aMHB/AGRON/RURSOC/PHIL 565: The Ethics of Modern Biotechnology
Syllabus, Spring 2007

A. Administrative Information

Instructor: Professor Robert Streiffer
Lectures: 155 Van Hise, Thursday, 2:25-4:55 (15 minute break at 3:30)
Office Hours: Wednesday 2:00-3:00 in my philosophy office, and also by appointment
Philosophy Office: 5123 Helen C. White Hall; 263-9479
Bioethics Office: 1411 Medical Sciences Center; 262-7490
E-mail: rstreiffer@wisc.edu; Home page: http://philosophy.wisc.edu/streiffer/

B. Course Description

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, and non-human animals. 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.

C. Materials:

- Reading packet available for purchase at Bob's Copy Shop on University between Lake and Francis (616 University Ave., 257-4536)
- Handouts and news articles distributed in class
- For additional biotech research on the web, good places to start are:
  http://www.library.wisc.edu/guides/Biology/gmo.htm
  http://philosophy.wisc.edu/streiffer/biotechlinks.html

D. Objectives

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:

3. Be more appreciative of opposing viewpoints on controversial ethical questions.
4. Be clearer about your own views on these matters.
5. Define relevant scientific concepts.
6. Define relevant ethical concepts.
7. List the main applications of biotechnology which have raised ethical concerns.
8. Explain how recombinant DNA techniques are used in those applications.

9. List the main ethical worries for each of those applications.
10. Analyze the main arguments from the literature, pro and con, for each of those applications.
11. Assess the reasonableness of the scientific claims made in those arguments.
12. Assess the reasonableness of the ethical claims made in those arguments.
13. Integrate the discussion of science, ethics, and political philosophy to formulate a positive argument for or against applications of biotechnology.

E. Grading Plan:

I use the following grading scale, with your final numerical grade rounded to the nearest letter grade:

Letter Grade	**Numerical Equivalent**
A	4
AB	3.5
B	3
BC	2.5
C	2
D	1
F	0

F. Requirements:

- 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.
- Attend all the classes. I will be taking attendance, both to grade attendance and to help me learn your names. Attendance will count as 10% of your final grade. You are entitled to one free unexcused absence. Any excused absences for reasons other than an emergency must be cleared in advance of the class missed. For all excused absences, you must send me an e-mail stating the date and the reason so that I will have a record of it when it comes time to calculate your final grade. Any unexcused absence above your free one will affect your attendance grade as follows:

1 absence	B
2 absences	C
3 absences	D
4 absences	F
5 absences	Fail the class

- Participate in class discussions. Class participation will count for 10% of your grade.
- Undergraduate papers: one shorter papers and two longer papers, per the schedule below.
- Graduate student papers: one shorter paper, 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.

- Late Paper Policy: You must hand in all the papers in order to pass this course. You may not elect to opt out of a paper and receive an F on it. Papers are due at the beginning of class on the due date. Papers handed in during class but after the beginning of class will be bumped to the next letter grade or half-letter grade down (e.g., from an A to an AB, from a C to a D.) After that, the penalty is one full letter grade per 24 hours. Any non-emergency extensions must be requested prior to the due date, and will be granted only in rare circumstances. Although you are encouraged to discuss your papers with friends and classmates, no group work is allowed.

G. Undergraduate Paper Dates:

	Assigned	Due	Paper Length	Grade
1	Feb 15	Feb 22	575-625 words (2 pages)	10%
2	March 6	March 22	1,750-1,850 words (6 pages)	35%
3	April 19	May 10	1,750-1,850 words (6 pages)	35%

H. Graduate Student Paper Dates:

	Assigned	Due	Paper Length	Grade
1	Feb 15	Feb 22	575-625 words (2 pages)	10%
2	March 8	March 22	First draft 2,400-3,000 words (8-10 pages); or 2,350-2,450 words (8 pages)	NA/35%
3	April 19	May 10	Final draft 4,675-4,925 words (16 pages); or 2,350-2,450 words (8 pages)	70%/35%

I. Additional Class Policies

Academic misconduct: Please note that the imposition of any penalty for any kind of academic misconduct (e.g., plagiarism, trying to get credit for a class you didn't attend, etc.) results in a permanent note that goes into your academic file, and that UW will disclose the fact that you were penalized for academic misconduct to interested parties who request that information.

