

that may be derived from them is clearly outweighed by the social interest in order and morality.”¹⁸⁵ In other words, morality-based restrictions on speech will be upheld only when there is a concomitant lack of value in the speech.¹⁸⁶ When there is value in the speech product as a whole, the Court has historically made clear that even speech that is patently offensive to community standards is protected.¹⁸⁷ In *Virginia v. Black*, the Court ultimately held that because the burning of a cross expressed an important social message, it could not be restricted solely in the name of order and morality.

The type of inquiry employed in *Virginia v. Black*, whether morally offensive speech has any redeeming social value, applies readily to the context of expressive scientific research. The initial conclusion from such an inquiry is that a purely moral interest is an insufficient justification for restricting scientific research, given that most research is certain to have independent social value. It is important to note, however, that *Virginia v. Black*, and the cases on which it relied, involved morality-driven speech restrictions that were content-based. In the context of content-neutral regulations of expressive conduct, purely moral interests might be “substantial” for purposes of *O’Brien*, but only if they avoid the appearance of being narrow-minded and subjective. For example, a moral interest in preventing the commodification of nascent human life, which would be invoked by opponents of reproductive cloning, seems undeniably substantial because it is framed broadly. Similarly, an interest in preventing unnecessary harm to animal subjects in scientific experiments would also likely be substantial. On the other hand, the moral interest of preventing inequitable distribution of perfect skin through genetic engineering would not be substantial without further evidence of objective harm.

The importance of the relationship between the government interest and the tailoring of the restriction, i.e., the second and fourth prongs of the *O’Brien* test, is revealed by this last example. Although the moral basis for the genetic engineering restriction might fail the test for substantiality, the interest could be recast as a broad one such that the analysis would hinge on how well the language of the restriction was tailored to advance this interest. For example, if the interest were recast as prevention of gross economic and aesthetic inequity at the hands of genetic enhancement, it would likely be deemed substantial, leaving the narrow tailoring prong as the final analysis of validity. Recasting moral interests to be as broad as possible is likely to be the best strategy for surviving the substantiality prong of the *O’Brien* test, because the further a moral interest can be moved from provincial and subjective to universal and

185. *Id.* at 358-59 (quoting *R.A.V. v. City of St. Paul*, 505 U.S. 377, 382-83 (1992) and *Chaplinsky v. New Hampshire*, 315 U.S. 568, 572 (1942)) (emphasis omitted).

186. *See also* *Miller v. California*, 413 U.S. 15, 34 (1973) (articulating the requirements for speech to be classified as unprotected obscenity, including a requirement that the speech be devoid of “serious literary, artistic, political, or scientific value”).

187. *See id.*

objective, the more likely it is to be accepted by a court. Unlike health and safety interests, however, moral interests are provincial by nature and are not easily formulated as interests of near-universal concern.¹⁸⁸ For this reason, safety-based restrictions on scientific research will generally be much more palatable to courts than will morality-based restrictions.

From the foregoing analysis, several conclusions can be drawn about the role that the government interest will play in the ultimate fate of government restrictions on research. First, health and safety interests should almost always be considered substantial for purposes of the *O'Brien* analysis. Second, when moral interests are accompanied by a safety interest, courts will duck the thorny question of whether government can restrict scientific research in the name of morality alone. In such cases, the safety interest will serve as an independent ground for validity, and the analysis will proceed to the issue of how well the language of the statute is tailored to further the safety interest.

Third, in the rare cases where a research restriction is grounded solely in a moral interest, the breadth and generality of the stated interest will be critical. Narrowly framed moral interests will not be universally held and will, therefore, be an inappropriate basis for a governmental restriction. Although cases such as *Virginia v. Black* and *Lawrence* suggest that even broadly framed moral interests are insufficient grounds for trampling individual rights, the moral interests in those cases did not rise to the level of near-universal concern. Near-universal concern could, however, characterize the moral interests behind restrictions on scientific research. For example, a governmental interest in preserving the fundamental genetic makeup of human beings or preventing the commodification of human life strikes at the core of humanity in a way unmatched by any moral interest addressed by the Court thus far. Furthermore, as discussed above, the cases that have tackled the issue of morality-based regulations reveal a fractured Court, rife with dissent and overturned precedent. Given the addition of Chief Justice Roberts and Justice Alito to the Court, it is likely that regulations grounded in conservative morality would receive more favorable treatment than they otherwise might.¹⁸⁹ Thus, research restrictions driven solely by moral interests are likely to receive sympathetic treatment from the Court if the interests are broadly formulated. Even when those

