

**HOM 565: The Ethics of Modern Biotechnology
Syllabus
Fall 2003**

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A. Administrative Information

Instructor: Professor Robert Streiffer

Lectures: 374 Van Hise, Thursday, 11:00 – 1:30

Philosophy Office: 5123 Helen C. White Hall; 263 – 9479

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Office Hours: Thursday 1:45 – 3:00 in my Philosophy Office, and by appointment

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Credits: 3

B. Course Description, Objectives, Requirements, Paper Dates, and Materials

This course is for graduate students and upper-level undergraduates. It is an in-depth study of a selection of ethical issues arising from the application of modern biotechnology to microorganisms, plants, animals, and humans. In contrast to much of the public, academic, and industry discussion on these issues, we will aim at a discussion that is informed both by scientific research and by work done in ethical theory, political philosophy, and other relevant disciplines, and whose character is rigorous, clear, nuanced, and unbiased. I do not consider myself either generally for or generally against biotechnology. As a philosopher, however, I am against bad arguments wherever they are found.

There are two overall goals of the course:

1. To improve your familiarity with the facts, concepts, theories, and arguments from the relevant scientific, ethical, and political literature.
2. To improve your ability to think about and discuss the ethical issues in this area.

More specifically, I expect you to be able to do the following by the end of the semester:

1. Be more appreciative of opposing viewpoints on controversial ethical questions.
2. Be clearer about your own views on these matters.
3. Define relevant scientific concepts.
4. Define relevant ethical concepts.
5. List the main applications of biotechnology which have raised ethical concerns.
6. Explain how recombinant DNA techniques are used in those applications.
7. List the main ethical worries for each of those applications.
8. Analyze the main arguments from the literature, pro and con, for each of those applications.
9. Assess the reasonableness of the scientific claims made in those arguments.
10. Assess the reasonableness of the ethical claims made in those arguments.
11. Integrate the discussion of science, ethics, and political philosophy to formulate a positive argument for or against applications of biotechnology.

Requirements:

1. Read all of the assignments, read them carefully, and read them critically. The average amount of reading per class is about 50 pages, but for some classes, is much higher. Start reading well in advance. In a small seminar, the contribution that each person makes to the discussions is important.
2. Attend all the classes. In addition to being expected to show familiarity with the class discussion in your papers, class participation will count for 20% of your grade.
3. Undergraduates: Two papers, 600 words (2 pages) in length, each worth 10% of your grade, and two papers 1500 words (5 pages) in length, each worth 30% of your grade.

4. Graduate Students: Two papers, 600 words (2 pages) in length, each worth 10% of your grade, and then either two papers 2400 words (8 pages) in length and each worth 30% of your grade, or a single term paper, 4800 words (16 pages) in length, done in two drafts, and worth 60% of your grade. (By “a draft” I mean a draft of a complete paper, not a partial paper.)

Undergraduate Paper Dates:

	Assigned	Due	Paper Length	Time
1	Sept 11	Sept 18	600 words (2 pages)	1 week
2	Oct 9	Oct 16	600 words (2 pages)	1 week
3	Oct 23	Nov 13	1500 words (5 pages)	3 weeks
4	Nov 20	Dec 11	1500 words (5 pages)	3 weeks

Graduate Student Paper Dates:

	Assigned	Due	Paper Length	Time
1	Sept 11	Sept 18	600 words (2 pages)	1 week
2	Oct 9	Oct 16	600 words (2 pages)	1 week
3	Oct 23	Nov 13	Rough draft or 2400 word paper (8 pages)	3 weeks
4	Nov 20	Dec 11	Final draft or 2400 word paper (8 pages)	3 weeks

Materials:

- Most of the readings will be available through the Middleton Health Sciences Library E-reserves (accessible through you're My UW page), the Middleton regular reserves, and will also be compiled into a reader available for purchase at Bob's Copy Shop in University Square.
- *The Elements of Style*, by William Strunk and E. B. White (Recommended, UWBS)
- *A Rulebook for Arguments*, by Anthony Weston (Recommended, UWBS)
- For additional biotech research on the web, two good sources are:
<http://www.biotech.wisc.edu/seebiotech/seemail/index.html> (for news)
<http://www.library.wisc.edu/guides/Biology/gmo.htm>

C. Course Schedule

I. Recombinant DNA Techniques (4 Meetings)

I will go over administrative details, provide an overview of the content and requirements of the course, and provide a brief history of biotechnology. After an introduction to the basics of recombinant DNA technology, we will evaluate some of the ethical arguments people were making in the early 1970s both for and against the use of recombinant DNA techniques. Although rDNA techniques are now known to be quite safe, the arguments are interesting both because they provide a historical context to the current debate, and because many of the current arguments are similar in form to the ones given originally. We will explore such question as the following. Is all genetic engineering unnatural, and if it is, does that make it intrinsically wrong? What does it mean to say that an activity is unnatural, anyway? To what extent is recombinant DNA research protected by the right to academic freedom? Is there a right of academic freedom to engage in research that the public perceives to be risky or morally objectionable? How should decisions be made under conditions of uncertainty? What grounds the state's right to restrict harmful activities? Is the fact that a group finds a kind of activity offensive a legitimate reason for the state to restrict that activity?

