

1/10/2023

MBIO 687 MICROBIAL PATHOGENESIS
Department of Microbiology and Immunology

Spring 2023

Tuesdays 3-5pm CTRB 601

(Belknap parking is available at 505 S Hanock St, free parking along Mohammad Ali Blvd.)

Course Director:

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Course content: MBIO687 Microbial Pathogenesis explores current state of the art research approaches to the study of interactions between pathogenic bacteria and their hosts. An attempt is made to cover many of the high-impact human infectious diseases, with a specific focus on laboratory models that are in use by the Instructors at the University of Louisville.

Recommended Textbook: None Required. Bacterial Pathogenesis: A Molecular Approach, 2nd or 3rd Ed. 2001/2010 by By Abigail A. Salyers, Ph.D.; and Dixie D. Whitt, Ph.D. (ISBN 1-55581-171-X). Note: The 2nd Ed. Is available both online as a used book, and around the Department, as it is a 3rd Ed. The overview provided by the authors gives useful historical perspectives in many areas that can help readers understand why certain questions are thought to be more central in the study of different pathogens.

Pre-requisites: MBIO 601 Molecular Microbiology. Each student will need to have a good basic understanding of the bacterial genetics and physiology that underlie all the specific mechanisms of colonization and immune evasion that will be discussed. Sufficient background coursework in Biochemistry and Cell Biology are also highly recommended. Contact the course director if more information or an exception is needed.

Class format: Meetings will be in CTRB 601. Each meeting will consist of i) an overview of an important infectious disease and the molecular biology of the relevant microbial pathogen and ii) a class discussion of an assigned primary research paper. Students will take a short one page quiz on each primary paper, which will be due by email prior to the start of the relevant class meeting.

Exams and Grading: There will be an open-note take home exam at both midterm and final. This exam format should allow you to focus your attention on the major lessons of the course, as opposed to trying to determine what specific information

presented you will be accountable for. Each will be worth 30%, with the remaining 40% attained through active participation (i.e. reading the papers and then interacting verbally in class). As students will have a world of information at their fingertips while taking these exams, correspondingly better answers can be expected. Apparent real understanding and potential insights then become the 'best' answers. However, all previously expressed ideas and opinions must be properly attributed to their sources ('cited' by author, journal, and year), and made distinct from any of one's own. Any plagiarism, or using whole sentences or intact phrases written by others will be verified, resulting in failing grades followed by University disciplinary action. Contact the course director if any part of this policy is unclear, or there are any issues in terms of language translation. Consulting with other students, lab mates, or mentors on exam questions is also not allowed.

Attendance: As this class will only meet a limited number of times for 2h, any absences must be arranged ahead of time with the course director. Although your experiments are at times similarly important, you must also prioritize your reading and attendance properly if you are to succeed in academics, both now or in the future. (Any class cancellations due to weather or changes in schedule will be arranged by faculty as necessary).

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MBIO 687	MICROBIAL PATHOGENESIS	Tuesdays 3-5 PM	CTR 601
Jan. 17	Introduction and Overview of Infectious Disease		Graham
Jan. 24	Molecular biology of <i>Mycobacterium tuberculosis</i>		Graham
Jan. 31	Cellular microbiology of <i>Legionella</i>		Abu Kwaik
Feb. 7	Molecular pathogenesis of <i>Helicobacter pylori</i>		Graham
Feb. 14	Streptococcal diseases		Graham
Feb. 21	Mechanisms of <i>Klebsiella</i> pathogenesis		Warawa
Feb. 28	Burkholderias (Take Home Exam I- due March 7th)		Warawa
March 7	Spring Break		
March 14	Cellular microbiology of <i>Salmonella enterica</i>		Graham
March 21	Clostridia		Collins
March 28	Bacterial antibiotic resistance		Thompson
April 4	<i>Yersinia</i> host cell interactions		Lawrenz
April 11	Molecular pathogenesis of <i>Staphylococcus</i>		Potempa
April 18	Major human parasitic infections (Take Home Exam II- due 4/25)		Graham