188. I will use the phrase “near-universal concern” to indicate an interest that is shared by the vast majority of citizens. Use of this phrase in the context of moral interests is not intended to imply that empirical studies or opinion polls provide the support for such a label. Rather, the phrase is intended to convey the idea that certain traditional sentiments, such as preventing child poverty or improving one’s station in life through education, are so widely held that a judge could comfortably accept them as the will of the majority. A judge may use a variety of sources to inform his decision. See *infra* note 209.

189. See, e.g., ALLIANCE FOR JUSTICE, REPORT ON THE NOMINATION OF SAMUEL A. ALITO TO THE UNITED STATES SUPREME COURT 9-10, available at <http://www.supremecourtwatch.org/alitofinal.pdf> (citing empirical evidence of Justice Alito’s staunch conservatism); Cass R. Sunstein, *John Roberts, Minimalist*, WALL ST. J., Sept. 1, 2005, at A10 (discussing the conservative leanings of Justice Roberts).

interests are vigorously opposed by a determined minority, the Court should recognize that the stakes are higher in the context of scientific research than in other contexts the Court has addressed. If the moral interest is broadly formulated so as to be of near-universal concern, the will of the majority should control and the interest should be found substantial.

C. How Narrowly Tailored Is the Restriction?

The final prong of the *O'Brien* test is the requirement that a content-neutral restriction on expressive conduct be narrowly tailored. That is, the restriction must be “no greater than is essential to the furtherance of [the governmental] interest.”¹⁹⁰ Unlike with content-based laws, the narrow tailoring analysis of content-neutral laws does not include a least-restrictive-means requirement.¹⁹¹ When government chooses a particular means of restricting expressive conduct, therefore, the restriction will not be invalidated on account of a less restrictive alternative. Thus, a content-neutral restriction primarily must avoid burdening speech that does not implicate the interest.

Historically, unlike content-based speech restrictions, content-neutral speech restrictions have rarely been invalidated on narrow tailoring grounds. Therefore, government has wide latitude to formulate content-neutral speech restrictions that further a substantial interest, and the Supreme Court has explicitly held a variety of such laws to be narrowly tailored.¹⁹² Importantly, even complete bans on certain types of expressive conduct have been held constitutional.¹⁹³ As the Court noted in *Frisby v. Schultz*, “[a] complete ban can be narrowly tailored, but only if each activity within the proscription’s scope is an appropriately targeted evil.”¹⁹⁴ In order to assess whether restrictions on scientific research, including total bans, can be narrowly tailored to withstand constitutional scrutiny, the remainder of this Subpart will analyze two hypothetical statutes that seek to restrict specific lines of research.

190. *United States v. O'Brien*, 391 U.S. 367, 377 (1968).

191. *Ward v. Rock Against Racism*, 491 U.S. 781, 800 (1989).

192. *See, e.g., Hill v. Colorado*, 530 U.S. 703, 725 (2000) (concluding that a restriction on “sidewalk counseling” in front of healthcare facilities was narrowly tailored since it could be carried out from a prescribed distance); *Barnes v. Glen Theatre, Inc.*, 501 U.S. 560, 572 (1991) (declaring an Indiana public indecency statute “narrowly tailored” because its requirements were “modest[] and the bare minimum necessary to achieve the State’s purpose”); *Ward*, 491 U.S. at 803 (holding that a city’s sound-amplification guideline was narrowly tailored, despite the fact that performers could not express their message at the volume of their choosing).

193. *See, e.g., Frisby v. Schultz*, 487 U.S. 474, 486 (1988) (upholding a total ban on residential picketing because it prohibited only picketing that was narrowly targeted at residents in their homes, as opposed to the public in general); *City Council of L.A. v. Taxpayers for Vincent*, 466 U.S. 789, 807-10 (1984) (upholding a complete ban on all signs posted on public property because the visual impact of signs “constitutes a substantive evil within the City’s power to prohibit”).

