

MHB 565: The Ethics of Modern Biotechnology
Syllabus, Spring 2005
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A. Administrative Information

Instructor: Professor Robert Streiffer

Lectures: 201 Van Hise, Tuesday, 2:25-4:55

Office Hours: Monday 2:00-3:00 in my bioethics office, and also by appointment

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

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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. Come to class ready to discuss the material. The contribution that each person makes to the discussion 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. Undergraduate papers: two shorter papers and two longer papers, per the schedule below.
4. Graduate student papers: two shorter papers, and a choice between two longer papers or one term paper in two drafts. By "draft" I mean a draft of a complete paper, not a partial paper. For the two longer papers or the term paper, you may choose your own topic so long as you discuss it with me beforehand. Although the graduate student papers are not substantially longer than the undergraduate papers, I will hold them to higher standards of clarity, rigor, and conciseness.

Undergraduate Paper Dates:

	Assigned	Due	Paper Length	Time	Grade
1	Jan 25	Feb 1	425-475 words (1 ½ pages)	1 week	10%
2	Feb 15	Feb 22	425-475 words (1 ½ pages)	1 week	10%
3	March 1	March 15	1150-1250 words (4 pages)	2 weeks	25%
4	April 12	May 3	1450-1550 words (5 pages)	3 weeks	35%

Graduate Student Paper Dates:

	Assigned	Due	Paper Length	Time	Grade
1	Jan 25	Feb 1	575-625 words (2 pages)	1 week	10%
2	Feb 15	Feb 22	575-625 words (2 pages)	1 week	10%
3	March 1	March 15	First draft 1500-3000 words (5-10 pages) or 1750-1850 words (6 pages)	2 weeks	NA/25%
4	April 12	May 3	Final draft 4075-4325 words (14 pages) or 2050-2150 words (7 pages)	3 weeks	60%/35%

Materials:

- The readings are available in a packet 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. Tuesday, January 18

Course Overview, Logic Terminology, History of Biotechnology

2. Tuesday, January 25

First paper topics handed out

Recombinant DNA Techniques; Intrinsic Objections

- 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), 59-64 (7 pages)
- John Stuart Mill, "On Nature" (32 pages)

3. Tuesday, February 1

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. Tuesday, February 8

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, labeling, humanitarian uses of agricultural biotechnology, and ecosabotage.

5. Tuesday, February 15

Second paper topics handed out
Environmental Ethics and GM Crops

- 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)
- 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)
- Dane Scott, "Science and the Consequences of Mistrust: Lessons from Recent GM Controversies," in *The Journal of Agricultural and Environmental Ethics* 16 (2003): 569-582 (14 pages)

6. Tuesday, February 22

Second paper topics due at the beginning of class
Labeling and the Role of Public Preferences in a Democracy

- 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)
- "Genetically Engineered Food Right to Know Act," retrieved from <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)
- Robert Streiffer and Alan Rubel, "Democratic Principles and Mandatory Labeling of GE Food," in *Public Affairs Quarterly* 13(3): 223-248 (26 pages)

7. **Tuesday, March 1**

Third paper topics handed out
Humanitarian Concerns

- Peter Singer, "Famine, Affluence, and Morality," in *Philosophy and Public Affairs* 1 (Spring 1972): 229-243 (15 pages)
- Ingo Potrykus, "The "Golden-Rice" Tale" (12 pages)
- Dane Scott, "The Magic Bullet Criticism of Agricultural Biotechnology," forthcoming in *The Journal of Agricultural and Environmental Ethics*. (12 pages)
- Mark Sagoff, "Biotechnology and Agriculture: The Common Wisdom and Its Critics," *Indiana Journal of Global Legal Studies* 9(13): 13-34 (22 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. **Tuesday, March 8**

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. **Tuesday, March 15**

Third paper topics or rough drafts due at the beginning of class
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)

Tuesday, March 22: Spring Break

10. Tuesday, March 29

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. Tuesday, April 5

Integrity and Telos Arguments (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 creating chimeras. 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 create an individual that was part human and part animal?

12. Tuesday, April 12

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
- Richard Doerflinger, "The Ethics of Funding Embryonic Stem Cell Research: A Catholic Viewpoint," in *Kennedy Institute of Ethics Journal* 9: 137-150
- Howard Curzer, "The Ethics of Embryonic Stem Cell Research," in *The Journal of Medicine and Philosophy* 29 (2004): 533-562 (30 pages)

13. Tuesday, April 19

Chimeras

- Jason Robert and Francoise Baylis, "Crossing Species Boundaries," in *The American Journal of Bioethics* 3 (3) 1-13 (13 pages).
- Robert Streiffer, "In Defense of the Moral Relevance of Species Boundaries," in *The American Journal of Bioethics* 3 (3) 37-38 (2 pages)
- Phillip Karpowicz, Cynthia Cohen, and Derek van der Kooy, "It Is Ethical to Transplant Human Stem Cells into Nonhuman Embryos," *Nature Medicine* 10 (4): 331-335 (5 pages).
- Robert Streiffer, "Human Embryonic Stem Cells, Chimeras, and Moral Status," draft (21 pages)

14. Tuesday, April 26

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 (57 pages)
- 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 (12 pages)

15. Tuesday, May 3

- Review
Fourth paper topics and final drafts due at the beginning of class
No Additional Readings