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## **Expository Writing 20: Genetics and Bioethics**

### **Course Overview**

When researchers at the National Institutes of Health announced in June 2000 that they had successfully sequenced the human genome, President Bill Clinton asserted that “with this profound new knowledge, mankind is on the verge of gaining immense, new power to heal.” Since 2000, scientists have developed DNA-risk tests, stem-cell therapies, and increasingly precise gene-editing techniques. Yet, despite the potential benefits of these breakthroughs, some have expressed concerns about the bioethical consequences of these new technologies. Critics have voiced fears that scientists are “playing God” and have expressed apprehensions that new gene-editing techniques may allow those who can afford them to produce “designer babies” and those who cannot to continue to suffer from heritable diseases. In this writing course, we will explore this debate, and we will examine how to balance the biomedical advantages of gene-editing technologies with their potentially deleterious social consequences.

For the first essay, we will examine the *Atlantic* article “The Case Against Perfection” by Harvard political philosopher Michael Sandel who highlights the moral dangers of genetic enhancements. In order to critically assess Sandel’s argument, we also will read the work of authors who provide alternative perspectives. These include *Enhancing Evolution: The Ethical Case for Making Better People* by John Harris, “A Bias for the Natural? Children’s Beliefs about Traits Acquired through Effort, Bribes, or Medicine” by Kristi Lockhart, Frank C. Keil, and Justine Aw, and “Choosing Disabilities and Enhancements in Children: A Choice Too Far?” by Timothy F. Murphy. For the second essay, we will consider claims that new genetic techniques could create a contemporary eugenics movement. The articles and book excerpts we will read for the second unit include *A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution* by Jennifer Doudna and Sam Sternberg, *Defending the Genetic Supermarket: The Law and Ethics of Selecting the Next Generation* by Colin Gavaghan, “‘Eugenics Talk’ and the Language of Bioethics” by Stephen Wilkinson, and “Can We Cure Genetic Diseases Without Slipping into Eugenics?” by Nathaniel Comfort. For the third and final essay, students will examine both the positive and negative consequences of a genetic technology of their choice and decide how to establish bioethical guidelines to direct its use. Possible topics could include human germline editing, pharmacogenomics, stem-cell therapy, cosmetic enhancements, cloning, or CRISPR. The course will culminate with a capstone project, and students will prepare a short talk about the social and biomedical ramifications of their selected genetic technology.

## Course Goals

In this course you will learn to build arguments that show a rigorous intellectual engagement with a range of materials. Over the course of the semester, you will develop your abilities to think and write critically about pertinent biomedical and social issues. The assignments for this class also are designed to help you identify your strengths as a writer, your scholarly voice, and your intellectual interests.

## Assignment Descriptions

### *Unit One: Testing a Theory*

For this essay, you will read “The Case against Perfection” by Harvard philosopher Michael Sandel, and you will “test” his theoretical article against a case study of your choice. In your essays, you will explore how the given case study challenges, complicates, or supports Sandel’s argument. Strong essays will neither wholly affirm his theory (i.e., “Sandel is totally right”) nor completely refute it (i.e., “Sandel is totally wrong”). Instead, your essays should weigh the evidence and acknowledge what Sandel has convincingly argued about genetic modification while exploring the limitations of his ideas.

The essay should be five to six pages double-spaced and should cite sources using MLA style. You will complete two response papers before you submit your essay for a grade. These response papers are designed to help you to develop your argument. You also will compose a draft of your essay before you submit your final paper, and you will meet with me in individual conferences to discuss how to improve your paper.

### *Unit Two: Entering a Conversation*

Critics of new gene-editing technologies such as CRISPR-Cas9, warn that if we are not cautious, we could create a contemporary eugenics movement. However, others argue that these criticisms are hyperbolic, and they claim that while eugenics was deplorable, we cannot let our fears of recreating this historical episode prevent us from pursuing promising new genetic innovations. In this unit, we will explore this debate. Each author that we will read for this unit offers a distinct argument about how we should proceed with new genetic technologies in light of past efforts to control and improve humans’ genetic makeup. Your job is to intervene in this debate. To adequately do so, you must stake out your own position among those of the various authors in contention. In developing your own argument, consider if the authors have adequately understood the problem at hand, if the authors could be right in some respects and wrong in others, or if some synthesis of their ideas can help us to best understand how to proceed with the implementation of new genetic technologies.

The articles and book excerpts that we will read for this unit include *A Crack in Creation: Gene Editing and the Unthinkable Power to Control Evolution* by Jennifer Doudna and Sam Sternberg, *Defending the Genetic Supermarket: The Law and Ethics of Selecting the Next Generation* by Colin Gavaghan, “‘Eugenics Talk’ and the Language of Bioethics” by Stephen Wilkinson, and

“Can We Cure Genetic Diseases Without Slipping into Eugenics?” by Nathaniel Comfort. All of the required reading material will be available on the course’s Canvas site, and you are not required to purchase any of these texts. The final essay for this unit will be six to seven pages long double spaced. Before you turn in your final paper, you will complete two response papers and you will meet with me in individual conferences to discuss your draft.

### *Unit Three: Research Paper*

In the second essay, you intervened in a debate about new genetic innovations and eugenics. In this essay, you also will intervene in a debate, but you will have the opportunity to conduct your own research and select your own sources.

For this assignment, you will select a genetic technology to examine, and you will discuss both the potential good and potential harm that this technology could generate. You then will make recommendations about how to use it appropriately. Topics you could explore include cloning, home DNA tests, pharmacogenomics, or CRISPR. In your essays, you are required to situate your own argument within the broader conversation about the use of new genetic technologies. To do this, you must include in your papers two authors who are on one side of a debate about how to use your selected technology and two who assume a different stance. Like your previous assignments, you will assess if the authors have adequately understood the issue or if they could be right in some respects and wrong in others. For example, if choose to examine CRISPR, you could decide that while many scholars have focused on the ethics of using CRISPR to edit humans’ DNA, it actually holds the most promise for use in agriculture and should be used exclusively to alter the genes of plants and livestock. Alternatively, after careful research, you could conclude that CRISPR indeed should be used to edit humans’ germline so that modifications will be passed to future generations.

