

# BMB/MMG/PSL 825

## Spring 2018

### 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., 6<sup>th</sup> 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	(75%)	Exam 1 (43 points), Exam 2 (48 points), Exam 3 (59 points); 150 points total
Term paper	(25%)	40 points
Participation	(5%)	10 points

#### **Examination Times:**

The examinations will be held at the following times.

- Exam 1** Tuesday, February 6<sup>th</sup> from 12:45 until 2:45 in Room 1420 BPS Bldg. Note that we have scheduled extra time on this day to allow students to have up to 2 hours.
- Exam 2** Tuesday, March 20<sup>th</sup> from 12:45 until 2:45 in Room 1420 BPS Bldg.
- Exam 3** Wednesday May 2<sup>nd</sup> from 10 am until noon in Room 1420 BPS Bldg.

#### **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 19<sup>th</sup>** and must closely follow the guidelines provided in the syllabus. Points will be deducted if the paper is late. Certainly papers can be submitted prior to April 19<sup>th</sup>. Instructions are attached.

Day	Date	Lecturer	Topic
T	Jan 9	SHB	The Diversity of Cells
Th	Jan 11	SHB	Plasma membrane: How structure affects function
T	Jan 16	SHB	The Endoplasmic Reticulum: How cells stay connected
Th	Jan 18	SHB	The Secretory Pathway
T	Jan 23	SHB	Mitochondria I: Genes and Proteins, ROS Production, Disease
Th	Jan 25	SHB	Chloroplasts: Enabling life on earth.
T	Jan 30	SHB	Peroxisomes: Oxidation and detoxification
Th	Feb 1	SHB	Lipid droplets: Intracellular lipid storage
T	Feb 6	SHB	<b>Exam 1: 12:45-2:45, 1420 BPS</b>
Th	Feb 8	SC	Signaling 1: GPCRs
T	Feb 13	SC	Signaling II: Receptor Kinases
Th	Feb 15	SC	Intracellular Signaling Pathways
T	Feb 20	SC	Nuclear Import and Export
Th	Feb 22	SC	Ubiquitin: protein turnover and other functions
T	Feb 27	SC	Cell Cycle I
Th	Mar 1	SC	Cell Cycle II: Checkpoints
<b>Mar 5-9</b>		<b>Spring Break</b>	
T	Mar 13	SC	Cell Death I: Apoptotic Pathways
Th	Mar 15	SC	Cell Death II: Autophagy and Necroptosis
T	Mar 20	SC	<b>Exam 2: 12:45-2:45, 1420 BPS</b>
Th	Mar 22	RD	Cytoskeleton: Actin and Actin binding proteins
T	Mar 27	RD	Cytoskeleton: Myosin and microtubules
Th	Mar 29	RD	Cytoskeleton: Cell polarization and migration
T	Apr 3	HS	Cell Adhesion: Cell-cell junctions
Th	Apr 5	HS	Cell Adhesion: ECM
T	Apr 10	HS	Cell Adhesion: Cell and ECM junctions
Th	Apr 12	RD	Cancer: Microevolutionary process
T	Apr 17	RD	Cancer: Critical pathways
Th**	Apr 19	RD	Cancer: Prevention and treatment
T	Apr 24	HS	Developmental mechanisms and developmental timing
Th	Apr 26	HS	Development: morphogenesis and growth
W	May 2		<b>Exam 3: 10 am – 12 noon, 1420 BPS</b>

\*\*Term papers are due by 4:00 p.m. on Thursday, April 20th in the office of the appropriate professor.

## 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 19th.** Points will be deducted for papers turned in late. Papers can be turned in prior to this date.