BMB/MMG/PSL 825
Spring 2026 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., 7th 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 — Thursday, February 26 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 23 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 15 @ 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 via email to the appropriate professor by 5:00 p.m. on Monday, April 28** and must closely follow the guidelines provided on D2L**.** Points will be deducted for late submissions. Instructions and evaluation criteria will be posted on D2L.

Day	Date	Lecturer	Topic
T	Jan 13	AD	Introduction to the class; Building a grant/fellowship proposal
Th	Jan 15	SHB	Introductions; Lecture: The diversity of cells;
T	Jan 20	SHB	Lecture: Methods in cell biology
Th	Jan 22	SHB	Guest lecture: Melinda Frame: Microscopy; tour of the Center of Advanced Microscopy Proposal abstract draft #1 due at 5 pm
T	Jan 27	SHB	Student presentation on MALDI-Imaging Lecture: Lipids and the plasma membrane
Th	Jan 29	SHB	Student presentation on Optogenetics Lecture: The plasma membrane: How structure affects function
T	Feb 3	SHB	Student presentation on nanodiscs/cryo em Lecture: The endoplasmic reticulum/ER stress
Th	Feb 5	SHB	Student presentation on ER stress Lecture: The Secretory Pathway
T	Feb 10	SHB	Student presentation on misfolded proteins:prions Lecture: The secretory pathway
Th	Feb 12	SHB	Lecture: Mitochondria and Chloroplasts -> import into organelles
T	Feb 17	SHB	Student presentation on mitochondrial fission Lecture: Mitochondria and Chloroplasts -> import into organelles
Th	Feb 19	SHB	Student presentation on trafficking Lecture: Lipids in the environment/disease; lipid signaling
T	Feb 24	SHB	Two Student presentations: lipids; Chryo-tomography
Th	Feb 26	SHB	**Exam 1: 12:45-2:45, 1420 BPS**
March 1 - 8			**Spring break**
T	Mar 10	AD	Lecture: Signaling: cell-cell communication, inflammation Proposal: Q&A discussion session
Th	Mar 12	AD	Lecture: The nucleus: cell commander's hub Student presentation: signaling Abstract draft #2, proposal's background, and aims' outline due
T	Mar 17	MH	Lecture: Epigenetics
Th	Mar 19	MH	Lecture: The cytoskeleton: movement and function control Student presentation: nucleus/epigenetics
T	Mar 24	MH	Lecture: Extracellular vesicles, isolation and uses
Th	Mar 26	AD	Lecture: Cell division, cell-cell junctions, and cell adhesion; Student presentation: EVs
T	Mar 31	AD	Lecture: Cell death Student presentation: cytoskeleton
Th	April 2	AD	Lecture: Control of cell fate, cancer and differentiation Student presentation: cell junctions
T	Apr 7	AD	Lecture: Control of cell fate, cancer and differentiation Student presentation: cell death/apoptosis
Th	Apr 9	AD	Guest lecture: Soo Hyun Ahn – Flow cytometry; tour of the facility
T	Apr 14	AD	Lecture: Inflammation, the inflammasome, and its cellular effects Student presentation: cell fate/cancer/differentiation
Th	Apr 16	SHB/MH	2 student presentations or writing time
T	Apr 21	SHB	Kristin Parent: Tour of the Cryo Em facility
Th	Apr 23	AD	**Exam 2: 12:45-2:45, 1420 BPS**
Proposal due Monday, April 28 by 5 pm			