
Immune System Group Project

Introduction

Each of you will work in a group of about 3 people (2-4) on a project that addresses an issue related to the human immune system. By our definition, “an issue is a question on which informed people disagree.” It can be a scientific question or a question arising from the application of scientific advances to societal problems. But it must be controversial. The issue must also have some interesting biology associated with it. When presenting and evaluating the various sides of the issue it is important that there is a biological basis to support each side. Ethics and morals are important, but arguments that only deal with what is moral or ethical are not sufficient. Why? Science can only deal with issues/questions that are definable, measurable and testable. A major and real limitation of science is the inability of science to address questions concerning right or wrong, moral or immoral, ethical or unethical because it is impossible to define, quantify or measure the variables involved. Therefore, do not select an issue that has ethics and morals as the primary focus.

Examples of Issues

Below are just a few of the many issues that are associated with the immune system. I’m sure you can think of more. **Obtain approval from your instructor before you begin to research the issue/topic your group wishes to work on!!**

1. Can the mind-immune system connection be enhanced to increase human health and longevity?
To decrease the incidence of cancer?
2. What causes autoimmune diseases? (e.g., multiple sclerosis, rheumatoid arthritis, Crohn's disease, lupus, Diabetes Mellitus, Myasthenia Gravis, Graves' Disease, Addison's Disease, etc.)
3. Are there chemicals in our food and/or environment that are implicated in depressing the human immune system?
4. Are vaccines safe? Should parents have their children vaccinated? Should children be vaccinated against chickenpox? Do the risks outweigh the benefits?
5. Is it possible to develop a vaccine against periodontal disease (i.e. cavities)?
6. Is it possible to develop a vaccine against malaria? What are the challenges involved?
7. Is it possible to develop an effective and safe vaccine against HIV? What are the challenges involved?
8. Is it possible to develop edible vaccines? What are the challenges involved?
9. What is the cause of allergies? Why do they come and go? Why do some people have allergies and others do not?
10. What is the cause of asthma and why is the incidence of asthma increasing in the U.S.?
11. What can be done to decrease the incidence of graft vs. host disease? (This is where the graft attacks the host, leading to serious complications during organ transplantation.)
12. What are the hopes of gene therapy curing genetic immune diseases such as SCIDS?
13. Should Xenotransplantation (e.g. use of hearts from genetically modified pigs) be banned because of the potential health risks to society?

The Group Project Consists of Three Assignments

1. **Searching the Literature: Library and Computer Resources** (an individual grade: **15 points**)

- An assignment that involves the acquisition of reference materials for the project, which will, in part, be evaluated on the quality of the references acquired. There's a separate handout for this assignment—please see it for further details.
- Due Date: **Wednesday May 15, 2002** (Wednesday of week 7 of the quarter)

2. **Progress report** (a group grade: **15 points**)

- Each group will submit a 1 to 2 page written summary of their group's progress—please refer to [page 7](#) of this handout for further details.
- Due Date: **Monday June 3, 2002** (Monday of week 10 of the quarter)

3. **Group presentation** (a group grade: 100 points)

- Each group will make their oral presentation during the last week of the quarter. Late presentations will not be accepted.
- Please look below and the grading rubric on [page 6](#) of this handout for further details about the group presentation.
- *The fine print.....* **Please take Note:**
 - ⇒ Failure to participate in your group's presentation will adversely affect your grade for the group project (50% penalty).
 - ⇒ Failure to attend the presentations by other groups will also adversely affect your project grade(25% penalty)

Group Presentation.....the details

One of the goals of this course is for you to be able to analyze and form an informed opinion about issues related to the human immune system. Issues are questions about which informed people disagree. Issues involve ideas that are controversial and there is no right or wrong answer, but your opinion needs to be supported by evidence and must also have some interesting biology associated with it. When presenting various sides of the issue it is important that there is a biological basis to support the various sides. Ethics are important, but arguments that only deal with what is moral or ethical are not sufficient. The main purpose of this project is for you to demonstrate how the biological concepts studied in this class are related to your issue.

Below is a list of the four components of a good project. It is important that all components are not just present but are presented clearly and persuasively. Remember that the clarity of your presentation is important, as is a demonstration of your thorough understanding of the issue and the biology behind it.

1. **Define the Issue**

The issue should be clearly and explicitly stated in your introduction and remain as a focus throughout the entire presentation. Part of your job is to convince the audience that this is an important issue and everyone should be concerned about it.

2. Arguments

Present the arguments from the various sides of the issue. Cite the source(s) of your evidence. We aren't looking for your opinion here, just the arguments that you have found in your research. Then focus on a couple of the arguments for which an understanding of biology is particularly important. These arguments should be the basis for the next section: biological background.

3. Biological Background (this should be the longest part of the presentation)

What are the biological concepts and information (especially include concepts you have learned in this class) that are important for making a decision on this issue? Why are these concepts important? How do they relate to the issue? You may present this information in a section separate from the arguments or combine arguments and biological background in a single section of your presentation. Whenever possible, you should make connections between specific arguments and specific biological concepts. Cite the source(s) of the biological concepts and information. The best presentations will be the ones that can make sophisticated connections between the arguments and the biological concepts. This is your opportunity to show us what you have learned about the human immune system (from lecture, seminars, your texts and your research) and how it relates to your issue.

