

	Course	Cellular Microbiology BIOL 4310
	Professor	Mehmet Candas
	Term	Spring 2013
	Meetings	Friday 10:00 am - 12:45 pm Room: JSOM 2.902

Professor's Contact Information

Office Phone	972-883-6338
Office Location	FN 3.206
Email Address	candas@utdallas.edu
Office Hours	F 1:00-2:00 pm Best way to reach Dr. Candas is via email communication. If you need to have a meeting, please schedule via e-mail.

General Course Information

Pre-requisites, Co-requisites	Successful completion of or co-enrollment in BIOL 3302 (Eukaryotic Molecular Cell Biology), or a consent from Dr. Candas.
Course Description	<p>Cellular Microbiology explores concepts and mechanisms involved in the interactions between microbes and human host. The course covers pathogenesis of infectious diseases in the context of host cell properties and immune responses. It introduces various human pathogens and describes their virulence by incorporating aspects of molecular cell biology, microbiology, immunology, virology and parasitology. It intends to support upper-level students seeking to advance their knowledge in medical microbiology and infectious diseases towards studies in medicine, health professions and biomedical research.</p> <p>Topics include pathogen invasion, toxins, manipulation of host cell functions, cell death, induction of apoptosis by pathogens, and innate immune responses. Emphasis is given on the theme that microbes have co-evolved with their hosts. Current literature on host-microbe interactions and molecular basis of diseases arising from these interactions are stressed with a clinical perspective. The course also explores current studies in the field of microbial genomics, human microbiome, probiotic microorganisms, antimicrobials, vaccine development, molecular diagnostics and applications of functional genomics and proteomics platforms to molecular microbiology and infectious diseases research.</p>

Learning Outcomes	<p>The primary objective of the course is to provide a fundamental understanding into evolutionary aspects of how pathogenic microorganisms interact with eukaryotic host cells and adapt to changing environments, and how host cells defend themselves against invading microorganisms.</p> <p>Upon successful completion of this course, students will:</p> <ul style="list-style-type: none"> • Demonstrate broad knowledge of the cellular and molecular aspects of host pathogen interactions. • Describe the principal mechanisms by which specific pathogens infect their hosts and cause disease. • Understand common themes involved in microbial pathogenesis and host responses (innate and acquired immune responses). • Evaluate mechanism of action of antimicrobial drugs and vaccines in terms of infectious disease control. • Understand the influence of microorganisms in health and diseases in the context of human microbiome. • Understand research involving molecular microbiology and microbial genomics. • Apply the principles of infectious disease to a selected research problem in the field.
Course Material	<p>There is no required text book. The course reviews up-to-date and relevant concepts based on current research. Lecture slides and assignments (original research articles and review papers involving microbial pathogenesis, medical microbiology, drug and vaccine development, and microbial genomics) are posted via Blackboard.</p>
Suggested Readings	<ul style="list-style-type: none"> • Cellular Microbiology (Pascale Cossart, Patrice Boquet, Staffan Normark, and Rino Rappuoli) ASM Press

Tentative Schedule and Topics

DATES	TOPICS
Jan 17	Introduction to Cellular Microbiology Co-evolution and co-differentiation of microbe and host
	Delineating pathogenesis and virulence Microbial genomics and infectious diseases
Jan 24	Cell adhesion and signal transduction in eukaryotic host cells (an overview of cell biology)
Jan 31	Bacterial adhesion to host cells
	Bacterial quorum sensing and biofilms in infections
Feb 7	EXAM 1
Feb 14	Bacterial toxins and secretion systems
Feb 21	Bacterial invasion of host cells
	Intracellular bacterial pathogens
Feb 28	Manipulation of membrane trafficking and cellular transport by pathogens
Mar 7	EXAM 2
Mar 10-16	SPRING BREAK
Mar 21	Innate immune responses, Toll receptor signaling
	Inflammation and autophagy
Mar 28	EXAM 3
Apr 4	Human microbiome
	Intestinal homeostasis; Allergy and Diseases in the Gut
	Probiotics
Apr 11	EXAM 4
Apr 18	Group presentations and class discussions
Apr 25	Group presentations and class discussions
May 2	EXAM 5 (last exam – based on topics covered in the group presentations and class discussions)

These descriptions and timelines are subject to change at the discretion of the Professor.

