

Monday and Wednesday 10:00 to 11:30am

Friday Sections 10:00 to 11:30am TBA

Professor:

Dr. Petra Levin

Rebstock 301

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Tel. 935-7888

Graduate TAs:

Suki Chandrasekaran

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Office Hours: 9-10am Tuesday

LS 110

Victoria Sepúlveda

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Office Hours: 9-10am Wednesday

LS 110

Sebastian Lourido

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Office 6-7pm Thursday

McDonnell 412

Molly Sutherland

Email: mcsuther@artsci.wustl.edu

Office Hours: 9-10am Monday

LS 110

Required Books:

Microbe, Schaechter, Ingraham, and Neidhardt

Web Site:

<http://www.nslc.wustl.edu/courses/Bio349/bio349.html>

NOTE: Hard copies of the lecture notes will be distributed in class. However, you are responsible for printing out ALL other handouts from the web.

Objectives:

The major goal of the course is that each student understands the biology, diversity, and utility of microorganisms and some approaches used to solve research problems concerning these organisms. In addition, students will gain familiarity with reading and evaluating primary research papers.

Texts and Resources:

The required textbook, Microbe, is used throughout the course although some lectures will be based on review articles (see syllabus). The latter will be available as PDF files on the course web site.

I would also recommend The Great Influenza and Microbe Hunters as optional reading for historical perspective. Microbe Hunters is dated in terms of style and language (See Publisher's Note on page vi) but it's a good introduction to the history of microbiology. The Great Influenza is the story of the 1918 influenza epidemic that killed 40 million people in less than a year. Both books are easy reads and give you a perspective on what life was like before antibiotics and flu vaccines, not to mention molecular biology! If you want more suggestions feel free to ask!!

Research Article Tutorials:

Understanding how to read and evaluate journal articles is an essential part of basic research. To this end, each week you will be required to read a primary research article on topics in molecular microbiology. These papers will complement topics discussed in class the day they are assigned and will be accompanied by study questions and key word definitions. Both the papers and the study questions are available on the course web site.

You will be assigned to a Friday section at the beginning of the semester. During these sections TAs will facilitate discussion of the weekly research paper. Students will be divided into small groups and each group will present one of the figures from the paper to the rest of the section using an overhead projector and/or the board.

You are expected to read the article **BEFORE** attending the session and hand in answers to the accompanying study questions at the **BEGINNING** of the tutorial. Answers to the study questions will count towards **15% of your final grade**. You are expected to answer these questions independently, however you may discuss the paper itself with other students. Class participation in these sessions will count towards **10% of your final grade**.

Exams:

There will be two in-class exams that cover the material indicated on the syllabus. The final exam will include some basic concepts from the topics covered on the first two exams but the majority will focus on the final third of the course. **Each exam is worth 25% of your final grade. No make up exams will be given.**

Exam Review: We will have evening review sessions before each exam. Exams from prior years will also be available on reserve in the biology library. These exams should be taken as guidelines for studying not as gospel.

Regrades: If you would like a question to be regraded, you will need to put your rationale for requesting a regrade in writing and turn it in with the exam to one of the TAs. Be advised we will regrade the entire exam and not just individual questions. You will have one week from the time your corrected exam is returned to ask for a regrade.

PLAGIARISM AND CHEATING:

Except when explicitly told otherwise, you are expected to work independently. Plagiarizing from either the primary literature or from another student will result in a failing grade, or, in more egregious cases, an appearance before the Academic Integrity Committee.

Cheating on an exam will result in an immediate failing grade for the exam, an appearance before the Academic Integrity Committee, and potentially a failing grade for the course.

Syllabus:

Date	Topics	Reading
1/14	Historical Perspectives Cell Structure and Growth	Ch 1-5 Selling Soap
1/16	Prokaryotic Phylogeny	Ch 15
1/18	NO SECTION	Handout on Reading a Scientific Paper
1/21	No Class MLK Day	
1/23	Metabolism, Energy generation	Ch 6-7
1/25	Tutorial	Reguera et al, 2005
1/28	Genetics	Ch 10 DNA transfer review
1/30	Cell cycle	Ch 8 (pp131-141), Ch 9
2/1	Tutorial	Hahn et al, 2005
2/4	Transport and secretion	Mota et al, 2005
2/6	Sequencing: Genes to Genomics	Goodner, B. et al, 2003.
2/8	Tutorial	Margalit et al
2/11	Guest Lecture on Genome Annotation Dr. Barry Goldman Monsanto	Dr. Goldman's handouts X Prize article
2/13	A not so random walk through environmental sensing and signaling	Ch 13 Bacterially speaking
2/15	EXAM I	

Date	Topics	Reading
2/18	Transcription and Transcriptional Regulation	Ch 12
2/20	Bacterial development	Ch 14
2/22	Tutorial	Mignot et al
2/25	Bacteriophage and Bdellovibrio	Ch 17
2/27	Mutualism and Biofilms	Ch 19, Battling Biofilms
2/29	Special Leap Year Tutorial	Mah et al
3/3	Guest Lecture on Microbial Ecology Dr. Ruth Ley Center for Genome Sciences Washington University School of Medicine	Ch 18 Gilmore and Ferretti, 2003 Fat Factor
3/5	Archaea and Metabolic Diversity	20,000 Microbes
3/7	Tutorial	Schippers et al
3/17	Bioremediation	Blue-Green Acres A tentative comeback Ch 23
3/19	Genetic Engineering	Custom made microbe Grains of doubt
3/21	TUTORIAL	TBA
3/24	Exam II	

Date	Topics	Reading
3/26	Overview of Pathogenesis	Ch 20-21 Source of deadly <i>E. coli</i> is found
3/28	Tutorial	Ksiazek et al, 2003
3/31	The immune system in a nutshell	Immunity's early warning system
4/2	Extracellular Pathogens	Turf abrasions Other topical handouts
4/4	Tutorial	TBA
4/7	Intracellular Pathogens	Gouin et al
4/9	Guest Lecture on Microbial Pathogenesis Dr. Joe Vogel Department of Molecular Microbiology Washington University	Dr. Vogel's handouts
4/11	Tutorial	Meehl et al, 2005
4/14	Eukaryotic Viruses-Bird Flu	Lamb and Jackson, 2005 Flu Handouts
4/16	VIDEO	INFLUENZA 1918
4/18	Guest Lecture on Parasitology Dr. Steve Beverley Chairman Department of Molecular Microbiology Washington University School of Medicine	Ch 16 Tackling Malaria
4/21	Antibiotics and Vaccines	The Challenge of Antibiotic Resistance When to use Antibiotics Genetic Vaccines
4/23	Microbes from a world health perspective	Ch 22 Handouts
4/25	VIDEO	Frontline AIDS series
5/5	FINAL EXAM 10:30 am to 12:30 pm	Location TBA