4. Conclusion

Evaluate the arguments in light of what biologists can tell us. Make it clear how the biological-information supports or refutes the particular arguments.

- Convince the audience that your opinion is correct, even if it falls somewhere between the extreme positions. Tell us why the arguments from the other side of the issue shouldn't convince us. Most issues are not black or white so you may fall somewhere between the extreme positions. If that is the case, then indicate what evidence is most convincing and what evidence is still weakly supported. Indicate what further evidence you would like to see to solidify your position.
- You should support your opinion with evidence from your readings/research. Cite the source(s) of your evidence.
- What does this problem and solution have to do with me? And/or what is its general significance to the world? This should sum up your presentation and leave the reader thinking: "Wow, that is an important conclusion and I should act on it in some way."

Instructions for the Oral Presentation of the Group Project

Your group's presentation should be about 25-30 minutes long—add to this an additional 5 to 10 minutes for questions/class discussion. This works out to about 10-15 min. per person for a two-person group; 8-10 min. per person for three person group, etc. You may incorporate various styles; debate, skit, lecture, poster presentation, etc., or you can stick to one style. **Try not to read a prepared paper or lengthy note cards.** *DO NOT give too much information, but, rather, summarize the important points in a thoughtful manner.* Go slowly, and emphasize main points. **Use visual aids to facilitate the audience's understanding of your presentation.** You can use PowerPoint, overhead projector transparencies, video clips, poster board, etc. I can help you use these, but only if you notify me well in advance of your presentation.

For a presentation to be successful, you need to know....

- **What material to present;** after all, a presentation is for conveying information. You need to know the topic *as a whole, as well as the specific aspects of it*. For example, if you were giving a presentation on vaccines against HIV, you need to have a thorough knowledge of the HIV life cycle and the human immune system's response to HIV, as well as a specific knowledge about how vaccines against HIV might work and why they so are controversial.
- **How to organize the material;** organized information is easier to remember for you and easier to understand for others. Notes are fine, but *don't write a paper*—an organized outline or a list is much more useful for a presentation. **IMPORTANT:** Eye contact with the audience is essential—do not read directly from your notes, PowerPoint presentation, etc.—use them only as quick reminders as to what you want to discuss—do not use them as a “crutch”!
- **How to present the information;** there are many ways to present material. *The best format is the one that allows you to convey information clearly*. A controversial topic might involve a debate format, and statistics might be presented best graphically, etc. Use visual aids to facilitate the audience's understanding of your presentation. You can use PowerPoint, overhead projector transparencies, video clips, poster board, etc. I can help you use these, but only if you notify me well in advance of your presentation.

How to get started

- **Search existing literature.** You need to know what information is available, as well as hot or controversial topics in the fields. To gain a comprehensive view of the field, I recommend starting with a book chapter or a review article. Use the reference sections from those to find more detailed information. Moreover, there are many links at the class website that may prove useful.
- **Come talk to me in person.** You can get a lot of *feedback* from me at any point during the preparation. Added benefit is that you can figure out my preliminary evaluation of your presentation, so that you will know how much and what kind of work you have to do quality work.
- **Organize you work.** You are working with others. *Clearly organizing and designating responsibility for each is extremely important*. I recommend getting together regularly (e.g. 2-3 times week for at least 30 min. each), so that you can give each other update on how things are going.

How to make a great Poster

If your group decides to use a poster as part of your presentation, then read on!

One of the roles of scientist is to communicate ideas to other scientist. Discoveries that are not reported die with the discoverer. One common method for communicating in the scientific community is through posters. Scientists from all over the world attend conferences where hundreds or even thousands of papers and posters are presented at each conference. Poster sessions have the advantage of presenting a large number of topics in a single place. People roam around and spend time reading those posters that are most interesting to them. The posters should be about 2 feet by 3 feet on poster board. You can buy the poster board in GRCC bookstore (or at a stationary store, etc.) or use cardboard with white paper glued onto it.

Your poster should include:

- A title in large print. The title should grab people's attention.
- List of authors
- A short abstract (explained below) that summarizes what the poster is about
- Biological concepts necessary to make an informed decision (with references cited)
- Arguments for various sides of the issue (with references cited)
- Your evaluation of the arguments
- Conclusion/opinions
- List of references (using the proper format)

Please Take Note!

While we would like you to include all the parts listed above.....

- Be creative and original.
- Use diagrams, photographs, charts and drawings freely to illustrate complex points, to attract interest in your poster, and to make the poster visually appealing.
- Use in-text citations for photographs, charts, drawings, ideas, and thoughts that are not original to you.

Abstract

The abstract should state clearly what your poster/presentation is about. An abstract is a brief, all-encompassing summary and should include the following: the issue, why the issue is important, a brief listing of the arguments involved, and the main conclusions made. Use in-text citations to cite the source(s) of all information that is not original. The abstract should be written as one single-spaced paragraph, no more than 200 words in length. Place the abstract just after or near the title of the poster.

