

**BMB/MMG/PSL 825**  
**Spring 2025 TENTATIVE**  
**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:**

Appointments will be scheduled 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., 7<sup>th</sup> Edition. You may want to purchase this book but it is not absolutely required.

**Objective:** Learn important aspects of cell structure and function and relevant methodologies. Acquire reading, critical thinking, writing, and presentations skills. Develop strategies for experimental design.

**Class participation:**

This is an in-person class. Attendance/ participation is mandatory; missing more than three class periods results in a failing grade. Being more than 10 minutes late or leaving more than 10 minutes early is inconsiderate of the presenters and will be considered an absence.

**Evaluation:**

2 Exams	(50%);	50 points each → 100 points total
Proposal	(25%);	50 points
Presentations	(15 %)	30 points
Participation	(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 MSU-approved emergencies.*

Exam 1            Tuesday, February 25 from 1:00 until 2:20 pm in Room 1420 BPS Bldg. Note that we have scheduled extra time to allow students to have up to 2 hours.

Exam 2            Thursday, April 24 from 1:00 until 2:20 pm in Room 1420 BPS Bldg.

**Presentations:** You will be expected to give a 20-minute presentation summarizing a publication assigned by the professor followed by 10 minutes for questions. This presentation is worth 30 points. Presentations will happen during class time. You will receive participation points for asking questions. For the guest lectures, you will be required to read the provided publication and submit three questions by noon and via email and ask questions in class. Attendance will be part of the participation grade. Information given during presentation may be included in the exams. Sign up for your three preferred presentation topics (found on D2L) by Jan 10 @ 5 pm.

**Proposal:**

Depending on the class size, you will work alone or in groups of two students. The topic is your choice and can be your PhD/MS/UG research topic. **The paper must be delivered in via email to the appropriate professor by 4:00 p.m. on Monday, April 28** and must closely follow the guidelines provided on D2L. Points will be deducted if the paper is late. Instructions and evaluation criteria will be posted on D2L.

**The first five people to email me their favorite animal prior to Friday, Jan 10 at 5 pm will receive a coupon for a scoop of ice cream from the dairy store.**

Day	Date	Lecturer	Topic
T	Jan 14	SHB	Introduction to the class; proposal components; The Diversity of Cells
Th	Jan 16	SHB	Lecture: Methods in cell biology
T	Jan 21	SHB	Student Presentation on MALDI-Imaging Lecture: Lipids and the plasma membrane
Th	Jan 23	SHB	Student presentation on Optogenetics Lecture: The plasma membrane: How structure affects function
T	Jan 28	AD	Building a grant/fellowship proposal
Th	Jan 30	SHB	No in-person class – watch recording on lectures about Mitochondria and chloroplasts on your own time. <b>Abstract draft #1 due at 5 pm</b>
T	Feb 4	SHB	Student presentation on mitochondrial fission; Chloroplast import Q & A about online lecture
Th	Feb 6	SHB	Lecture: The endoplasmic reticulum/ER stress/ The secretory pathway
T	Feb 11	SHB	Student presentation on ER stress Lecture: The Secretory Pathway
Th	Feb 13		NO CLASSES
T	Feb 18	SHB	Student presentation on trafficking Lecture: The Secretory Pathway/ lipids in environment and disease
Th	Feb 20	SHB	Student presentation: Lipids Lecture: Lipids in the environment/disease
T	Feb 25	SHB	<b>Exam 1: 12:45-2:45, 1420 BPS</b>
Th	Feb 27	SHB	Guest lecture by Jens Schmidt
<b>March 2 - 9</b>			<b>Spring break</b>
T	Mar 11	AD	Lecture: Signaling: cell-cell communication, inflammation; Proposal: Q&A discussion session
Th	Mar 13	AD	Lecture: The nucleus: cell commander's hub Student presentation: signaling <b>Abstract draft #2, proposal's background, and aims' outline due</b>
T	Mar 18	MH	Lecture: Epigenetics/CRISPR Cas9
Th	Mar 20	MH	Lecture: The cytoskeleton: movement and function control Student presentation: nucleus/epigenetics
T	Mar 25	MH	Lecture: Extracellular vesicles, isolation and uses (extra time to wrap up topics from 3 lectures)
Th	Mar 27	AD	Lecture: Cell division, cell-cell junctions, and cell adhesion; Student presentation: cytoskeleton
T	April 1	AD	Lecture: Cell death Student presentation: cell division
Th	April 3	AD	Lecture: Control of cell fate, cancer and differentiation Student presentation cell death
T	Apr 8	AD	Lecture: Control of cell fate, cancer and differentiation Student presentation: cell fate/cancer/differentiation
Th	Apr 10	AD	Lecture: Inflammation, the inflammasome, and its cellular effects Student presentation: cell fate/cancer/differentiation
T	Apr 15	AD	TBD; 2 student presentations if necessary – Alternative AD guest lecture or alternative 1 presentation and wrap up of lectures
Th	Apr 17	SHB/AD/MH	TBD; student presentations if necessary; Working on the proposal: Q&A
T	Apr 22	AD	Daniel Vocelle: Flow Cytometry as it relates to cell biology; visit of facility
Th	Apr 24	MH	<b>Exam 2: 12:45-2:45, 1420 BPS</b>
<b>Proposal due Monday, April 28 by 5 pm</b>			

