

MEDICAL BACTERIOLOGY
Bio 312/512
Spring 2013

INSTRUCTOR: Dr. Colleen M. McDermott
OFFICE: Nursing Ed 101 or HS 154
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OFFICE HOURS: MF 10:20-11:20AM
MWF 1:30-2:30 PM
And by appointment***

LECTURE: TR 8:00-9:00 AM

TEXTBOOK: Bacterial Pathogenesis: A Molecular Approach, 3rd Ed.
2011. Wilson, B., Salyers, A. A, Whitt, D.D. and Winkler, M.
ASM Press, Washington, DC.

GRADING POLICY: There will be three (3) one hour exams during the course and are worth 100 points each. Times are as listed on the course schedule. All make-up exams will be comprehensive and oral. Please call instructor or Biology Departmental Office (424-1102) if unable to attend exam due to illness or emergency. Those students needing additional time to complete exams must make arrangements with instructor prior to examination period.

Exam format will be short essay, fill in the blank, definitions, etc. Grading will take into account spelling, grammar, and organization. Feel free to bring a dictionary (NO MEDICAL DICTIONARIES WILL BE ALLOWED), calculator, or other aid (within reason) to class or exams. Each exam is worth 100 points.

A review paper will be written by each student in the class. Paper topics will be determined by the instructor, with student input. The review paper will be a comprehensive examination of a particular disease agent, and will include signalment (who is the patient, age, gender, occupation, other important information), clinical signs, organism identified, brief description of how disease is diagnosed, pathogenesis, treatment, and outcomes. It will be properly referenced. The review paper will be written in a manner similar to those published in "Clinical Microbiology Reviews". See Review Paper Instruction sheet on D2L for more information. This will be worth 100 points and will be due on May 2, 2013.

Short quizzes will be given as per the schedule. Quizzes will be worth 20 points each and will total 100 points. Quizzes will cover material from the previous classes, as well as general information about that day's class. Quizzes will occur during the first 5-10 minutes of the class period. If you are not present for a quiz, you will receive a zero. Quizzes are designed to keep you current. Reviewing your notes and reading the textbook will help with this!

Grades will be based on the following averages*:

| | | | |
|----|---------|----|-------|
| A | 100-94% | C | 76-74 |
| A- | 93-90 | C- | 73-70 |
| B+ | 89-87 | D+ | 69-67 |
| B | 86-83 | D | 66-64 |
| B- | 82-80 | D- | 63-60 |
| C+ | 79-77 | F | <60 |

*Instructor reserves the right to adjust grades (i.e. curve) if necessary.

PREREQUISITE: Bacteriology (Biol 309) and Immunology (Biol 341) are prerequisites for this course. Students will be expected to have knowledge of the following topics:

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|--------------|-------------------------------|
| Phagocytosis | Antigen/antibody interactions |
| Complement | Inflammation |

MEDICAL BACTERIOLOGY Bio 312/512
Lecture Schedule 2013

| <u>WEEK</u> | <u>DATE</u> | <u>TOPIC</u> | <u>CHAPTER</u> |
|---|-------------|---|--|
| Basic Principles | | | |
| 1 | Jan. 29 | Introduction | 1 pp. 1-15 |
| | Jan. 31 | Host Defenses | 2 pp. 16-27 5 pp. 73-97 6 pp. 98-110 |
| 2 | Feb. 5 | Host Defenses, cont. | 7 pp. 111-129 |
| | Feb. 7 | Virulence Factors: Microbial Subversion | 8 pp. 130-138 11 pp. 193-224 |
| 3 | Feb. 12 | Virulence Factors: Bacterial Toxins | 3 pp. 47-50 12 pp. 225-255 (13 pp. 256-274) |
| | | QUIZ 1 | |
| | Feb. 14 | Vaccines | 17 pp. 373-398 |
| 4 | Feb. 19 | Antibiotics | 7 pp. 111-120 15 pp. 317-346 16 pp. 347-372 |
| GRAM POSITIVE BACTERIAL DISEASES | | | |
| | Feb. 21 | Staphylococcal Disease | 18 pp. 399-414 |
| | | QUIZ 2 | |
| 5 | Feb. 26 | Staphylococcal Disease, cont. | “Community-associated methicillin-resistant <i>Staphylococcus aureus</i> : Epidemiology & clinical consequences of an emerging epidemic” |
| | Feb. 28 | EXAM 1 | |
| 6 | March 5 | Group A & Group B Streptococci, Enterococci | “Prevention of perinatal Group B Streptococcal disease” “Pathogenesis of Group A Streptococcal infections” |
| | March 7 | Streptococci and Enterococci, cont. | 11 pp. 221-222 “The Life and Times of the Enterococcus” |