1. Thursday, September 4

Course Overview, Philosophical Terminology, History of Biotechnology

- Handed out in class: Turning Point Project, “Who Plays God in the 21st Century.”
- Handed out in class: Introduction Handout
- Handed out in class: GE Food Quiz

2. Thursday, September 11

First paper topics handed out

Recombinant DNA Techniques; Intrinsic Objections (75 pages)

- Michael J. Reiss and Roger Straughan, "The Practicalities of Genetic Engineering," Ch. 2 in *Improving Nature* (Cambridge: Cambridge University Press, 1996), 11 – 42 (32 pages)
- Michael J. Reiss and Roger Straughan, "Extrinsic and Intrinsic Concerns," in *Improving Nature* (Cambridge: Cambridge University Press, 1996), 49 – 50 (2 pages)
- Michael J. Reiss and Roger Straughan, "Intrinsic Concerns about Unnaturalness," "Intrinsic Concerns about Disrespect," in *Improving Nature* (Cambridge: Cambridge University Press, 1996), 59 – 67 (9 pages)
- John Stuart Mill, "On Nature" (32 pages)

3. Thursday, September 18

First paper topics due at the beginning of class

Extrinsic Objections

- Paul Berg, D. Baltimore, and H. W. Boyer, "Potential Biohazards of Recombinant DNA Molecules," *Science* 185 (1974): 303 (1 page)
- Sinsheimer, Robert L., "Two Lectures on Recombinant DNA Research," in *The Recombinant DNA Debate*, ed. by David A. Jackson and Stephen P. Stich (Englewood Cliffs, New Jersey: Prentice – Hall, Inc, 1979), 85 – 98 (14 pages)
- Stephen Stich, "The Recombinant DNA Debate: Some Philosophical Considerations," in *The Recombinant DNA Debate*, ed. by David A. Jackson and Stephen P. Stich (Englewood Cliffs, New Jersey: Prentice – Hall, Inc, 1979), 183 – 201 (19 pages)

4. Thursday, September 25

Principles of Legitimate Regulation

- Joel Feinberg, "General Introduction," in *Harm to Others*, by Joel Feinberg (New York: Oxford University Press, 1984), 3 – 27 (25 pages)
- John Stuart Mill, "The Harm Principle," in *The Philosophy of Law*, edited by Frederick Schauer and Walter Sinnott-Armstrong (Fort Worth: Harcourt Brace College Publishers, 1996), 310 – 313 (4 pages)
- Judith Jarvis Thomson, "Distress and Harm," Ch. 10 in *The Realm of Rights* (Cambridge, Massachusetts: Harvard University Press, 1990), 249 – 269 (21 pages)
- Joel Feinberg, "The Offense Principle," in *Social and Political Philosophy*, edited by George Sher and Baruch A. Brody (Fort Worth: Harcourt Brace College Publishers, 1996), 84 – 96 (13 pages)

II. Plant Biotechnology (4 Meetings)

In this section, we will explore various theories regarding the duties we have to plants, species, and the environment, we will familiarize ourselves with the current applications and regulations of plant biotechnology, and we will explore views about the role of experts and of public opinion in a democracy. With that framework as background, we will then examine issues regarding environmental risk, food safety, labeling, humanitarian uses of agricultural biotechnology, and agro- and eco-terrorism.

