

MMBB 250
Fall 2006
Course Outline

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Laboratory MMBB255 T. Steffens Life Science 167 ph:885-8953, TimS@uidaho.edu

Text: *Microbiology* authors: Prescott, Harley and Klein, 5th edition, 2002. McGraw Hill Pub.

Laboratory Manual: P. Hartzell Laboratory Exercises is available on line at:
http://www.uidaho.edu/micro_biology/250/250lab.htm:

MMBB250 Grading will be on the **strict percentile basis (no curve)**: There will be three lecture exams and a cumulative final. Total course points **400**
Lecture exams 4 @ 100 Total of **400** pts.

Grade cut offs:

A = 90%
B = 80%
C = 70%
D = 60%
F < 60%

Review sessions prior to examinations reviews will be held if there is interest. Weekly reviews will be held Monday evenings (5:10 P.M.) in room 163 Life Science or the teaching laboratory.

Office Hours: MWF 10:30. I have an open door policy and encourage you to stop by when you have questions. You can also make an appointment by contacting me via email or by making an appointment at the end of class.

Extra credit: Students can earn an extra 5 points per examination, including the final, by providing a typed one to two page synopsis of a 'primary' research article from the list of journals supplied. The only stipulation is that it **not be a review** article (no submissions from Scientific American, Omni, Time, Newsweek, Readers digest etc.) and the publication date of the article must be after June 1, 2006. You must include a full reference for the paper, authors, journal, date, page, title of article. Plagiarism will be penalized by loss of points.

Honor system: Students are reminded that examinations, laboratory exercises, and extra credit problems are to reflect their own work and knowledge. You will receive the maximum allowable penalty if caught breaking this understanding and may be removed from the class.

Disabilities: Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Disability Resource Center (DRC) in Administration Annex 206, 335-3417.

Lecture Outline:

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| August 21, 2001: | Introduction to Microbiology, an Historical Perspective. Reading Assign. Chapter 1 and Chapter 2. |
| August 23: | Historical perspective continued Reading Assign. Chapter 1 continued |
| August 25: | History continued, introduction to Prokaryotic cell structure. Chapter 3. |
| August 28 | Prokaryotic cell structure. Reading Assign. Chapter 3. (Last day to add or change course online) |

- August 30: Prokaryotic cell structure.
Reading Assign. Chapter 3.
- September 1: Cell structure continued
Reading Assign. Chapter 5.
- September 4 Labor Day; UI closed**
- September 6: Microbial Growth and Nutrition
Microbial Nutrition
Types of Media and pure culture isolation.
Reading Assign: Chapter 5.
- September 8: Microbial growth continued
Growth curve
Growth rate calculation
Reading Assign. Chapter 6.
- September 11: Metabolism: Overview
Reading Assign. Chapters 8 and 9
- September 13: Energy Production Chapter 9
Glycolysis
Citric Acid cycle
Oxidative phosphorylation
Reading Assign. Chapter 9.
- September 15: Metabolism continued Chapter 9
- September 18 (Monday): Examination I (Extra credit turned in with test)**
(last day to drop without a W grade)
- September 20: Macromolecule synthesis
DNA and proteins
Reading Assign. Chapter 11.
- September 22: DNA replication Chap 11
PCR, DNA sequencing
- September 25: Transcription (gene structure, promoters, sigma factors)
Reading Assign. Chapter 12
- September 27: Translation (Chap 12)
- September 29: Microbial genetics Read Chaps 13 and 14
Fluctuation test
Conjugation
Transduction
The *lac* operon
- October 2: The *lac* Operon continued.
- October 4: Gene regulation continued
- October 6: Gene regulation continued.
- October 9: Recombinant DNA Technology (Restriction enzymes, cloning
vectors and hosts, Chap 14)
- October 11: Recombinant DNA methods continued:
gene fusions, over-expression, Chap 14

October 13: Microbial Taxonomy
Reading Assign. Chapter 19

October 16: Prokaryotic Diversity Chap 19

October 18 (Wednesday): Examination II

October 20: Immunology: Antigens and Antibodies
Reading Assign. Chapter 31

October 23: The immune response
Reading Assign. Chapter 31-32

October 25: Medical Microbiology: Chemotherapy and Resistance
Reading Assign. Chapter 35.

