

Genome 261 – Critique Paper Assignment

Basic concept:

An essential part of this course is for you to learn to **critically think** about various viewpoints expressed in society about genetic topics. For example, we often get handed pamphlets at local markets condemning GM foods or we hear a politician take a stance on genetic technologies. Do their claims have scientific merit? What other factors play a role in their opinions? Can you trust them?

For this assignment, you will choose a topic, research the genetic technology, then find and critique “opinion sources” (defined below). The goal is to think critically about materials that are presented to you on a controversial topic, no matter where they come from (websites, magazines, pamphlets, your friends, your professors, etc), or what their stance is (for or against) using your best scientific knowledge and logical reasoning.

Overall Brief Outline and Deadlines:

Part 1: Paper Topic Assignment (10 points), Due Monday, April 9th, in class

- Chosen topic and short description of technology

Part 2: Paper Sources Assignment (20 points), Due Wednesday, May 2nd, in class

- One paragraph critique of each opinionated source commenting on your topic.

Part 3: Final Draft (80 points), Due Monday, May 21st by the end of class (2:30 pm)

Possible Critique Paper Topics:

- Genetically modifying human embryos (genetic engineering of humans)
- Pre-implantation Genetic Diagnosis (Genetic screening of embryos)
- Sperm sorting (choose sperm with an X or Y chromosome – gender selection)
- Cloning of Pets (or any other animal other than humans)
- Genetically Modified Pets (i.e. Glo-fish, allergen-free cats)
- Genetically Modified Plants or Animals for Vaccine/Drug Production (“Pharming”)
- Gene Therapy as treatment for Genetic Disease
- Genetic Enhancement of Athletes
- Genetic Testing of Employees/Insurance (i.e. the Burlington Northern Railroad case)
- DNA Ethnicity Testing for Forensic Use (gives an “ethnic profile” of suspects)

You are free to choose a topic not on this list, but please check with an instructor first!

Note: The following two topics are not on the list because they will be part of our policy projects. They will not be allowed as topics for your papers.

- GM Food for human consumption
- Human reproductive and therapeutic cloning

Individual Assignment Details:**Part 1: The Topic-**

Choose one of the topics from the list provided. Research the technology behind this controversial topic so that you understand the science. Then write the following:

1. Your name, section and choice of topic
2. A paragraph or less summarizing what the genetic technology is and how it is used.
3. One sentence describing why you think this topic is controversial.
4. Include any references you use in a list at the bottom of the page.

A very silly example:

Mandy Schivell, Section AF

Topic: Using bleach to kill E. coli in the lab.

Bleach is used worldwide as a disinfectant. The chemical name for household bleach is "sodium hypochlorite" and it is typically sold in an aqueous solution of 5.25% (science.howstuffworks.com). In solution, sodium hypochlorite dissociates to form a strong base that reacts with both lipids and proteins, breaking them down. This in turn interferes with their ability to participate in general cell processes, and therefore kills cells that are subjected to bleach treatment (Estrela et al., 2002).

I believe this topic is controversial because I've heard of "bacterial rights" activists who think that the killing of billions of bacteria in one flask in the lab is tantamount to mass murder.

References:

1. Estrela, Carlos et al., (2002) "Mechanism of Action of Sodium Hypochlorite" **Braz Dent J** 13(2): 113-117.
2. "How does Chlorine Bleach Work?"
<http://science.howstuffworks.com/question189.htm>

Part 2: The Sources Assignment (the main critique!)

You will find various sources (magazine articles, newspaper articles, pamphlets, friends, family and/or websites) that contain strong opinions about your topic. These should NOT be textbooks, scientific journals or impartial websites.

Choose...

- 2 sources IN FAVOR of the use of the technology you have chosen and...
- 2 sources that express relatively strong views AGAINST this use.

Everyone MUST have at least one interview as a source, but no more than two. See guidelines for the interview on the next page.

What you will turn in:

1. Your name, section, and choice of topic
2. One paragraph for EACH source including the following: (you should have four paragraphs total – one for each source!)
 - a) The title and/or source of the opinion
 - b) Whether it is **in favor of** or **against** the technology you are writing about
 - c) The “angle” from which the author is writing (or speaking) from.
 - d) The quality of the science in this article or commentary
 - e) Whether you think that the source is convincing overall (as a combination of b, c, and d)
3. Photocopies or transcripts of each source.

(Remember that this assignment is worth 20 points. If you do well, you will already have a good structure for the final critique paper. Make sure you understand the science behind your topic before you get too far! Ask us if you need help!)

A continuation of the silly example – with ONE of the 4 source paragraphs:

1. Mandy Schivell, section AF, Killing bacteria in the lab using bleach
2. Source 1: “Mass murder in the laboratory: Bleach is the weapon” by the People for Sensible Treatment of E. coli. www.pstec.org

This source is clearly against the use of bleach in the laboratory. They are writing from the super-gaia point of view that all living creatures should be allowed to exist. They include some statistics that show that 90% of lab E. coli could survive in the wild if set free. From what I’ve learned this quarter, it doesn’t seem that this could be true, since many E. coli are symbiotic and need to survive in the gut of a host mammal. They do not cite their source of the data, so I’m skeptical it is real. Overall, their prose is impassioned, but I don’t think that their claims are convincing.