Exceptions to the rules: I will not grant anyone an exception to the rules outlined in this syllabus unless that exception is granted to everyone. This means, for example, that since I can't commit to allowing everyone the option of rewriting their paper, I can't allow anyone the option of rewriting their paper.

Classroom Etiquette: You are expected to behave in ways that are appropriate and respectful to the professor and the other students. This includes, but is not limited to

1. Arriving on time. Students who walk into the classroom late create a distraction.
2. Refraining from private conservations with classmates during lecture or discussion.
3. Being patient and courteous to other students when they ask a question or make a comment.
4. Expressing disagreement with the comments of others in a respectful manner.
5. Removing sunglasses and hats.
6. Staying awake.
7. Refraining from reading any non-course-related material.
8. Refraining from packing up until class is completely over.

9. Turn any beepers or cell phones off when entering class.

J. Outside Resources for Help

The Writing Center has several classes and numerous handouts on academic writing. They will also do provide individual writing instruction. Appointments can be made by stopping in at 6171 Helen C. White or calling 263-1992. Their web site is www.wisc.edu/writing. They can be much more effective if you approach them early in the writing process.

Study Skills: UW, as well as many other universities, have on-line materials available on how to improve your study skills as an undergraduate, and I encourage you to take a look at the URLs below and try to benefit from them.

http://guts.studentorg.wisc.edu/SS/sshome.htm
http://www.stanford.edu/dept/undergrad/uac/resources/study_skills.html.

Students with disabilities should notify me by the end of the second week of the semester so that appropriate accommodations can be made. Please bring your documentation from the McBurney Center (http://www.mcburney.wisc.edu/).

Jim Pryor has a very helpful page on how to read philosophy papers at

http://www.jimpryor.net/teaching/guidelines/reading.html.

K. 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? 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, January 25
Course Introduction, Moral Argumentation, and Logic Terminology

2. Thursday, February 1
The Basics of 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," in *Improving Nature?* (Cambridge: Cambridge University Press, 1996), 59-64 (7 pages)
- Allan Millar, "Following Nature," in *The Philosophical Quarterly*, Vol. 38 No. 151 (1988), 165-185 (21 pages) [N.B.: Next time, cut out sections III and IV.]

3. Thursday, February 8
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, February15
First paper topics handed out
Principles of Legitimate Regulation

- Joel Feinberg, §§ 1-4 and "Definitions of Liberty-Limiting Principles," from "General Introduction," in *Harm to Others*, by Joel Feinberg (New York: Oxford University Press, 1984), 3-14, 26-27 (12 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)
- Judith Jarvis Thomson, "Distress and Harm," Ch. 10 in *The Realm of Rights* (Cambridge, Massachusetts: Harvard University Press, 1990), 249-269 (21 pages)

II. Plant Biotechnology (3 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, and humanitarian uses of agricultural biotechnology.

5. Thursday, February 22
First paper topics due at the beginning of class
Environmental Ethics and Genetically Engineered 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)
- John Losey, "Transgenic Pollen Harms Monarch Larvae" in *Nature* 399 (20 May 1999), 214 (1 page)
- Eric Niiler, "GM Corn Poses Little Threat to Monarchs" in *Nature Biotechnology* 17 (December 1999), 1154 (1 page)
- Carol Yoon, "No Consensus on Effect of Genetically Altered Corn on Butterflies," *New York Times* (4 Nov 1999), A20 (2 pages)
- Quist and Chapela, "Transgenic DNA Introgressed into Traditional Maize Landraces in Oaxaca, Mexico," *Nature* 414 (29 Nov 2001), 541-543 (3 pages)
- S. Ortiz-Garcia, E. Ezcurra, B. Schoel, F. Acevedo, J. Soberon, and A. A. Snow, "Absence of Detectable Transgenes in Local Landraces of Maize in Oaxaca, Mexico (2003-2004) in *Proceedings of the National Academy of Sciences* (30 August 2005) 12338-12343 (6 pages).
- Alejandro Segarra and Jean Rawson, "StarLink Corn Controversy Background", CRS Report for Congress (6 pages).