194. 487 U.S. at 485.

The first hypothetical statute is a restriction on the development of novel strains of lethal viruses. The primary governmental interest behind such a restriction would be prevention of physical harm to large numbers of people who might be exposed to the novel virus following a deliberate or accidental release. An additional interest would be the prevention of social and economic paralysis that would follow widespread virus exposure in the general population. These interests would certainly be deemed substantial by a reviewing court, and the permissible breadth of the regulation would depend on whether the regulation restricted any research that did not implicate the stated interests. If the statute took care to define the categories of research that were off-limits, either by an enumerated list of viruses or through some other objective criteria, it would be possible to tailor the statutory scope to include only the specific research that threatened the stated health and safety interests.

As noted in Part I.A, novel virus research may be an important defense against bioterrorism because it allows government to stay one step ahead of terrorists via informed and effective countermeasures. Therefore, rather than a total research ban, a possible limitation on the scope of the hypothetical statute would be to confine those who can perform the research to scientists whose work directly addresses the bioterrorism issue. Such a construction would allow the beneficial work to continue, while prohibiting research conducted for other reasons, reasons that would necessarily be inadequate in light of the risks. Of course, the line separating beneficial from nonbeneficial research is unlikely to be a bright one. In addition, the problem of restrictions on scientific publication would persist, even for research deemed beneficial.¹⁹⁵ In the absence of free and open scientific discourse, achieving optimum bioterrorism countermeasures could be a sluggish and perhaps misdirected journey.¹⁹⁶ Legislatures, however, not courts, would need to grapple with the efficacy and wisdom of the statute; courts would merely decide its constitutionality. Ultimately, the narrow tailoring requirement is not likely to present a significant constitutional hurdle to a virus research ban, given that every category of novel virus research could implicate the health and safety interests offered by the government.

The second hypothetical statute is a total ban on human genetic enhancement. As a preliminary matter, the statute would need to define precisely the meaning of genetic enhancement to avoid a vagueness challenge. Here, it will be defined as the insertion, removal, or alteration of genes in human germinal cells or embryos to control the traits of the resulting offspring. Although there may be substantial health and safety interests behind a ban on this type of genetic enhancement, moral resistance would remain even if the technology were proven safe. The moral interest driving this type of research ban would be, at core, the preservation of our humanity. At some extreme, the desire to keep physical humanity in its present form, in terms of the range and

195. See *supra* Part I.C.

196. See Volokh, *supra* note 10, at 1210-11.

distribution of abilities and characteristics, might be substantial, if not compelling. For example, if faced with a technology whose use resulted in every human having the same physical appearance, a government would clearly have an interest in restricting the technology in the name of human preservation.

Assuming a purely moral interest in resisting genetic enhancement could indeed be found substantial under the *O'Brien* test, a reviewing court would next evaluate whether the total ban on enhancement were narrowly tailored. Because genetic enhancement, as defined above, captures genetic alterations performed to combat specific diseases, it is doubtful that a total ban on enhancement would be considered narrowly tailored. Scientific research geared toward curing genetic diseases would not implicate the moral interest invoked to support the enhancement ban. Therefore, at a minimum, the ban would need to be limited to non-disease-related enhancement. Note that from a semantic standpoint, a total ban could still be narrowly tailored if the definition of genetic enhancement were more restrictive, i.e., to exclude the disease-related enhancement. Only then would the complete ban satisfy the *Frisby* requirement that “each activity within the proscription’s scope [be] an appropriately targeted evil.”¹⁹⁷

Opponents of the genetic enhancement ban could also make a more general attack on the tailoring of the statute. The argument would be that any research restriction should focus only on the application of genetic enhancement technology and not on the acquisition of the underlying knowledge.¹⁹⁸ This limitation would burden no more research than was necessary to further the stated moral interest and would leave open the possibility of acquiring enhancement knowledge for its own sake, for dissemination to other nations, or simply for posterity. Although this argument has merit in the context of genetic enhancement research, the acquisition of scientific knowledge in other contexts is not always benign and may warrant restriction to further a governmental interest. With virus research from the previous hypothetical statute, for example, the health and safety interests are implicated as soon as a novel virus is created or its synthesis is understood, given the danger of accidental release or theft by terrorists. In other cases, such as with human reproductive cloning, opponents might argue that there is no acceptable use of even the basic scientific knowledge, so there should be no reason not to ban the acquisition of that knowledge along with the ban on all technological applications.