Course Policies

Exams and Assignments	<p>The approach for meeting the course objectives will be a combination of attending class meetings, reading assigned articles, participating in class discussions and group presentations.</p> <p>Overall assessment is based on five in-class exams. Exams may include multiple choice questions and short-answer questions. The questions will be based on information covered in the lectures, group presentations and discussions, materials posted in eLearning, and assigned articles.</p> <p>Completion of all exams and assignments and participation in discussions and presentation is mandatory. Missed or not-accepted exams or assignments are graded "zero".</p>
Make-up Exams	<p>If you do miss an exam, the score will be recorded as 0. Make-up exams will be provided only in cases of documented excuses, emergencies, official university business (e.g., athletic team), or professional school (e.g., medical school) interviews. Documents must support that you were unable to attend the exam at the time it was given. Most "return to work" slips do not indicate that there was a sickness or emergency and they do not specify the date and reason for visit and diagnosis by a doctor or clinic. Thus you need to provide an official documentation indicating specifically the date and reason of admission to a clinic, or a documentation indicating attendance to a school interview, or demonstrating an extraordinary or emergency situation.</p> <p>Since religious holidays are known in advance, we must be informed of them at the beginning of the semester. Scheduled trips well in advance are acceptable, but it is best to inform us as soon as possible (not one or two days before an exam).</p> <p>Make-up exams will be entirely essay questions. There will be no multiple choice questions on make-up exams. The highest grade possible on a make-up exam is the average of your other exams. Students should not be able to benefit from the extra time that other students do not have. Students can maintain their average but not improve upon it.</p>
Extra Credit	None
Grading	Assessment is based on 5 exams and the final letter grade is based on the average score obtained from the exams.

	<p>Grades will be distributed as following:</p> <table><tr><td>97-100%</td><td>A+</td><td>73-75%</td><td>C+</td></tr><tr><td>92-96%</td><td>A</td><td>70-72%</td><td>C</td></tr><tr><td>88-91%</td><td>A-</td><td>66-69%</td><td>C-</td></tr><tr><td>84-87%</td><td>B+</td><td>62-65%</td><td>D+</td></tr><tr><td>80-83%</td><td>B</td><td>60-61%</td><td>D</td></tr><tr><td>76-79%</td><td>B-</td><td>55-59%</td><td>D-</td></tr></table>	97-100%	A+	73-75%	C+	92-96%	A	70-72%	C	88-91%	A-	66-69%	C-	84-87%	B+	62-65%	D+	80-83%	B	60-61%	D	76-79%	B-	55-59%	D-
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80-83%	B	60-61%	D																						
76-79%	B-	55-59%	D-																						
Class Attendance	<p>Attendance is expected and it is part of your responsibility as a student.</p> <p>The classes are conducted in an interactive manner involving discussions on original research papers and review articles along with audio/video presentations on specific topics.</p> <p>Cellular microbiology is a multidisciplinary subject consists of concepts from molecular cell biology, biochemistry, microbiology and immunology as well as contemporary topics including genomics, bioinformatics and proteomics. Learning of such multidisciplinary biology topics is enhanced by reinforcement of subjects through discussions and question/answer interactions in the lectures. Class notes and assigned papers rarely can convey the emphasis placed on principles during lectures.</p>																								
Field Trip Policies	Not applicable																								
Student Conduct and Discipline	<p>The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, <i>A to Z Guide</i>, which is provided to all registered students each academic year.</p> <p>The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the <i>Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3</i>, and in Title V, Rules on Student Services and Activities of the university’s <i>Handbook of Operating Procedures</i>. Copies of these rules and regulations are available to students in the Office of the Dean of</p>																								

	<p>Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).</p> <p>A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.</p>
Academic Integrity	<p>The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.</p> <p>Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.</p> <p>Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism.</p> <p>Plagiarism You should acknowledge where ideas or knowledge not originally your own come from. The acknowledgment should be done even if you state your understanding of the idea in your own words.</p> <p>It is not appropriate to use extensive paragraphs from a text or web site without citation. Even the use of a phrase from a book, an article or the internet without quotation marks and citing the reference is considered plagiarism.</p> <p>Be especially careful in cases in which you work together with your lab partners. While you would have the same data, the ideas presented in your lab report must be your own.</p>

Any instance of plagiarism is handled by the Academic Judiciary.

