

Research Project Outline

You must adhere to the colleges "Honor Code", and stick to proper use of referencing to avoid Plagiarism. If you are not sure of these rules, refer to your student handbook or to the web in the student development page under academic policies.

The overall theme for the projects this year is

"The World of Microbes: How to exist amongst them"

To that end, each group has been assigned an infectious agent that has received some attention in the news recently. These agents cause diseases that researchers and pharmaceutical companies are in a race to deal with (either by abolishment or by control).

You can begin to look for general information on the web (although a www URL address is not a valid citation). Information obtained on the web should then send you to literature and books that have information on your subject.

*****Feel free to come and see me if you are having problems finding information.**

Your group's project should therefore address the following 4 topics.

- **The disease caused by your microbe**—this section should address how your particular infective agent causes the disease. That is: does it destroy the immune system?, does it secrete a toxin?, does it just take over an organ?, etc. This should include something about the life cycle of the pathogen and how it is transmitted (what is its vector).
- **History of the disease**—this section should address whether this is an old disease that we have been attempting to combat for years, or some newly discovered disease (by new I mean discovered within the last 20 years).
- **Epidemiology**—this is the science that deals with the spread and control of diseases. The CDC (Centers for Disease Control in Atlanta, does a lot of epidemiological studies to determine the location and probable spread of diseases). This part of your report, then, should also address how your disease is transmitted, and whether it is endemic to certain areas of the world. If the microbe's habitat is limited to certain locations, you should address reasons that you believe this to be the case?
- **Treatments**—this part of the report should address what is currently available, what is being considered, and for diseases that are making a comeback, what worked in the past and why that treatment no longer works.

The entire paper should not be more than 10 pages [the syllabus says 10-20 pages, 20 pages is excessive].

After the **"Doing Research Session"** that will be conducted on Tues., Oct. 3 by Ms. Rank, our reference librarian, you should begin to find articles (preferably Reviews) on your topic. The Internet can be used to find some general information, **but should not be your only source of information**. I want you to get familiarized with reading primary scientific articles. If you find information that you cannot understand or interpret, **DO NOT HESITATE** to come and see me. I will be more than happy to look over your articles and help you understand them.

Do not wait until the last minute to begin doing your research.

- I guarantee (100% sure) that you will need to visit Western University's Library.
- I am 100% sure that you will need to do at least one interlibrary request for an article. This could take up to 2 weeks to arrive.
- I am 100% sure that you will find lots of information on your microbe.

Some good sources to look at for general information and reviews:

- The New England Journal of Medicine
- Reviews of Infectious Diseases
- Reviews of Microbiology
- The Encyclopedia of Microbiology (4-volume reference books in the Upjohn Library)
- Books on closed reserve in the library

This year's topics will be:

- **Helicobacter pylori**
- **Salmonella**
- **Prions**
- **Smallpox virus**
- **Mycobacterium tuberculosis**
- **Coxsackie virus**

Writing the Paper

These are "suggestions" and may or may not apply to your topic.

The key is "Start Early!" Nothing is more frustrating than attempting to write while rushed.

- I will be requiring periodic updates on your group's progress (due dates to be announced).
- You will have to evaluate one another at the end of this assignment, so begin to think about your role and the role of the other members of the group as it relates to the project.
*I want to know **early** if there are issues and concerns with any member of the group.
- **Introduction**
This section should address the organism.
 - is it a bacterium (with Gram classification) or a virus (with DNA or RNA classification)? You may include pictures in this section.
 - does it possess any sub-classification from the main classes mentioned previously (ex. is it an acid-fast bacillus or an RNA-retrovirus)?
 - what is the normal host of the organism and how is it transmitted to its infective host?
 - What disease does it cause? How is the disease manifested (that is its symptoms)?
- **Life Cycle**
In the introductory sections you may want to devise a pictorial view of the organisms life cycle (this may not be possible for all organisms). ***For an example, see the life cycle of the Lyme disease causing tick in your book "No Germs allowed".**
- **History**
This section is self-explanatory. You should discuss the history of your agent and address the discovery of the disease that it causes (when and how discovered), and also if it is a re-emerging infection. In this section you should also address the mechanism of pathogenesis, or "HOW" the organism causes the disease (i. e., via integration into host cells, by secretion of a toxin, or by a host-defense avoidance mechanism)

- **Treatments or Ways of Control**

This section should discuss any therapies known. You should discuss whether a vaccine is available, and the regiment of vaccination (how many shots, how often). If a drug is available, you should discuss its discovery, the company that makes it, whether it is a new or old drug, and if any resistant strains of the organism have been detected.

- **Personal Comments and discussion**

In this section, you will have the opportunity to discuss your findings. You can include any interesting or disturbing piece of information that you found. Address whether or not you agree with the information given, and whether you feel the information is useful or to be filed in your memory banks ☺. **Discuss and show anything that was particularly interesting and / or memorable about this project** (I hope everything is ☺).

Making the Poster

The main thing to remember here is the audience. The viewers of the posters will be 11 & 12 year old 6th graders. They are young, so don't go for the "shock value" of the information. I have several posters in my office that you can come and look at to get ideas.

Your project's research will have to be mostly complete by the time that you plan on the poster's format and information. The more pictorial your poster is, the more the kids will enjoy viewing them. Also the more interactive the poster is the more the kids will give you feedback.

Make posters that asks them:

- (1) what the organism is
- (2) where it is found
- (3) what disease it causes, and
- (4) how to prevent it

Be CREATIVE! The more thought you put into the poster, the more CREATIVE it will be, the better your points on this portion of the project will be.

Feel free to see me at any time about this.

Project Grading Scheme: total of 200 points

Summaries-- due on October 19 th (20 points) & November 9 th (20 points)	40 pts.
Research paper-- due December 6 th	100 pts.
Poster-- due December 6 th	50 pts.
Project Evaluation / Tracking forms-- due December 6 th	10 pts.