

BMB/MMG/PSL 825

Spring 2019

Cell Structure and Function

Instructors

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Time:

Classes will be held from 1:00-2:20 p.m. Tuesday and Thursday throughout Spring Semester in Room 1420 BPS.

Office Hours:

Each instructor will provide office hours, either scheduled or by appointment as needed. Short questions can be answered by e-mail.

Readings:

Readings from the text and/or the current literature will be assigned by individual instructors. The recommended text is "Molecular Biology of the Cell", by Alberts et al., 6th Edition. You may want to purchase this book but it is not absolutely required.

Class participation:

It is expected that students will participate in class discussions.

Evaluation:

The final grade will be apportioned as follows:

3 Exams	(70%)	Exam 1 (40 points), Exam 2 (45 points), Exam 3 (55 points); 140 points total
Term paper	(20%)	40 points
Homework	(10%)	20 points

Examination Times:

The examinations will be held at the following times. **Please mark these times on your calendar, as makeup exams will not be given except in dire emergencies.**

Exam 1 Tuesday, February 5th from 12:45 until 2:45 in Room 1420 BPS Bldg. Note that we have scheduled extra time to allow students to have up to 2 hours.

Exam 2 Tuesday, March 19th from 12:45 until 2:45 in Room 1420 BPS Bldg.

Exam 3 Wednesday May 1st from 10 am until noon in Room 1420 BPS Bldg.

Homework:

Homework problems will be assigned by each professor based on readings from the primary literature.

Term Paper:

Topics for a potential term paper will be provided by each professor. **The paper must be delivered to the office of the appropriate professor by 4:00 p.m. on Thursday, April 18th** and must closely follow the guidelines provided in the syllabus. Points will be deducted if the paper is late. Instructions are attached.

Day	Date	Lecturer	Topic
T	Jan 8	SHB	The Diversity of Cells
Th	Jan 10	SHB	The plasma membrane: How structure affects function
T	Jan 15	SHB	Mitochondria
Th	Jan 17	SHB	Chloroplasts: Enabling life on earth.
T	Jan 22	SHB	The Endoplasmic Reticulum
Th	Jan 24	SHB	The Secretory Pathway
T	Jan 29	SHB	Lipid Signaling
Th	Jan 31	SHB	Peroxisomes (guest lecturer Jianping Hu)
T	Feb 5	SHB	Exam 1: 12:45-2:45, 1420 BPS
Th	Feb 7	SC	Signaling 1: GPCRs
T	Feb 12	SC	Signaling II: Receptor Kinases
Th	Feb 14	SC	Intracellular Signaling
T	Feb 19	SC	Nuclear Import and Export
Th	Feb 21	SC	Ubiquitin: protein turnover and other functions
T	Feb 26	SC	Cell Cycle I
Th	Feb 28	SC	Cell Cycle II: Checkpoints
Mar 4-8		Spring Break	
T	Mar 12	SC	Apoptotic Pathways
Th	Mar 14	SC	Autophagy and Necroptosis
T	Mar 19	SC	Exam 2: 12:45-2:45, 1420 BPS
Th	Mar 21	RD	Cytoskeleton: Actin and Actin binding proteins
T	Mar 26	RD	Cytoskeleton: Myosin and microtubules
Th	Mar 28	RD	Cytoskeleton: Cell polarization and migration
T	Apr 2	HS	Cell Adhesion: Cell-cell junctions
Th	Apr 4	HS	Cell Adhesion: ECM
T	Apr 9	HS	Cell Adhesion: Cell and ECM junctions
Th	Apr 11	RD	Cancer: Microevolutionary process
T	Apr 16	RD	Cancer: Critical pathways
Th**	Apr 18	RD	Cancer: Prevention and treatment
T	Apr 23	HS	Developmental mechanisms and developmental timing
Th	Apr 25	HS	Development: morphogenesis and growth
W	May 1		Exam 3: 10 am – 12 noon, 1420 BPS

Instructions for the Preparation of a Term Paper

1. **Topic Selection:** Topics for the term papers will be provided by each instructor and you will be given a chance to select a topic of interest. Discuss your area of focus with the assigned instructor BEFORE beginning work. Provide the papers you have selected and an outline of your paper before beginning the writing process. You should contact the instructor **a month in advance** of the due date.
2. **Format:** The paper should be 7-10 typewritten, double-spaced pages (excluding the references). The first page or two should be an introduction to the topic that assumes the reader has some knowledge of the material presented in class but not beyond. The middle 4-6 pages should focus on 3-4 experimental reports bearing directly on your specific topic. Figures can be a welcome addition to guide the reader. Unless there is an important exception, the papers cited should be from reputable journals from the 2006-2018 literature. For the most part, they should be original articles supported as needed by review articles. One aspect of this assignment may be to narrow the topic from that provided to focus on a specific subtopic. The last page or so of the paper is VERY important. It should be a summary or synthesis that reflects your assessment of the area presented in a mature, thoughtful manner. Discuss any controversies and be sure to provide your own ideas for future directions and experiments. **The summary MUST reflect the maturity of your thinking on this topic and will play a key role in the grade.**
3. Your reference list at the very end of the paper should include all the authors for each article, the title of the article, the volume and date of journal and all page numbers.
4. Plagiarism: Copying paragraphs or sentences from your cited or non-cited references constitutes plagiarism! Rephrasing sentences and paragraphs does not represent a scholarly effort. All writing must be your synthesis of the material presented in your own words. ***Any significant form of plagiarism will result in an automatic failing grade since it constitutes scientific misconduct.***
5. **The term paper is due in the appropriate professor's office by 4:00 p.m. Thursday, April 18th.** Points will be deducted for papers turned in late. Papers can be turned in prior to this date.