Biol 5303, Cellular Physiology
Fall 2020
M.W. 5:30-6:50 pm, HPR 253
Course Syllabus

PROFESSOR
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http://www.uttyler.edu/directory/biology/azghani.php

OFFICE HOURS
Th. 1:00 – 2:00 or by appointment.

TEXTBOOK
Recommended:
1. MOLECULAR CELL BIOLOGY, LODISH 8TH EDITION, 2016, FREEMAN,
   www.whfreeman.com/launchpad/lodish8e
   
   EDITION 7TH OF THIS BOOK IS ON RESERVE FOR A 3- HOURS CHECKOUT AT UTT LIBRARY.

2. CELLULAR PHYSIOLOGY SOURCE BOOK, ESSENTIALS OF MEMBRANE BIOPHYSICS, 4TH EDITION, NICHOLAS SPERELAKIS, EBOOK,

The ebook is located EBL Ebooks on Demand

Current UTT students can access it anytime via Ebooks on Demand after log in with their Patriots:
https://urldefense.proofpoint.com/v2/url?u=http-3A
utttyler.eblib.com_patron_FullRecord.aspx-3Fp-
3D848958&d=DQIFAg&c=e7TYJBzRfB0YbjEn2u3vBA&r=BMXRlDw21gut0kpJ4eQ7-guMEhYJCWxfVPp6oGrQ4&m=GKdG-
9AikA3veBskA_XUIWCJxRctqLXRyqBPAMdnnt0&s=9e2ORmqafNu6XiKJVB7kR6q ao7fCRGBefliZ5DRXzL0&e=

PRIMARY RESEARCH ARTICLES (classic and recent) for class discussions will be posted on Canvas for all to read in advance.
COURSE DESIGN

Dr. Azghani will present the topic and introduce relevant journal articles and significant human diseases. He will also direct a student-led discussion on the concept, relevant modern technologies, and major questions in your field of interest. Participation from each student is expected and necessary in class discussions to ensure a high level analysis. The student’s final evaluation will reflect participation in student-led discussions, formal presentations, and a comprehensive final exam.

COURSE DESCRIPTION

Cellular Physiology will focus on the fundamentals of cell physiology in molecular level and explore targeted, current developments in the field. New experimental technologies that have enhanced our understanding of target molecular processes, concepts in cell functions, and consequences of aberrant cell structure and function will be discussed as well.

SPECIFIC OBJECTIVES

1. Understand how specialized cells perform their tasks on a molecular level.
2. Assess the pathologic basis of significant diseases in the context of cell and molecular biology.
3. Learn how to extract, comprehend and teach key elements introduced in cell physiology papers.
4. Discover new experimental technologies that you can utilize in your own research practice.

Tentative Topics

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<tr>
<th>Tentative Topics</th>
<th>Chapters in Lodish</th>
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<tbody>
<tr>
<td>Culturing &amp; visualization of eukaryotic cells</td>
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<tr>
<td>Biomembrane Structure</td>
<td>7</td>
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<tr>
<td>Transmembrane transport</td>
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<td>Signal transduction</td>
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<td>Cell organization and Movement</td>
<td>17?</td>
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<td>Nerve cells</td>
<td>22</td>
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<td>Immune cells</td>
<td>23</td>
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<td>Cancer</td>
<td>24</td>
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CLASS SESSIONS MANAGEMENT

We will spend 3 sessions for each topic as follows:

First session: Introduction by Dr. Azghani;

Second and 3rd sessions: A 20 min student led presentation focused on a sub-topic of your interest. Original & Review articles must be posted on Canvas for all to read in preparation for class discussion following presentation.

ASSIGNMENTS/GRADING

Project 1: Class readings and discussions 30%

Project 2: Presentation of your topic of interest in cell physiology 40%

Project 3: Comprehensive final exam over class presentations/discussions (30%)

Please make sure to turn-on the “Announcement” in your account Notification Preferences to receive emails regarding new course announcements on Canvas.

Official COVID-19 Policy

Students are required to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms, laboratories, and office hours), as specified by Procedures for Fall 2020 Return to Normal Operations. Also, at the end of lab sessions cleaning materials will be provided to clean your lab space.

The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the Covid-19 safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call (903) 566-7079 or email saroffice@uttyler.edu.

Recording of Class Sessions

Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.
Resources for Success for UT Tyler Students

Faculty Office Hours: These are times when you can meet with your faculty to ask questions about the content, better understand the discipline, make career connections and more. Make use of office hours. Faculty list three hours a week (minimum) that they are available to you and also provide an appointment option if you have class or work during their office hours.

Writing Center: The Writing Center provides all undergraduate and graduate students a place to work on their writing projects and skills. There are tutoring options as well as workshops available to support you in your academic writing.

Math Learning Center: The Math Learning Center provides drop-in tutoring for lower-level math courses throughout the week. The MLC also has computer workstations for your use.