The distinction between acquisition and application of scientific knowledge raises the issue of restricting research based on actual versus potential harm. In other First Amendment contexts, restriction of certain types of harmful speech

197. *Frisby*, 487 U.S. at 485.

198. This argument has typically been made in the context of human cloning research. See, e.g., Ferguson, *supra* note 5, at 663 (“[T]he state could effectively answer [cloning opponents’] moral concerns by restricting the *practice* of human cloning once the knowledge is gained.”).

depends on the immediacy of the harm. For example, the government may restrict speech that threatens national security only if the speech would cause “direct, immediate, and irreparable” harm.¹⁹⁹ In the incitement context, speech is unprotected by the First Amendment if the speaker has an intent to cause imminent lawless action and there is a likelihood of that action.²⁰⁰ Based on the temporal component of these doctrines, it may be reasonable to expect that a government restriction on expressive scientific conduct must similarly contain a temporal component if it is to be upheld. That is, if there is no reasonably foreseeable harm from a given category of research, then restrictions that included such research would not be narrowly tailored. The appropriate temporal component of a research restriction would be highly dependent on the type of research involved and the type of harm sought to be prevented.

Clearly, the narrow tailoring analysis must be performed on a case-by-case basis for restrictions on scientific research. The hypothetical examples provided in this Subpart demonstrate that more than one constitutionally viable interpretation may be possible. Because the ultimate fate of research restrictions will likely be decided under the narrow tailoring prong of the *O’Brien* test, overly ambitious or ideological research bans are not likely to be upheld. Rather, adequately tailored restrictions must reflect a precise relationship between the interest to be protected and the risk of harm posed by the research.

D. *The Issue of Deference*

Scientific research has been a cornerstone of American progress, and few governmental interests carry enough weight to trump the importance of science. Consequently, legislators are likely to be loath to enact any restrictions on scientific research. Courts that review the constitutionality of such restrictions, therefore, are likely to defer to the judgment of the legislators.²⁰¹ However, that deference should extend only so far. Erring on the side of deference to the legislature about its stated interests in restricting certain types of research makes sense while rubber-stamping the statutory means of furthering those interests does not.

Deference in the context of the First Amendment has had a checkered past. In *Landmark Communications, Inc. v. Virginia*, the Supreme Court declared

199. *N.Y. Times Co. v. United States*, 403 U.S. 713, 730 (1971) (Stewart, J., concurring).

200. *Brandenburg v. Ohio*, 395 U.S. 444, 447 (1969) (per curiam).

201. Deference to the scientists themselves, regarding the importance and validity of their results, is a separate issue that courts have occasionally addressed. *See, e.g.,* *McMillan v. Togus Reg'l Office*, 294 F. Supp. 2d 305, 317 (E.D.N.Y. 2003) (“Any unnecessary intervention by the courts in the complex debate and interplay among scientists that comprises modern science can only distort and confuse. Humility of judges is the sine qua non of the law’s relation to science.”).

that “[d]eference to a legislative finding cannot limit judicial inquiry when First Amendment rights are at stake.”²⁰² However, this statement was made in reference to a newspaper’s right to publish confidential information—thereby implicating what is arguably core speech—and may not be directly applicable to a broader legislative finding that certain research seriously threatens public health or even morality, especially when expressive scientific conduct, not core speech, is involved. Indeed, since *Landmark*, the Court has noted that “[e]ven in the realm of First Amendment questions where Congress must base its conclusions upon substantial evidence, deference must be accorded to its findings as to the harm to be avoided and to the remedial measures adopted for that end, lest we infringe on traditional legislative authority”²⁰³ The Court reconciled this position with the one taken in *Landmark* by explaining that deference to the legislature does not mean that legislative findings are “insulated from meaningful judicial review altogether.”²⁰⁴ That is, the judicial review that is undertaken in the First Amendment context “is not a license to reweigh the evidence *de novo*, or to replace Congress’ factual predictions with [that of the Court]. Rather, it is to assure that, in formulating its judgments, Congress has drawn reasonable inferences based on substantial evidence.”²⁰⁵

