RESEARCH PROPOSAL (individual effort)

Specific Aim + Background/Significance: Due Friday April 22nd
Complete Proposal: Due Friday April 29th

Specific Aim (1/4 page): Succinctly describe what you intend to discover/determine, give a brief summary of how you propose to answer this question.

Background/Significance (1-1.5 pages): Place your aim within a broader context of immunology so that the reader can understand your proposed experiments. Clearly indicate why this is a significant problem to solve.

Methods (1-1.5 page): You should outline your experimental strategies to answer your question. If you propose more than one technique (desirable), indicate the comparative advantages and disadvantages. Describe anticipated results.

Format: Single spaced, 0.7 in margins, 11 pt font (Times New Roman, or equivalent)

PRESENTATIONS –(Group Formation & Topic approval by April 15, 2015

• Pick your favorite topic. You are not limited to the list provided (see overleaf); choose a topic of interest to you! Please try to work in pairs or groups of three, although individual presentations are allowed. Your presentation can be directly related to your proposal.

• Inform me as soon as possible, topics are available on a first-come first-served basis. Along with the title of your topic, include a brief (2-3 sentence) outline so that I can assess how well your topic relates to the course. If there is a single article from the primary literature that you will be working from, please send that to me as well.

• I will approve your topic within a day or two. You may be asked to submit an alternate topic if your original one is not sufficiently related to the course.

• Once approved, topics will be posted on Blackboard, please check to see if a topic has been taken.

• Distribute brief 1 page summary, on the day of your presentation, as an aid to the class as background (worth 50% of the presentation grade). This should be in 12pt font, single-spaced, margins 1 in. Use this space wisely, allowing some room for note-taking. A small illustration is useful. You may use the back of the sheet for a large illustration and citations if necessary.

• You will also give a 7 min – 10 min presentation (singles = 7 min, pairs = 9 min, threesomes=10 min) to educate the class and the instructors. You will be largely graded on the clarity of your presentation (50% of the presentation grade).

• Come prepared to answer one or two questions from the audience.

Grading Scheme:

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<tr>
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<th>Relevance of topic to the course, or immunology in general.</th>
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<th>Organization and level of focus of handout and presentation.</th>
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<th>Quality of handout – appropriate level of detail.</th>
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<th>Presentation follows handout and has appropriate depth &amp; clarity</th>
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<th>Appropriate use of illustrations and graphics</th>
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<th>Depth of knowledge of the subject, e.g. - ability to handle questions.</th>
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General Guidelines:

• Remember that you only have 7-10 min to present your topic. Therefore, you should select a topic that can be well presented in that time. Focus your talk on a small area of immunology! However, you should take a minute or two to show how your topic fits in to a more global area of immunology.
Ask yourself the following questions while working on your presentations:

- Is there a clear link between the immune system and your chosen disease/illness/condition?
- Is your one page summary sheet well written?
- Did you demonstrate your knowledge of which cells and or proteins are directly involved?
- Did you clearly define how this aberrant phenotype differs from wild type?
- Did you discuss any treatments or cures and by what mechanism they work?
- Did you reference your sources?
- Did you define all acronyms you used?
- Do you have figures in your handout/presentation that improve the clarity of your text?
- Do you have good figure legends?
- Did you give proper credit for your figures?

Your presentation:

- Practice your talk beforehand, make sure that you can deliver the material in less than 7-10 min at an appropriate pace. If possible, find a friend to practice your talk with. They can help you identify points that are unclear. Feel free to ask the instructor or TA for guidance.
- If you are using visual aids (overheads, Powerpoint) make sure that the text/diagrams are legible from the back of the room.
- If you present data, either in tabular or graphical form, be sure to tell the audience the nature of the data. e.g. what is plotted on the x-axis, what is plotted on the y-axis. Make sure the axis of graphs and columns of tables are legible. You may find it helpful to redraw a figure from a paper or to only present a subset of the data from a large table.

Suggested Topics: Choose one of the following or pick a topic on your own. If you do select a topic that has been covered in the course, please present additional details or another slant on the topic. Simply recapitulating the lecture material will ensure that you will get a poor grade.

1. Immune responses in non-vertebrate organisms e.g. fruit flies
3. Hybridoma technology: Detoxification in drug addiction.
4. Hybridoma technology: Other applications of monoclonal antibodies.
5. Additional AIDS "resistance" genes in humans
6. AIDS vaccine development.
7. Oral tolerance
8. Cancer vaccines
9. Immunotoxins
10. Stress and the Immune System
11. Immunology of infection (pathogen biology, immune evasion, disease progression, vaccine strategies etc), some examples:
   - Ebola virus, Bacillus anthracis (Anthrax), Mycobacterium tuberculosis (TB)
   - Streptococcus pneumoniae or Pneumococcus (ear infections, meningitis, sepsis)
   - Haemophilus influenzae (bacterial pneumonia), Helminths (Parasitic worms)
12. Molecules in Immunology, some examples:
   - TAP1/TAP2, RAG1/RAG2
   - Staphylococcal Protein A
   - Mammalian Toll-like receptors
   - γ-Interferon
   - Interleukin 10, Interleukin 12, Interleukin 2
13. Immunological methods of Birth control.
15. Critical historical observations that led to insights into immunological processes.