

Microbial Ecology: SWSC/MCBL 211, Spring 2012

Instructors: Professors James Borneman (2105 Batchelor Hall, borneman@ucr.edu), David Crowley (318 Science Lab 1, crowley@ucr.edu), Joel Sachs (2219 Spieth Hall, joels@ucr.edu), Jason Stajich (1207K Genomics Building, jasonst@ucr.edu), Marylynn Yates (312 Science Lab 1, mvyates@ucr.edu).

Tuesday and Thursday: Sproul Hall 2364, 11:10 am to 12:30 pm.

Dates	Topic	Instructor
Apr 3	Introduction: Surveys of Microbial Diversity. Tansley Lecture by Fenchel.	Crowley
Apr 5	Genetic and Genomic Diversity; Molecular Methods.	Borneman
Apr 10, 12	Microbial Interactions. Bacterial Growth and Quorum Sensing. Student Paper 1.	Crowley
Apr 17, 19	Microbial Processes and Enzymes. Ecoinformatics. Student Paper 2 and 3.	Crowley
Apr 24, 26	Fungal Evolution and Diversity Student Paper 4.	Stajich
May 1, 3	Fungal Pathogens and Host-Microbe Interactions Student Paper 5 and 6.	Stajich
May 8, 10	Evolution of Symbioses: Origins and Diversity Student Paper 7.	Sachs
May 15, 17	Cooperation and Conflict Between Symbionts and Hosts Student Paper 8 and 9.	Sachs
May 22, 24	Environmental Transmission of Pathogens. Effects of Climate Change on Environmentally-Transmitted Diseases. Student Paper 10.	Yates
May 29, 31	Human Microbiome Student Paper 11 and 12.	Borneman
June 5, 7	Human Microbiome Crystal Ball Papers.	Borneman
TBA	Final Exam	

GRADING:

30 points	Final Exam.
10 points	Crystal Ball Paper.
10 points	Participation.
40 points	Weekly Summaries of Assigned Papers (due at beginning of period).
10 points	Paper Discussion Leadership.

Final Exam Guidelines:

The Final Exam will cover the topics presented in the manuscripts in the Paper Folder. The Paper Folder will include all of the papers presented by the students in the class. Additional papers discussed in class may also be added to this folder. This folder will be located on the ilearn website (www.ilearn.ucr.edu), and it will be updated as needed. The final exam will be designed to test the student's ability to:

1. Understand the concepts and methods described in these papers.
2. Synthesize ideas. Synthesis means taking multiple concepts from one or more of these papers and putting them together to address a concept that was not directly covered.
3. Interpret data. For example, if given a Figure and Figure legend from a paper, you could be asked to write a Results and Discussion corresponding to these data.
4. Design experiments. This requires a breadth of knowledge about experimental methods, understanding what the methods are for and how they work, and how to apply them appropriately.

Crystal Ball Guidelines:

Each student will write a 2-3 page, single-spaced report describing where they believe the field of microbial ecology will be in 10-20 years. This paper can include methodological advancements, theoretical breakthroughs and the level of understanding that we will have in specific or general areas of microbial ecology. Students will also present these ideas in ~5 minute informal presentations on June 7, 2012.

Weekly Summary Guidelines:

For each student assigned paper, ALL students will write a 0.5 page, single-spaced report describing the paper. These summaries are due at the beginning of the period of the presentation, and will typically include:

1. Background: the problem under investigation or a hypothesis.
2. Methods: the experimental methods or protocols used to accomplish the research.
3. Results: the key points derived from experiments.
4. Conclusion: a summary of the findings as they relate to the problem/hypothesis.
5. Future: a description of the next set of experiments.

For review-type articles, summarize the key ideas and describe the evidence supporting these ideas.

Student Paper Presentation Guidelines:

Presentations should include the information described above in the "Weekly Summary Guidelines." Presentations should be given in the PowerPoint format. Presentations should be approximately 10-15 minutes. The student will then direct a 10-15 minute discussion of the paper by asking pre-prepared questions. Students not giving the presentation should ask questions or comment on the paper. **All students are expected to participate in these discussions.**