References

Include a list of 8-10 *quality* references that you actually used and cited within the text of the poster. Place the references in alphabetical order by author's last name. Use proper format when citing your references—see the handout *Searching the Literature: Library and Computer Resources* for the correct ways to cite references.

Group Presentation Evaluation Rubric

Issue: _____

Names of Presenters: _____

	1 to 4 points	5 or 6 points	7 to 9 points	10 points	Points Scored
Organization	Audience cannot understand presentation because there is no sequence of information.	Audience has difficulty following presentation because presentation jumps around.	Group presents information in logical sequence which audience can follow.	Group presents information in logical, interesting sequence which audience can follow.	
Knowledge of the issue	Group does not have grasp of information and issue presented; Cannot answer questions about subject	Group is uncomfortable with information and issue presented; Able to answer only rudimentary questions.	Group is at ease with issue presented and answers all questions, but fails to elaborate.	Group demonstrates full knowledge of the issue; Answers all class questions with explanations and elaboration.	
Depth of Content	Superficial treatment of subject/issue. Listeners gain no new insights.	Explanations of concepts concerning the issue are inaccurate and/or incomplete. Listeners gain little from the presentation.	For the most part, explanations of concepts concerning the issue are accurate and complete.	Accurate and complete explanation of key concepts concerning all sides of the issue presented; Listeners gain insight	
Accuracy of Content	Information is inaccurate. Presentation is not a source of accurate information.	Enough errors are made to distract a knowledgeable listener, but some information is accurate	No significant errors are made. Errors may be the result of nervousness or oversight.	Information included in the presentation is consistently accurate.	
Conclusion	No clear conclusion is made and/or no specific biological information is used to support/refute specific arguments; Sources of biological information not cited, incompletely cited and/or are not reputable	Group does not come to a clear conclusion and/or arguments are not fully supported by biological information; Sources of biological information not cited, incompletely cited and/or are not reputable	Group comes to a clear conclusion; Some arguments not fully supported by biological information; Not all sources of biological information are cited or are not reputable	Group comes to a clear conclusion; Uses specific biological information to support/refute all arguments presented; Cites reputable sources of biological information	
Communication aids e.g. Transparencies, Slides, Posters, Handouts, Computer-Generated Materials	No communication aids are used, or they are so poorly prepared that they detract from the presentation	Group occasionally uses communication aids	Frequent use of communication aids that add to audience understanding of the presentation.	Communication aids enhance the presentation: appear professional,, text/graphics easily read, main points stand out	
Mechanics	Student's presentation has four or more spelling errors and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has no misspellings or grammatical errors.	
Eye Contact	Students read all of report with no eye contact.	Students occasionally use eye contact, but still read most of report.	Students maintain eye contact most of the time but frequently return to notes.	Students maintain eye contact with audience, seldom returning to notes.	
Elocution	Student mumbles, incorrectly pronounces terms, and speaks too quietly for students in the back of class to hear.	Student's voice is low. Student incorrectly pronounces terms. Audience members have difficulty hearing presentation.	Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation.	Students use a clear voice and correct, precise pronunciation of terms so that all audience members can hear presentation.	
Group Participation	One or more group members added little to the presentation	All group members spoke, but some much more than others	Equal participation by all group members	Equal and knowledgeable participation by all group members	
				Total Points Scored	/ 100

Progress Report - 15 points (Turn in one per group!)**Issue researched** (state as a question):

Group Members (indicate first & last names)	Responsibilities (Be very specific!)

1. Abstract

Attach to this page a typed copy of your group's abstract. In short, an abstract should state clearly what your presentation is about. An abstract is a brief, all-encompassing summary and should include the following: the issue, why the issue is important, a brief listing of the arguments involved, and the main conclusions made. Use in-text citations (see below) to cite the source(s) of all information that is not original. The abstract should be written as one single-spaced paragraph, no more than 200 words in length.

2. In-Text Citations

Citation formats are often discipline specific. Footnotes or endnotes are *not* normally used in scientific writing as they are in humanities and the social sciences. Because natural scientists most often use the Name-Year System, we will use this. All citations occur in the text in parentheses, with the author(s) and date of publication. For example: Clinton (1999) found that naked foxes run four times faster on grass than those wearing pantyhose. Alternatively: Naked foxes run four times faster on grass than those wearing pantyhose (Clinton 1999). It's as easy as that! If there is more than one author of a source, simply use the first author's last name, followed by et al., Latin for "and others". For example: (Clinton et al. 1999). The complete list of authors will appear in the full citation at the end of a scientific paper.

3. References

Attach to this page a typed list of *quality* references (minimum: 8-10) that you have actually used or plan to use in preparing your presentation. Place the references in alphabetical order by author's last name. Use proper format when citing your references—see the handout *Searching the Literature: Library and Computer Resources* for the correct ways to cite references.

4. Unfinished Business

Attach to this page a typed list of the major things your group still needs to complete