6. Thursday, March 1
Scientific Expertise and 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)

- 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* Volume 13, Number 3 (2004), 223-248 (26 pages)

7. Thursday, March 8

Second paper topics handed out
The Humanitarian Argument for Agricultural Biotechnology

- Peter Singer, "Famine, Affluence, and Morality," *in Philosophy and Public Affairs* 1 (Spring 1972), 229-243 (15 pages)
- Ingo Potrykus, "The "Golden-Rice" Tale" (16 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)
- Stein, "Potential Impact and Cost Effectiveness of Golden Rice," in *Nature Biotechnology* 24 (October 2006), 1200-1201 (2 pages)

III. Animal Biotechnology (4 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 about the moral status of animals, the ethical justifiability of their use as food or in medical experimentation, the ethical justifiability of using genetic engineering to change an animal's nature to better suit our needs, perhaps at the expense of the animal's own welfare, at the use of biotechnology to create part animal, part human chimeras, and at the circumstances under which illegal activity can be justified in the name of animals or the environment.

8. Thursday, March 15

Uses and Techniques of Animal Biotechnology, Moral Status of Animals

- 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)
- Peter Singer, "All Animals Are Equal," in *Contemporary Moral Problems*, ed. James E. White (Belmont, CA: Wadsworth Publishing Company, 2000), 490-499 (10 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)

9. Thursday, March 22
Second paper topics or rough drafts due at the beginning of class
Duties to Animals Beyond Welfare?

- 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)
- Sara Gavrell Ortiz, "Beyond Welfare: Animal Integrity, Animal Dignity, and Genetic Engineering" *Ethics and the Environment* 9(1) 2004, 94-120 (27 pages)

10. Thursday, March 29
Human/Animal 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)
- Robert Streiffer, "At the Edge of Humanity: Human Stem Cells, Chimeras, and Moral Status," *Kennedy Institute of Ethics Journal* 15(4), 347-370 (24 pages)

Thursday, April 5: Spring Break

11. Thursday, April 12 (Guest Lecture or Reschedule)
Illegal Activity on Behalf of the Environment or Animals

- 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)
- Tom Regan, "The Case Against Vandalism and Violence, in *Satya*, April 2004, http://www.satyamag.com/apr04/regan.html (3 pages)
- Singer, Peter, "Humans Are Sentient Too," *The Guardian* (30 July 2004). (2 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)

IV. Biotechnology and Intellectual Property 2 Meetings)

In this section, we will look at the patent law system and the main court cases involving biotechnology. We will address such questions as the following. What, if anything, ethically justifies the patent law system? What rights do developing countries have to compensation for the use of their plant genetic resources? Does allowing life patents encourage harm to the environment or show improper respect for life?

12. Thursday, April 19

Third paper topics handed out
Biotechnology Patenting

- Robert Merges, "Introduction to the Patent Act," Ch 2. § A in *Patent Law and Policy* (Charlottesville, Virginia: Michie Law Publishers, 1997), 51-61 (11 pages)
- Robert Merges, "Natural Substances and Living Things, " Ch. 2 §D Subsections 1 - 3 in *Patent Law and Policy* (Charlottesville, Virginia: Michie Law Publishers, 1997), 157-180 (24 pages)
- Ned Hettinger, "Patenting Life," *Environmental Affairs Law Review* 22 (1995): 267-305 (40 pages).
- Robert Streiffer, "Academic Freedom and Academic-Industry Relationships in Biotechnology," in *The Kennedy Institute of Ethics Journal* 16(2), 129-149 (21 pages).

13. Thursday, April 26

Intellectual Property and Traditional Cultures

- Hope Shand, "There is a Conflict Between Intellectual Property Rights and the Rights of Farmers in Developing Countries," in *The Journal of Agricultural and Environmental Ethics*: 1991 131-142 (12 pages)
- Sidney B. Williams, Jr., "There is Not a Conflict Between Intellectual Property Rights and the Rights of Farmers in Developing Countries," in *The Journal of Agricultural and Environmental Ethics*: 1991 143-150 (8 pages)
- Robert Streiffer, "An Ethical Analysis of Ojibway Objections to Genetics and Genomics Research on Wild Rice," *Philosophy in the Contemporary World* Volume 12, Number 2 (Summer 2005), 37-45 (9 pages)

14. Thursday, May 3

- Topic to be determined by class

15. Thursday, May 10

Third paper topics or final draft due
Review and Overflow