Even if judicial deference in the free speech context is inappropriate for content-based regulations, as some have hinted,²⁰⁶ deference would still apply to restrictions on scientific research, which are likely to be content-neutral.²⁰⁷ The primary area of deference should be the adequacy of the stated governmental interests. The interests driving a legislative restriction on research are likely to represent the will of a large number of constituents and be the result of informed debate. Interests that involve protection of citizens’ health and safety, for example, are attractive candidates for deference because legislatures are best-equipped to make line-drawing decisions about the level of risk its citizens should face.²⁰⁸ Courts should recognize that the essence of any

202. 435 U.S. 829, 843 (1978); *see also* Volokh, *supra* note 10, at 1139 (“[W]hile the Court at one time did defer to legislative judgments that speech ought to be restricted . . . modern free speech protection rests on a rejection of this approach.”).

203. *Turner Broad. Sys., Inc. v. FCC*, 520 U.S. 180, 196 (1997).

204. *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 666 (1994).

205. *Id.*

206. *See* Volokh, *supra* note 10, at 1139. It is somewhat tautological to argue that courts will defer less to the legislature for content-based restrictions than for those that are content-neutral. The former demands strict scrutiny while the latter calls for less rigorous review by definition. So, of course courts will perform a more exacting review of content-based regulations because the standard of review necessitates it. Whether the distinction is one of judicial rigor or one of judicial independence, the important point is that the Court has explicitly recognized the appropriateness of deference to the legislature in the context of the First Amendment.

207. *See supra* Part III.A.

208. *See generally* Volokh, *supra* note 10, at 1208 (acknowledging a “jurisprudential notion that arbitrary line-drawing decisions . . . are for the legislature rather than for judges”).

legislative restriction on scientific research is a cost-benefit analysis that balances the trajectory of technology in our society, the conformance of the controversial science to that trajectory, and the potential for harm/misuse of the new technology on one hand with the purported benefits of the technology on the other. Deference to moral interests proffered by the legislature is less appropriate because a court should determine for itself that a moral interest is of near-universal concern before that interest is deemed substantial for purposes of the *O'Brien* analysis.²⁰⁹

Although deference to the legislature on the substantiality of its interest is of significant concern, it addresses only one prong of the *O'Brien* test. The other prong where deference is relevant is the question of narrow tailoring. With tailoring, there is not likely to be a compelling reason to defer to the legislature. Rather, ensuring that a restriction on scientific research is narrowly tailored will be an essential check on legislative attempts to dissolve constitutional freedoms without thoughtful deliberation and precise drafting. Moreover, unlike the one-dimensional question of whether an interest is substantial, the question of narrow tailoring is multidimensional. In addition to possible vagueness of individual terms, a statutory restriction may be impermissibly underinclusive or overinclusive such that the stated interest is not furthered in the most sensible and fair manner. Correction of these potential problems could take many forms, including partial or complete redrafting, delay in execution, or abandonment of the statute altogether. The role of the court should be to stand in the way of implementation of the research restriction, when it is challenged, until it satisfies the appropriate level of constitutional scrutiny. Deference to the legislature's idea of narrow tailoring could inappropriately and unnecessarily endanger free speech rights that do not implicate the governmental interest.