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| 7 | March 12 | <i>Streptococcus pneumoniae</i> | 18 pp. 414-423 |
| | | QUIZ 3 | |
| | March 14 | Clostridial diseases | 18 pp. 423-436 20 pp. 468-470 |
| | | | “The Changing Epidemiology of <i>Clostridium difficile</i> Infections” |
| | | SPRING BREAK BIOSECURITY ISSUES | |
| 8 | March 26 | Anthrax | 20 pp. 457-466 “Use of Anthrax Vaccine in the United States” |
| | March 28 | Listeriosis <i>Yersinia pestis</i> | 20 pp. 470-475 20 pp. 467-468 “ <i>Yersinia pestis</i> —Etiologic Agent of Plague” |
| | | GRAM NEGATIVE BACTERIAL DISEASES | |
| 9 | April 2 | <i>E. coli</i> and GI disease | 19 pp. 437-440 |
| | | QUIZ 4 | |
| | April 4 | Case studies/Discussion | |
| 10 | April 9 | <i>E. coli</i> and Urinary Tract Disease | 19 pp. 440-441 |
| | April 11 | Salmonellosis | 11 pp. 216-218 “Clinical pathogenesis of typhoid fever” “Molecular Pathogenesis of <i>Salmonella enterica</i> Serotype Typhimurium- Induced Diarrhea” |
| | | (EXAM 2: Given at Testing Center. May be taken April 11 or 12) | |
| 11 | April 16 | Salmonellosis, cont. | |
| | April 18 | Ulcers and <i>Helicobacter pylori</i> | “ <i>Helicobacter pylori</i> and gastric cancer: Factors that modulate disease risk” |
| | | Review Paper Draft Due April 18 | |
| 12 | April 23 | <i>Pseudomonas aeruginosa</i> | 19 pp. 443-446 “Alginate Synthesis by |

Pseudomonas aeruginosa:
A Key Pathogenic Factor
in Chronic Pulmonary
Infections of Cystic
Fibrosis Patients”

QUIZ 5

MISCELLANEOUS INFECTIOUS DISEASES

| | | | |
|----|----------|---|---|
| | April 25 | Sexually Transmitted Disease | “Sexually Transmitted Diseases Treatment Guidelines, 2010” |
| 13 | April 30 | The Spirochetes: Lyme Disease, Ehrlichiosis & Syphilis | 19 pp. 447-456 “Biological Basis for Syphilis” “Coinfections Acquired from <i>Ixodes</i> Ticks” |
| | May 2 | Anaerobic Bacterial infections | 19 pp. 441-443 “Enterotoxigenic <i>Bacteroides fragilis</i> : a Rogue among Symbiotes” Taxonomy, Biology, and Periodontal Aspects of <i>Fusobacterium nucleatum</i> |
| | | Review Paper Due May 2 | |
| 14 | May 7 | Tuberculosis | 11 pp. 216-218 “ <i>Mycobacterium tuberculosis</i> Pathogenesis and Molecular Determinants of Virulence” |
| | May 9 | EXAM 3 | |

For each organism examined over the course of the semester, we will discuss the following: Clinical Signs, Predisposing factors and transmission, pathogenesis of infection, treatment and disease prevention.