Interview guidelines:

- 1) Minimum of 1 and maximum of 2 interviews as **opinionated** sources. You may interview random citizens, friends, family members, or classmates. The only requirement is that they have a **strong opinion** about your technology. If you do two interviews, one must be for and one must be against the technology.
- 2) Make sure to ask the following questions of your interviewee...
 - a) **Why** are you for/against this technology?
 - b) **Do you know how** this technology works?
 - c) **When** did you form this opinion?
 - d) **How** do you think this technology might impact society?
- 3) Tape record or make notes during the interview. Write a transcript of the questions/answers that you ask and receive during the interview as documentation. The interviewee can remain anonymous if they wish, but please indicate the date and time of the interview, as well as the gender, approximate age, and occupation of the interviewee.

Part 3 - The Paper:

I. Begin with a thorough introduction to your topic

Write to a non-scientist audience (imagine a family member who doesn't know about the technology) and include:

- the process of how the technology works
- the history of the technology
- the uses of the technology (i.e. common or rare? Expensive or cheap?)
- current status in the world (i.e. banned in places? Legal?)

Research for the introduction **SHOULD** be done with textbooks, scientific articles, and reputable websites. These sources should not have an opinion about ethical issues...

II. Discuss each of the four strongly opinionated sources separately

Comment on their science, think about *who* is expressing these viewpoints and the details of their reasoning. If there are flaws in the science, be sure to point them out. This section should essentially be a more in depth version of your sources assignment! You don't need to rewrite it - just add to what you've already written (and modify as indicated by the instructor).

III. Finish with a summary

Summarize what you think the prevailing opinion is about your technology. Give your own thoughts on the matter. Were you surprised by the opinions you found? Dismayed? Happy? Does it appear that the public has a good understanding of this technology or did your sources in general have no idea of what the science really was?

IV. References

Give full references for all sources you use for the paper and make sure to appropriately cite these in the text of your paper. See attached guidelines for citing and writing bibliographies.

REMEMBER - there are no right or wrong positions in your papers. What I expect from you is a clear and critical analysis of each source and the topic as a whole. Both sides may provide strong scientific evidence for their views, even though they come to opposite conclusions.

Frequently Asked Questions:**How long should this paper be?**

I am looking for QUALITY over quantity. I will assume that to discuss the background of a topic and 4 articles will require at least 3-4 pages. However, I know how easily you can change the length of a paper by altering font/font size, etc. (Even I had a word processor in college!) Therefore concentrate on making a clear discussion of both sides of your topic and don't worry about length.

When should I get started on this project?

I would start as soon as possible. Choose a topic you like and start looking for sources. It will get you thinking about class material in general as well as your specific topic. Sources can come from ANYWHERE and you may bump into one without looking!

What if I have trouble finding relevant articles/websites?

If you are having problems researching articles, let one of us know. We may be able to give you tips.

Can I work with a friend?




Feel free to pick the same topic as a friend and discuss this topic. In fact, I encourage you to discuss your topic with lots of different people to get a feeling for public understanding and opinions. HOWEVER, you must find your own sources to discuss in your paper. In addition, all sections of this paper must be written independently. Plagiarism is the use of other people's thoughts and words without properly quoting or citing them. Plagiarism in any form will NOT be tolerated and will be reported to the Disciplinary Committee. (If you have further questions about this, please ask us or see the link on our website to the UW's policy on Academic Honesty.)

Can I express my own views about a technology in this paper?

YES. You are free to express your own views and opinions on whether or not this technology should be used. We will be grading your paper based on your critical thinking, not on the direction of your views. The place to do this would be in your summary. Support your opinion with thoughtful comments and scientific information. It is possible that you will not have a strong opinion either way, and that is also fine.

Citing Sources in the Text:

In this paper you will be referencing information that you have learned through research. If you mention a fact or opinion in a sentence that you did not think up yourself, reference the source in one of the following ways. (In either case, list your references in the bibliography.) You can use footnotes or endnotes, it does not matter to me as long as I can find the source of the information.

- a) Interestingly, there are approximately 10^{81} atoms in our universe (5).  Refers to #5 in your reference list, or in a footnote.
- b) "GATTACA" got two thumbs up from Siskel and Ebert ³.  Refers to #3 in your reference list, or in a footnote.
- c) It appears that many animals escape from private aquaculture ponds (Naylor et al., 2000).  Directly references the author of the work cited.

Suggested Format for References (although any standard format is fine!):**- Article from a Scientific Journal:**

Authors (year) Title of article. Journal title and volume number, pages.

example: Naylor, R.L, Williams, S.L., and Strong, D.R. (2001) Aquaculture – A gateway for exotic species. *Science* 294, 1655-1656.

- Article from a Periodical:

Author, "Title" Periodical Name, Issue Date, pages.

example: Wills, Christopher, "The Skin We're In." Discover Mag., Nov. 1994, 76-81.

- Book:

Author, Title, City: Publisher, (year).

example: Ridley, Matt, Genome: The autobiography of a species in 23 chapters, New York: Perennial, (1999).

- Websites:

"Title of webpage or article."Date of posting [Online] url.

example: "The New Eugenics in Cinema: Genetic Determinism and Gene Therapy in GATTACA." July, 2000 [Online] <http://www.depauw.edu/sfs/kirby81art.htm>