PASS Tutoring Center: The PASS Tutoring Center supports a variety of courses. Due to COVID-19, we are asking that you schedule an appointment for your face-to-face tutoring support. Tutoring is also available through Zoom tutoring sessions. Check the website to see the courses supported for the Fall 2020 term.

Supplemental Instruction (SI): SI is a series of weekly peer-assisted study sessions in courses identified by previous students as difficult. Due to COVID-19, SI sessions will be conducted face-to-face and via Zoom this fall. Check the website to see the support courses for the Fall 2020 term.

Upswing (24/7 Online Tutoring): Upswing is a free, confidential, and convenient way to receive help in nearly all of UT Tyler’s undergraduate courses.

Robert R. Muntz Library Staff: UT Tyler has an incredible staff of librarians ready to assist you. Discipline/major library liaisons are available to support you and you can also schedule appointments for research consultations. In addition, the Robert R. Muntz library’s Head of University Archives and Special Collections can assist you with scholarly communications, primary sources, and archive materials.

Canvas 101: This Canvas course provides you with a wealth of information – including how to navigate in Canvas, use ProctorU (and even take a practice test), tips for being a successful online and hybrid learner, how to use Zoom, and more!

Digital Support Toolkits: Digital Support Toolkits are supplemental materials generated by faculty to help you be successful in targeted courses typically taken by our freshman and sophomore population. Students registered in Digital Support Toolkits supported courses will find these in their Canvas dashboard. You don’t have to register – just take advantage of this great resource.

UT Tyler Testing Center: The Testing Center provides securing testing opportunities to meet the needs of students and the community in an environment conducive to student and academic success.
**Student Accessibility and Resource (SAR) Office:** The SAR Office works to provide students equal access to all educational, social, and co-curriculum programs through the coordination of services and reasonable accommodations, consultation, and advocacy.

**Student Counseling Center:** The Student Counseling Center supports students in developing balance, resiliency, and overall well-being both academically and personally. They have in person and virtual counseling options. In addition, the Student Counseling Center offers TAO, a self-help, completely private online library of behavioral health resources. Sign in to the TAO website using your UT Tyler credentials.

For more information regarding Student Affairs and Students Rights and Responsibilities, please refer to:

- Manual of Policies and Procedures for Student Affairs
- The University of Texas at Tyler - MOPP
  - [http://www.uttyler.edu/mopp/](http://www.uttyler.edu/mopp/)
  - [https://www.uttyler.edu/academicaffairs/files/syllabuspolicy.pdf](https://www.uttyler.edu/academicaffairs/files/syllabuspolicy.pdf)

**Helpful Links:**


- **Mendeley:** A free reference manager: [https://www.mendeley.com](https://www.mendeley.com)

- **Genome browsers:** These websites are repositories for genetic information. You can look at an entire chromosome using the genome browser, or focus on more detailed information for a specific gene.
  - European Genome Browser: [http://www.ensembl.org/index.html](http://www.ensembl.org/index.html)
  - DNA Data Bank of Japan: [http://www.ddbj.nig.ac.jp/](http://www.ddbj.nig.ac.jp/)
  - UC Santa Cruz genome browser: [http://genome.ucsc.edu/](http://genome.ucsc.edu/)

- **Gene-specific informatics:** These websites provide more detailed information on genes and genetic disorders.

- **Selected Animal Specific Informatics:** These websites focus on the most popular genetic animal models.
  - Zebrafish (Danio rerio) Informatics: [http://zfin.org/](http://zfin.org/)
  - Fly (Drosophila melanogaster) Informatics: [http://flybase.org/](http://flybase.org/)
  - Saccharomyces cerevisiae informatics: [http://www.yeastgenome.org/](http://www.yeastgenome.org/)

- **Programs to look at DNA sequence:** Sanger sequencing produces chromatograms, as a read out. This readout can be viewed using a number of programs. These will covert the data into a string of nucleotides that can be analyzed further.
  - A Plasmid Editor (ApE) - [http://biologylabs.utah.edu/jorgensen/wayned/ape/](http://biologylabs.utah.edu/jorgensen/wayned/ape/)
  - FinchTV - [http://www.geospiza.com/Products/finchtv.shtml](http://www.geospiza.com/Products/finchtv.shtml)

General Science Resources:
- HHMI Biointeractive: http://www.hhmi.org/biointeractive/
- CSHL DNA interactive: http://www.dnai.org
- Science Friday Life Science Education: http://www.sciencefriday.com/teacher-resources/index.html?subject=3#page/full-width-list/1
- Cell and Molecular Online: http://www.cellbio.com/education.html

Techniques Journals
- Biotechniques: http://www.biotechniques.com
- Nature Methods: http://www.nature.com/nmeth/index.html
- Methods: http://www.journals.elsevier.com/methods/
- JOVE: http://www.jove.com