CONCLUSION

Because scientific research merits *prima facie* protection under the First Amendment only when it qualifies as expressive conduct, it becomes inappropriate to discuss a freedom of scientific research, *per se*. Rather, research that meets the expressive conduct threshold will be treated like any

209. Courts are in a better position to determine what is near-universal because they are better insulated from political pressures that drive morality-based legislation. The will of a substantial majority of the legislators is insufficient evidence that a moral interest is near-universal. Rather, courts must base their decisions not only on the immediate, practical effects that are likely guiding legislators but also on any long-term, unintended, or unappreciated effects. Investigation and reliance on history and customs, consensus societal values, or natural law or human rights would come into the calculus. See Richard H. Fallon, Jr., *A Constructivist Coherence Theory of Constitutional Interpretation*, 100 HARV. L. REV. 1189, 1208 (1987). In short, as Alexander Bickel has noted, "[C]ourts have certain capacities for dealing with matters of principle that legislatures and executives do not possess." ALEXANDER BICKEL, *THE LEAST DANGEROUS BRANCH* 25 (2d ed. 1986).

other kind of expressive conduct, with research restrictions subject to either intermediate or strict scrutiny.²¹⁰ Blanket First Amendment protection of scientific research is incompatible with expressive conduct theory and is not supported by free speech jurisprudence. The expressive conduct approach has the virtue of not requiring an independent assessment of what qualifies as scientific research, a judgment that would be fraught with difficulty and bias. Moreover, expressive conduct is firmly rooted in First Amendment precedent and offers predictability over competing theories of protection for scientific research.

Thus, when faced with a statutory restriction on a particular line of research, a scientist seeking First Amendment protection must clear two hurdles. First, she must prove that the research activity qualifies as expressive conduct under the *Spence* test. If this threshold is cleared, the court's potential validation of the research restriction presents a second hurdle. If the court rejects either the judgment of the legislature or the scope of the research restriction, then the expressive research will be protected. But because restrictions on controversial research are likely to be supported by a strong government interest, the scope of the restriction will be the inevitable battleground. Judicial deference to the legislature about the importance of its interest is likely, particularly for health and safety interests; however, deference concerning the proper scope of the statute is not warranted. Therefore, although the burden is on the government to justify the statute, the scientist may be able to demonstrate that the restriction is inappropriately tailored. Poorly tailored restrictions, such as total bans on certain research, might be successfully redrawn, and indeed, even those who favor a First Amendment right to research concede that limited bans might be constitutional.²¹¹

Some commentators have compared modern regulation of scientific research to the opposition faced by Copernicus, Galileo, and Darwin.²¹² The analogy is facile and inapt. The controversial discoveries of those scientists were not linked to technological applications that threatened the safety of the populace. Moreover, opposition of an earlier day, based primarily on religious motives and reinforced by a lack of robust debate, grew in response to the threat the new discoveries posed to the centrality of the human species. Modern biotechnology, on the other hand, threatens not who we are but who we will become. It is this threat that many of today's legislative restrictions seek to control. More analogous to the work of Copernicus or Darwin would be race-

210. See Francione, *supra* note 5, at 459 ("If experimentation does involve communicative elements, then it is protected as expression, and its status as experimentation becomes irrelevant.").

211. See, e.g., Coleman, *supra* note 7, at 1397 ("[W]hile complete bans would not rationally relate to state interests, limiting . . . research to support a state interest related to societal or health concerns could be constitutional.").

212. See, e.g., Ferguson, *supra* note 5, at 641.

IQ research that might uncover a racial hierarchy of intelligence²¹³ or neuroscience research that may reveal the absence of human free will. It is doubtful, however, that the government could formulate any constitutionally viable interest to justify a restriction on this type of basic research, without there being an associated technology that threatened our future.²¹⁴

It is possible that scientists will take the lead and become effective at self-policing not only publication²¹⁵ but also the underlying research.²¹⁶ Although self-policing creates conflicts of interest that may dilute its effectiveness, scientists may have strong incentive to avoid the alternative of government-imposed restrictions. Nonetheless, such restrictions may at times be warranted, regardless of scientists' rights or preconceptions, when new technologies imperil millions of individual lives or threaten our collective way of life. Those decisions will be made by legislatures, ideally in response to both informed debate and the will of their constituents. The breadth of those decisions will be evaluated in court, taking into account the associated loss of constitutional rights. A blanket right to scientific research, in the name of technological progress, would preempt this balance and is not supported by the First Amendment.

213. See generally Delgado et al., *supra* note 5.

214. *But see id.* at 225 (concluding that some regulation of scientific race-IQ research might be constitutional).

215. See *supra* text accompanying notes 97-98.

216. See *supra* text accompanying note 46.