As a class, we will read and discuss excerpts from the National Academy of Sciences’ report *Human Genome Editing: Science, Ethics, and Governance*, and this reading is intended to introduce you to policies that the scientific community is considering. You also will meet with Harvard librarians, and they will help you to develop your research questions and identify pertinent material for your essays.

You will complete two response papers for this assignment, and you will meet with me in individual conferences before you submit your final essay. Your final paper should be eight to ten pages long. It is essential that you cite all of your sources properly and include a bibliography at the end of your essay.

### *Capstone Project*

In December 2015, the National Academies of Sciences, Engineering, and Medicine, along with the Chinese Academy of Sciences and the United Kingdom’s Royal Academy, co-hosted the first “International Summit on Human Gene Editing.” At the conference, a diverse group of molecular biologists, sociologists, bioethicists, lawyers, geneticists, chemists, and physicians from across the globe convened to discuss both the scientific and social issues involved with

CRISPR and other gene-editing technologies. The summit generated policy recommendations, and major news outlets including the *New York Times*, the *Scientific American*, and the *Washington Post* covered both the conference and the proposals that followed. Based on the success of the initial summit, scientists, policymakers, and humanities scholars reconvened in Hong Kong in November 2018 for the “Second International Summit on Human Genome Editing,” and researchers have stressed the importance of continuing the global conversation about the social impact of genetic technologies.

For your capstone project, prepare a speech that you will deliver at the (hypothetical) “Third International Summit on Human Genome Editing,” which Harvard, the Massachusetts Institute of Technology, and the Broad Institute will conjointly host. Utilizing the research that you have conducted for your final research paper, briefly discuss the potential social consequences of your selected genetic technology and make brief recommendations for how to proceed with its use. Assume that an interdisciplinary, international community of scholars will attend your talk. Journalists from major newspapers and television stations also will likely be present. Thus, while you should provide an in-depth analysis of the benefits and problems that your selected biotechnology may create and you additionally should offer concrete recommendations for how to proceed with its implementation, write a speech that will be easy for the general public to understand. Define your terms, avoid scientific jargon, and take seriously biochemist Jennifer Doudna’s assertion that “society as a whole” should be able to participate in discussions about how to use new biotechnologies.

Your talk should be approximately five minutes long and should be about the same topic that you will explore in your final paper. You should use a PowerPoint or other software to present visual material.

## **Harvard College Writing Program Policies**

### *Completion of Work*

Because your Expos course is a planned sequence of writing, you must write all of the assigned essays to pass the course, and you must write them within the schedule of the course—not in the last few days of the semester after you have fallen behind. You will receive a letter reminding you of these requirements, therefore, if you fail to submit at least a substantial draft of an essay by the final due date in that essay unit. The letter will also specify the new date by which you must submit the late work, and be copied to your Resident Dean. If you fail to submit at least a substantial draft of the essay by this new date, and you have not documented a medical problem, you are eligible to be officially excluded from the course and given a failing grade.

### *Attendance*

Because Expos has a shorter semester and fewer class hours than other courses, and because instruction in Expos proceeds by sequential writing activities, your consistent attendance is essential. *If you are absent without medical excuse **more than twice**, you are eligible to be*

*officially excluded from the course and given a failing grade.* On the occasion of your second unexcused absence, you will receive a letter warning you of your situation. This letter will also be sent to your Resident Dean, so the College can give you whatever supervision and support you need to complete the course.

Apart from religious holidays, only medical absences can be excused. In the case of a medical problem, you should contact your preceptor before the class to explain, but in any event within 24 hours: otherwise you will be required to provide a note from UHS or another medical official, or your Resident Dean. *Absences because of special events such as athletic meets, debates, conferences, and concerts are not excusable absences.* If such an event is very important to you, you may decide to take one of your two allowable unexcused absences; but again, you are expected to contact your preceptor beforehand if you will miss a class, or at least within 24 hours. If you wish to attend an event that will put you over the two-absence limit, you should contact your Resident Dean and you must directly petition the Expository Writing Senior Preceptor, who will grant such petitions only in extraordinary circumstances and only when your work in the class has been exemplary.

#### *Academic Integrity*

Throughout the semester we'll work on the proper use of sources, including how to cite and how to avoid plagiarism. All the work that you submit for this course must be your own, and that work should not make use of outside sources unless that is explicitly part of the assignment. Any student submitting plagiarized work is eligible to fail the course and to be subject to disciplinary action by the Honor Council. You must affirm your awareness of the Harvard Honor Code on all drafts and revisions for this course.

#### *Collaboration*

The following kinds of collaboration are permitted in this course: developing or refining ideas in conversation with other students and through peer review of written work (including feedback from Writing Center tutors). If you would like to acknowledge the impact someone had on your essay, it is customary to do this in a footnote at the beginning of the paper. As stated in the *Student Handbook*, "Students need not acknowledge discussion with others of general approaches to the assignment or assistance with proofreading." However, all work submitted for this course must be your own: in other words, writing response papers, drafts or revisions with other students is expressly forbidden.

#### *Electronic Submissions*

You will submit at least some of your work electronically this semester. As you send or upload each document, it is your responsibility to ensure that you have saved the document in a form compatible with Microsoft Word. It is also your responsibility to ensure that the file you are sending is not corrupted or damaged. If I cannot open or read the file you have sent, the essay will be subject to a late penalty.