Avoiding Plagiarism

[Adapted from Duke University's guidelines for writers]

Take time to make careful choices among--and learn to use--the research tools available to you. You will probably find that your favorite web search engine is not adequate by itself for college-level research. Consult with your professor or a librarian. You may need to use specialized research tools, some of which may require learning new searching techniques.

Expect to make trips to the library. While you can access many of the library's resources from your home computer, you may find that you need to make several trips to use materials or research tools that are not accessible remotely. Of course, you will be seeking the best information, not settling for sources simply because they happen to be available online.

Allow time for gathering materials that are not available at UT Dallas. The InterLibrary Loan Office can borrow articles and books from other libraries, but this process takes additional time.

Allow time for reading, rereading, absorbing information, taking notes, synthesizing, and revising your research strategy or conducting additional research as new questions arise.

Sloppy note-taking increases the risk that you will unintentionally plagiarize. Unless you have taken note carefully, it may be hard to tell whether you copied certain passages exactly, paraphrased them, or wrote them yourself. This is especially problematic when using electronic source materials, since they can so easily be copied and pasted into your own document.

Identify words that you copy directly from a source by placing quotation marks around them, typing them in a different color, or highlighting them. (Do this immediately as you are making your notes. Don't expect to remember days or weeks later what phrases you copied directly.) Make sure to indicate the exact beginning and end of the quoted passage. Copy the wording, punctuation and spelling exactly as it appears in the original.

Jot down the page number and author or title of the source each time you make a note, even if you are not quoting directly but are only

	<p>paraphrasing.</p> <p>Keep a working bibliography of your sources so that you can go back to them easily when it's time to double-check the accuracy of your notes. If you do this faithfully during the note-taking phase, you will have no trouble completing the "works cited" section of your paper later on. Keep a research log. As you search databases and consult reference books, keep track of what search terms and databases you used and the call numbers and URLs of information sources. This will help if you need to refine your research strategy, locate a source a second time, or show your professor what works you consulted in the process of completing the project.</p> <p>You must cite direct quotes.</p> <p>You must cite paraphrases. Paraphrasing is rewriting a passage or block of text in your own words. If you paraphrase, you must still cite the original source of the idea.</p> <p>You must cite ideas given to you in a conversation, in correspondence, or over email.</p> <p>You must cite sayings or quotations that are not familiar, or facts that are not "common knowledge." However, it is not necessary to cite a source if you are repeating a well-known quote or familiar proverb.</p> <p>Common knowledge is something that is widely known. For example, it is widely known that Bill Clinton served two terms as president; it would not be necessary to cite a source for this fact.</p> <p>These types of sources should be cited as well. Printed sources: Books, parts of books, magazine or journal articles, newspaper articles, letters, diaries, public or private documents; Electronic sources: Web pages, articles from e-journals, newsgroup postings, graphics, email messages, software, databases; Images: Works of art, illustrations, cartoons, tables, charts, graphs; Recorded or spoken material: Course lectures, films, videos, TV or radio broadcasts, interviews, public speeches, conversations.</p>
Email Use	<p>The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD</p>

	<p>student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.</p>
Withdrawal from Class	<p>The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.</p>
Student Grievance Procedures	<p>Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's <i>Handbook of Operating Procedures</i>.</p> <p>In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.</p> <p>Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.</p>
Incomplete	<p>As per university policy, incomplete grades will be granted only for</p>

Grades	work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to <u>F</u> .
Disability Services	<p>The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.</p> <p style="padding-left: 40px;">The contact information for the Office of Disability Services is: The University of Texas at Dallas, SU 22 PO Box 830688 Richardson, Texas 75083-0688 (972) 883-2098 (voice or TTY)</p> <p>Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.</p> <p>It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.</p>
Religious Holy Days	The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

	<p>The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.</p> <p>If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.</p>
Off-Campus Instruction and Course Activities	<p>Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean.</p>

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