October 27: Bacterial Diseases
Reading Assign. 39 Airborne pathogens

October 30: Bacterial Diseases cont. Arthropod-borne
The plague
Direct Contact

November 1: Bacterial Diseases: Direct contact continued; STDs

November 3: The Chlamydial, Mycoplasma, and Rickettsial; Viral Diseases
Chapter 38 and Chapter 36

November 6: Viral Diseases continued; HIV

November 8 (Wednesday): Examination III

November 10: Emerging infections and antibiotic resistance revisited; Chapter 35
Fungal and Protozoan Diseases, Chapter 40

November 13: Environmental Microbiology
Nutrient cycling
Reading Assign. Chapter 28-30.

November 15: continued.

November 17: Soil Microbiology
Reading Assign Chapter 30

Thanksgiving Break: Saturday Nov. 20 to Nov. 26.

November 27: Microbiology of Food; Chapter 41

November 29: continued

December 1: Industrial Microbiology
Reading Assign. Chapter 42

December 4-8 (Dead Week) Lecture catch up period, Directions of the Future and
Career Opportunities

Final Examination: Comprehensive Wednesday December 13th 10AM-12

A short list of Microbiology Journals for extra credit: These can be accessed on line

The Journal of Bacteriology
Infection and Immunity
Microbiological Reviews
FEMS Microbiology Letters
FEBS Letters
Molecular and General Genetics
Journal of Molecular Microbiology
Applied and Environmental Microbiology
Journal of Bacterial Systematics
Journal of Clinical Microbiology
Journal of Infectious Diseases
Canadian Journal of Microbiology
Anton VanLeevanhoek
Reviews of Infectious Diseases
Antibiotics and Chemotherapy
Microbial Pathogenicity
Molecular Microbiology

Allied Journals

Cell
Nature
Science
Proceedings of the National Academy of Sciences
EMBO Journal
Nucleic Acids Research
J. of Molecular Biology
Journal of Biological Chemistry
Biochemistry
Genes and Development
Genes

General Review Sources for interest, not to be used for Extra credit

Annual Review of Microbiology
Annual Review of Biochemistry
Annual Review of Genetics

General books on the History of Microbiology (further readings)

Rats, Lice, and History. Hans Zinder
Microbes and Men. Robert Reid
Disease and History. Cartwright
The Double Helix. J.D. Watson
What Mad Pursuit. F. Crick
Chance and Necessity. J. Monod
The Statue Within. F. Jacob
The Logic of Life. F. Jacob
Of Flies, Mice and Men F. Jacob
The Microbe Hunters. Paul deKruif
Milestones in Microbiology. T. Brock
The Eighth Day of Creation. Judson
For the Love of Enzymes. A. Kornberg.
The Life of Pasteur
In Search of the Double Helix. John Gribben
Correcting the Code by Larry Thompson
The Hot Zone (a true thriller about Ebola virus)
Any of the Books by **Lewis Thomas**, eg., *Lives of a Cell, The Medusa and the Snail, Medicine the Youngest Science, Late Night Thoughts while Listening to Mahler's Ninth Symphony.*
The Coming Plague by Laurie Garrett

Double Edged Sword: The Promise and risks of the genetic revolution by Karl Drlica
Virus Hunting; Aids, Cancer, and the Human Retrovirus by Robert Gallo, M.D.
Phage and the Origins of Molecular Biology, eds. G. Stent and J.D. Watson
A Deadly Feast (1997) Rhodes (Mad Cow Disease, Kuru, and Jacob Creutzfeld disease, the search for, and understanding of, prions)
Invisible Frontiers: The race to synthesize a human gene, S. S. Hall (Atlantic Monthly Press)
DNA by JD Watson 2003 Knopf
Robert Koch: A Life in Medicine and Bacteriology by Thomas D. Brock
Life of Pasteur 1928 by Rene Vallery-Radot,
The White Plague: Tuberculosis, Man, and Society by Rene J. Dubos, David Mechanic, Jean Dubos