5. Thursday, October 2

Background on Environmental Ethics

- J. Baird Callicott, "The Search for an Environmental Ethic," Ch. 10 in *Matters of Life and Death*, edited by Tom Regan (New York: Random House, 1986), 381-420 (40 pages)
- Elliott Sober, "Philosophical Problems for Environmentalism," in *Environmental Ethics*, edited by Elliot (Oxford: Oxford University Press, 1995) 226-247 (22 pages)
- L. L. Wolfenbarger and P. R. Phifer, "The Ecological Risks and Benefits of Genetically Engineered Plants," *Science* 290 (15 Dec 2000): 2088-2093 (6 pages)

6. Thursday, October 9

Second paper topics handed out

The FDA and the Role of Expertise and of Preferences in a Democracy (49 pages)

- U. S. Food and Drug Administration, "Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Developed Using Bioengineering," Draft of January 2001 (4 pages)
- Robert Dahl, "Guardianship," Ch. 4 in *Democracy and Its Critics* by Robert Dahl (New Haven: Yale University Press, 1989), 52 – 64 (13 pages)
- Robert Dahl, "Is Political Equality Justified," Ch. 4 in *Controlling Nuclear Weapons*, by Robert Dahl (Syracuse: Syracuse University Press, 1985) 53 – 67 (15 pages)
- "Genetically Engineered Food Right to Know Act," available at <http://www.thecampaign.org/HR3377.htm> (6 pages)
- Alan McHughen, "Uninformation and the Choice Paradox," in *Nature Biotechnology* 18 (October 2000) 1018 – 1019 (2 pages)
- Eichenwald, Kurt; Kolata, Gina; Peterson, Melody, "Biotechnology Food: From the Lab to a Debacle," in *The New York Times*, January 25, 2001 (9 pages)

7. Thursday, October 16

Second paper topics due at the beginning of class

Humanitarian Concerns

- Peter Singer, "Famine, Affluence, and Morality," in *Philosophy and Public Affairs* 1 (Spring 1972): 229 – 243 (15 pages)
- Maarten J. Chrispeels, "Biotechnology and the Poor," in *Plant Physiology* 124 (September 2000): 3 – 6 (4 pages)
- Ingo Potrykus, "The "Golden – Rice" Tale" (12 pages)
- Kimbrell, Andrew, "Why Biotechnology and High-Tech Agriculture Cannot Feed the World," in *The Ecologist* 28 (September/October 1998): 294 – 298 (5 pages)
- Greenpeace, "Golden Rice is Fool's Gold," http://www.biotech-info.net/fools_gold.html (1 page)
- Greenpeace, "Genetically Engineered Pro-Vitamin A Rice," <http://a288.g.akamai.net/7/288/1533/5d028232b3b6de/www.greenpeace.org/%7Egeneng/reports/food/GRice.pdf> , (2 pages)
- Vandana Shiva, "Genetically Engineered Vitamin 'A' Rice: A Blind Approach to Blindness Prevention," http://www.biotech-info.net/blind_rice.html (2 pages)
- Ingo Potrykus, "Response to Greenpeace," http://www.biotech-info.net/IP_response.html (2 pages)

8. Thursday, October 23

Third paper topics handed out

Ecosabotage

- Ronald Dworkin, "Civil Disobedience and Nuclear Protest," in *A Matter of Principle* by Ronald Dworkin, 104 – 116 (13 pages)
- Michael Martin, "Ecosabotage and Civil Disobedience," in *Environmental Ethics* 12 (Winter 1990): 291-310 (20 pages)
- Kim Murphy, "Eco-terror Groups Fights Fire with Fire, More Fire," in *The Denver Post*, May 2, 2000 (4 pages)
- Bioengineering Action Network, "The Cross – Pollinator #1, Harvest, 1999," <http://www.greens.org/s-r/gga/ban.html> (3 pages)
- "Activists Destroy GE Crops at Research Facility in Brentwood, CA," Genetix Alert News Release, May 17, 2001, <http://ban.tao.ca/501ARBrentwood.htm> (2 pages)
- "The Nighttime Gardener," <http://ban.tao.ca/1299nighttimegardener.htm> (6 pages)

III. Animal Biotechnology (3 Meetings)

In this section, we will survey the techniques and uses of animal biotechnology, and evaluate some of the concerns that have been expressed about them. We will look at arguments for and against the view that

animals have rights, the ethical justifiability of their use in medical experimentation, and the ethical justifiability of using genetic engineering to change an animal's nature to better suite our needs, perhaps at the expense of the animal's own welfare.

9. Thursday, October 30

Uses and Techniques of Animal Biotechnology, Views on the Moral Standing of Animals (21 pages)

- Sheldon Krimsky and Roger Wrubel, "Transgenic Animals," Ch. 10 in *Agricultural Biotechnology and the Environment* (Urbana: University of Illinois Press, 1996), 191 – 211 (21 pages)
- Tom Regan, "The Case for Animal Rights," in *Contemporary Moral Problems*, ed. James E. White (Belmont, CA: Wadsworth Publishing Company, 2000), 500 – 508 (9 pages)
- Tibor R. Machan, "Do Animals Have Rights?" in *Contemporary Moral Problems*, ed. James E. White (Belmont, CA: Wadsworth Publishing Company, 2000), 509 – 515 (7 pages)
- Marry Anne Warren, "Difficulties with the Strong Animal Rights Position," in *Contemporary Moral Problems*, ed. James E. White (Belmont, CA: Wadsworth Publishing Company, 2000), 516 – 522 (7 pages)
- Handed out in class: Gary Varner, *In Nature's Interests*, 51-54 (4 pages)
- Handed out in class: Peter Singer, *Animal Liberation*, illustrations (10 pages)

