

## Phil/Bio 2510: Genetics & Society

### Optional Final Paper

The student has the option to write a final paper that may replace the lowest exam grade. See syllabus for due date.

#### General Description:

The final paper is a persuasive paper in which an issue relevant to genetics is identified and then a position is taken on that issue and defended. (See list of suggested topics provided below.) The main goal of the paper is to develop and defend your view on a genetic issue, but it should also include a description of the relevant genetic science/technology and a description of the social or ethical problem that it gives rise to.. Think of the paper as an argument presented to a jury of peers that will then “vote” on your thesis. You should develop what you think is the best position on a genetic issue, carefully explaining and detailing your argument. We expect the arguments to be fair, balanced, and clear. Keep the “knuckle-head factor” to a minimum – don’t overstate your argument, don’t draw wild conclusions, don’t slight opposing views by name-calling, don’t ignore what should be obvious points of contention, and so on. The paper should be presented in a serious, fair, and clear fashion. Assume that your audience is intelligent, well-read, but not necessarily familiar with the details of your topic. The ultimate goal is to demonstrate that you have a good grasp of and have thoughtfully considered both the science and ethical issues involved in some aspect of genetic science.

We are more than willing to look at early drafts or outlines of the paper, or to help you identify resources. But you should allow ample time for us to look at the drafts and provide you feedback for revision.

#### Specific Requirements:

- The paper should conform to the standards of a good paper. It should demonstrate careful consideration of the issue, clear organization, and be a polished essay including good grammar and spelling. See the sample grading rubric below for more details;
- The paper must have:
  - A clear and focused thesis (preferably in the introductory paragraph), with at least 2-3 points of support, and address at least one serious objection or alternative to the thesis (identify and answer the objection);
  - Include an adequate description of the issue discussed, including a description of the relevant genetic science or technology involved.
  - Where possible, we suggest using a case study to help illustrate the issue and provide some concrete considerations for your argumentation.
- The final paper should be no longer than 2,500 words (~8 pages single-sided, plus bibliography), typed, double spaced, 1 inch margins, 12 point standard font (e.g., Times, Times New Roman), etc.;
- Keep quotes to a minimum, but when you quote or paraphrase another’s ideas use proper citations. The format may be MLA, APA, or any other recognized style format you are familiar with, just be consistent;
- Include a title page with your name, the course title, title of the paper, and date. Please do not include report covers. Staple the pages in the upper left corner.

## Some Suggested Paper Topics

Below are some paper topics that might inspire a thesis for your paper. We recommend students choose one of the following paper topics. However, if the student has an interest in writing on a topic not specified below, the professors must approve of the topic prior to writing the paper. Regardless, we are more than willing to look at early drafts or outlines of your paper prior to the due date (no less than a week before the deadline).

