

Spring 2007

MMBB450/550 Molecular Mechanisms in Microbiology

Professor: Hartzell, Patricia

M-W 2:30 to 3:20 in Life Science 163

Objectives:

1. To hone your analytical and interpretive skills

We will read several publications that deal with cutting-edge, research topics in microbiology and discuss them in detail.

2. To explore the methods of scientific discovery

We will discuss how current research results alter our perceptions and prior attitudes or mind sets.

3. To fully integrate the genetics, molecular biology, biochemistry and microbiology that you have learned during your previous semesters

We will pursue an in-depth analysis of each experiment – we will map out how the experiment was done, what controls were used and why they were important, and examine how the authors present the data. All of this will require that you draw on the information you've learned in other classes.

3. To develop your skills in oral presentation

Each student will present a research paper published within the last 18 months. The format of the oral presentation must include 50% time at the chalk/white board. You will be expected to provide a neat, polished handout to accompany your presentation.

Syllabus

You will be expected to read recent publications in high profile journals. In some cases, we might read a review article. These publications represent the most recent, exciting advances in the field. We can expect to cover about 12-14 papers. You will be invited to contribute ideas for papers to cover based on your own interests.

Please follow this procedure for each paper:

1. Read the paper from start to finish. Do not expect to understand most of it. That's OK.
2. **It will be necessary to do outside research.** Have a computer handy to GOOGLE topics and techniques that are unfamiliar to you. Know how to use Pubmed
<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed>
3. Define the basic hypothesis in one sentence.
4. For each experiment, outline how the experiment was done, what controls were used, and be able to describe the results. It is very helpful to use flow-charts to draw out the way an experiment was done. This will give you a visual image of what the scientists were actually doing.
5. Identify the experiments that address or refute the hypothesis.
6. Think about additional experiments that might advance our understanding of this area.

Grading 1000 pts

50% of your grade (500 pts) will be based on your answers to exam questions. There will be five, 100 pt exams. Typically each exam will cover two papers. The questions on the exam will be taken directly from classroom discussion.

25% of your grade is based on class participation (we have ≈29 meetings, several periods will be exams; ≈10 pt per meeting). During the first half of the semester, I will lead discussions and you must be prepared to go to the board at any time to describe/interpret a figure or table in a paper.

25% of your grade will be based on your oral presentation and the quality of the handout you provide. You must provide some background information and a thorough analysis of the paper. You must be prepared to use the full hour and perhaps two hours.