10. Thursday, November 6

Animal Patents and the Use of Animals in Medical Experimentation (32 pages)

- R. G. Frey, "Organs for transplant: animals, moral standing, and one view of the ethics of xenotransplantation," Ch. 14 in *Animal Biotechnology and Ethics*, eds. Alan Holland and Andrew Johnson (London: Chapman and Hall, 1998), 190 – 208 (19 pages)
- Baruch Brody, "Evaluation of the Ethical Arguments Commonly Raised against the Patenting of Transgenic Animals," in *Animal Patents: The Legal, Social, and Ethical Issues*, edited by Lester (New York: Macmillan Publishers, Ltd., 1989) 141-153 (13 pages)

11. Thursday, November 13

Undergraduates: Third paper topics due at the beginning of class

Graduate Students: Rough draft or third paper topics due at the beginning of class

The Integrity Argument (45 pages)

- David E. Cooper, "Intervention, Humility, and Animal Integrity," Ch. 11 in *Animal Biotechnology and Ethics*, eds. Alan Holland and Andrew Johnson (London: Chapman and Hall, 1998), 145 – 155 (11 pages)
- Bernard E. Rollin, "On Telos and Genetic Engineering," Ch. 12 in *Animal Biotechnology and Ethics*, eds. Alan Holland and Andrew Johnson (London: Chapman and Hall, 1998), 156 – 171 (16 pages)

IV. Human Biotechnology (3 Meetings)

In this section, we will look at the application of biotechnology to humans. One application is presently underway, human embryonic stem cell research, and two more are on the horizon: human cloning and human genetic engineering. Is HES cell research permissible, or does it involve complicity in the wrongful death of the fetus? Is it ever permissible for one human being to make a genetic copy of him or herself, or would doing so inevitably entail unjustifiable risk to the clone? And under what circumstances, if any, would it be permissible to engage in

12. Thursday, November 20

Fourth paper topics handed out

Human Embryonic Stem Cell Research

- James A. Thomson, "Human Embryonic Stem Cells," in *The Human Embryonic Stem Cell Debate: Science, Ethics, and Public Policy*, Suzanne Holland, Karen Lebacqz, and Laurie Zoloth eds. (Cambridge: The MIT Press, 2001) 15- 26
- John Robertson, "Ethics and Policy in Embryonic Stem Cell Research," in *Kennedy Institute of Ethics Journal* 9.: 109-136.

- Richard Doerflinger, "The Ethics of Funding Embryonic Stem Cell Research: A Catholic Viewpoint," in *Kennedy Institute of Ethics Journal* 9.: 137-150

Thursday, November 27—No Class (Thanksgiving Holiday)

13. Thursday, December 4

Human Cloning

- Dan Brock, "Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con", in *Cloning Human Beings: Report and Recommendations of the National Bioethics Advisory Commission*, Rockville, MD 1997. Reprinted in M. Nussbaum and C. Sunstein, eds., *Clones and Clones: Facts and Fantasies About Human Cloning* (New York: W. W. Norton, 1998).
- Leon Kass, "The Wisdom of Repugnance," in *The Ethics of Human Cloning*, by Leon Kass and James Wilson (Washington D. C.: the AEI Press, 1998) 3 – 59.
- Laurence Tribe, "On Not Banning Cloning for the Wrong Reasons," in *Clones and Clones: Facts and Fantasies about Human Cloning*, Martha Nussbaum and Cass Sunstein, eds. (New York: W. W. Norton and Company, 1998). 221 – 232.

14. Thursday, December 11

Undergraduates: Fourth paper topics due at the beginning of class

Graduate Students: Final draft or fourth paper topics due at the beginning of class

Genetic Engineering of Humans

- LeRoy Walters and Julie Gage Palmer, "Germ-Line Gene Therapy," Ch. 3 in *The Ethics of Human Gene Therapy* (Oxford: Oxford University Press, 2000). 60 – 98.
- Allen Buchanan, Dan Brock, Norman Daniels, and Daniel Wikler, "Why Not the Best?" Ch. 5 in *From Chance to Choice: Genetics and Justice* (Cambridge: Cambridge University Press, 2000). 156 – 203.