1. **Insurance and Genetic Tests:** Genetic tests for early diagnosis of disease promises to improve health care and reduce overall health costs for individuals and insurers alike. It seems clear that people should have some secure privacy regarding the results of their genetic tests, but it also seems clear that insurers also have a legitimate reason for wanting access to this health information from genetic tests. How should this apparent conflict be resolved? Should insurers have access to genetic information regarding individuals?
2. **PGD Technology:** Pre-implantation genetic diagnosis (PGD) is a promising technology that has the potential to screen out embryos for fatal and debilitating diseases, and to select for desirable traits, such as a bone marrow match for needy siblings. Nevertheless, there are some worries about the proper use of this technology. What should PGD be used for, and what should it not be used for? Why? Does PGD amount to a 'new eugenics'?
3. **GM Agriculture:** Genetically modified (GM) crops promise improved food quality and production, but it also raises many important questions. What is the most serious issue(s) raised by the use of GM crops, and how should that issue be resolved? What alternatives are there? Should GM crops be specifically labeled for sale (in the US)?
4. **Transgenic Animals:** One promising use of transgenic animals (usually mice) is as animal models for studying human diseases. Suppose we want to model human brain diseases, such as Alzheimer's, Huntington's, or even aspects of schizophrenia. However, for some the fact that we insert human derived genetic information/material into animal brains raises ethical questions. Since the idea is to make the animal brain more like a human brain, does this practice change the moral status of the transgenic animal? How much is too much when it comes genetically altering brains? Is this research morally different from, say, research on cancer in transgenic animals?
5. **Race and Genetics:** Human population genetics provides us a picture of how humans have migrated across the globe since coming out of Africa. For many it also provides a view of human relatedness that challenges racial classifications. For example, race has often been used as a category to guide certain medical treatments, but population genetics tells us that race isn't the best indicator of health status. What does genetics tell us about race? How can this lead to problems or solutions to already existing racial problems? How should genetics be used when it comes to racial issues, such as personalized medicine?
6. **Stem Cell Research:** Although considered promising, human embryonic stem cell research has been extremely controversial because it involves the destruction of a human embryo. What is the central ethical issue? How should it be resolved? Should human embryonic stem cell research be permitted or illegal in our society? Why?
7. **Gene Therapy:** Gene therapy has been hailed as one of the greatest promises of the genetic revolution in medicine, however, the success of gene therapy is plagued by deaths and unexpected side effects. Is the risk involved in gene therapy worth the potential benefits? Who will be put at risk and who will benefit? Also, if gene therapy does prove itself an effective way to treat diseases, should we limit its use to only therapeutic applications, or should we also use it for "enhancement" purposes. Describe what the distinction is between therapy and enhancement (using examples), and how we should decide the proper application of gene therapy.
8. **Forensic Databases:** Forensic genetics has provided breakthrough technologies that can identify criminals, as well as identify paternity. As a social policy, it has been suggested that we should have a genetic database of everyone, or at least those that have been put through the criminal justice system, in order to make it easier to find and deter criminals. Would this be a good (or ethical) policy? Who should have their DNA put into criminal databases?
9. **Genetics and Responsibility:** Behavior genetics researchers the genetic basis for complex behavior, such as creativity, intelligence, sexual preference, even loving or caring attachments between individuals. One behavior of particular interest is aggression or violent behavior. What does research on aggression reveal about the genetic basis for such behavior? Should this research affect how we evaluate an individual's ethical or legal responsibility for acting violently?
10. **Infectious Disease and Biowarfare:** Understanding how viruses and bacteria function is important for developing vaccines and other approaches to infectious disease, including developing defenses against biological weapons. However, having that knowledge also makes it possible to develop more lethal viruses or other biological agents for use in biowarfare. How should genetic research that has application to both infectious disease and biowarfare be managed? Should it be made public or restricted to secret operations? What are the risks involved?

## Sample Grading Rubric

Unacceptable	Passable: Below Average	Adequate: Average	Good: Above Average	Exceptional
1	2	3	4	5

**Thesis:** The paper contains a clear and focused thesis (preferably in the introductory paragraph).

**1      2      3      4      5**

**Support:** The thesis is adequately supported by examples, illustrations, or other reasons. (E.g., uses textual references or other examples to support and illustrate pivotal claims.)

**1      2      3      4      5**

**Structure:** The paper is well organized, has an identifiable structure, and is presented in a logical fashion. (e.g., provides the reader with a clear “map” of the ideas and issues, etc.)

**1      2      3      4      5**

**Clarity:** The paper uses concrete and specific language. (e.g., clearly defines important concepts and provides adequate detail; does not use overly technical or pompous language, etc.)

**1      2      3      4      5**

**Spelling and Grammar:** The paper uses proper spelling, grammar and sentence structure. (e.g., varies sentence structure; avoids run-on or awkward sentences; uses proper punctuation; etc.)

**1      2      3      4      5**

**Insight:** The paper demonstrates a level of insight regarding the topic and its implications. (e.g., provides particularly well researched, novel, or unique interpretation and/or analysis of the topic; draws interesting and relevant parallels with contemporary events or ideas, etc.)

**1      2      3      4      5**

**Overall Quality of Paper:** Overall the paper represents a thoughtful, interesting and thorough argument or analysis of the topic, demonstrating an appropriate level of mastery of the material consistent with the expectations of the assignment. (A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F).

**Letter Grade = \_\_\_\_\_**

**Other Comments:**