

**BIOM6000 Cell Biology and Biochemistry
Fall 2025**

- Course Coordinator:** Kurt A. Engleka, PhD (“Ingelkay” hard “g”) (he/him)
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orcid.org/0000-0001-5539-4076
- BGS Coordinator:** Colleen Dunn
BGS Office: 160 BRB II/III
dunncoll@pennmedicine.upenn.edu
- Weekly Office Hours:** Kurt A. Engleka, PhD (kengleka@pennmedicine.upenn.edu)
(use the Google calendar) Thursdays, 3:00 – 5:00 pm (also by appointment)
- Teaching Assistants:** **Kathya Arana Fernandez Garrido**
(use Google calendar for scheduling) (kathya.aranafernandezgarrido@pennmedicine.upenn.edu)
Kisha Patel (kisha.patel@pennmedicine.upenn.edu)
Cecilia “Cece” Petruconis
(cece.petruconis@pennmedicine.upenn.edu)
Max Wadley (max.wadley@pennmedicine.upenn.edu)
- Textbook:** **Molecular Biology of the Cell**, Eds. Alberts, et al. 7th edition (recommended but not required).
- Some assignment/small group problems with answers are obtained from **The Problems Book: for Molecular Biology of the Cell (Sixth Edition)** by John Wilson and Tim Hunt (not required).
- Lectures:** Live, in person as indicated Mon, Wed, and Fri – 10:15 – 11:45 AM in CRB Austrian Auditorium. Lectures are recorded and available on MediaSite. Lecture recordings provide students with a learning tool, and are not a substitute for regular class attendance and preparation.
- The first two lectures ~ August 27 and August 29 ~ will be held in Rubenstein Auditorium (Smilow)***
- Small Group Sessions:** Participation is mandatory during normal class time as scheduled in **251, 252, 253 BRB and 09-, 11-146AB Smilow**.
- Biochemistry Quiz:** Open notes/on-line. **To be completed by Monday, September 15, 2025.**
- Lecture Assessments:** **10:15 am – 12:35 pm** (open notes as assigned)
Wed Sep 24 Austrian (CRB)/ Rubenstein (Smilow) Auditoriums

BIOM6000 Cell Biology and Biochemistry
Fall 2025

Wed Nov 12 Austrian (CRB)/ Class of '62 (John Morgan)
Auditoriums

Wed Dec 17 Austrian (CRB)/ Class of '62 (John Morgan)
Auditoriums

Please see the **Course Overview** document for further information.

BIOM6000 Cell Biology and Biochemistry Fall 2025

Review Basic Techniques information as needed. This background material is posted on the course site on Canvas in learning modules.

- Immunological Techniques in Cell Biology
- Basics of Protein Structure & Folding
- Protein Methods in Cell Biology
- Sequencing Techniques in Cell Biology
- Control of Protein Expression and Function in Cell Biology
- Introduction to Binding Kinetics
- Introduction to Enzyme Kinetics
- Data Presentation

THEME I: INFORMATION FLOW AND SIGNAL TRANSDUCTION

Wed, Aug 27	Course Introduction (Engleka)/Keynote Address	Caroline Bartman
Fri, Aug 29	Intro to Signal Transduction	Kurt Engleka
Mon, Sep 1	<i>No Class (Labor Day)</i>	
Wed, Sep 3	Protein-Protein Interactions	Ronen Marmorstein
Fri, Sep 5	G-Protein Coupled Receptors and G-Proteins <i>Small Groups</i>	TAs
Mon, Sep 8	Protein Phosphorylation <i>Small Groups</i>	TAs
Wed, Sep 10	Calcium Signaling and Phospholipases	Kevin Foskett
Fri, Sep 12	Phosphoinositides and Monomeric GTPases	Margaret Chou
Mon, Sep 15	Nuclear Receptor Signaling Biochemistry quiz due 11:59 PM	Mitchell Lazar
Wed, Sep 17	Ubiquitin-Mediated Proteolysis	Luca Busino
Fri, Sep 19	Exam Review	TAs
Mon, Sep 22	Overview of Light Microscopy	Andrea Stout
Wed, Sep 24	Theme I Exam: 10:15am - 12:15pm Austrian (CRB)/ Rubenstein (Smilow) Auditoriums	

THEME II: CELLULAR COMPARTMENTATION

Fri, Sep 26	Biomembranes <i>Small Groups</i>	TAs
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BIOM6000 Cell Biology and Biochemistry
Fall 2025

Mon, Sep 29	Protein Biogenesis and Translocation into the Endoplasmic Reticulum	Crys Conn
Wed, Oct 1	Protein Folding and Assembly in the Endoplasmic Reticulum	Michael Marks
Fri, Oct 3	ER Protein Translocation/Folding <i>Small Groups</i>	TAs
Mon, Oct 6	Mechanisms of Vesicular Transport	Michael Marks
Wed, Oct 8	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Fri, Oct 10	Endocytosis and Lysosomal Degradation	Michael Marks
Mon, Oct 13	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Wed, Oct 15	Mitochondria Biogenesis & Function	Rebecca Ganetzky
Fri, Oct 17	Nuclear Architecture and Nucleocytoplasmic Transport	Ben Black
Mon, Oct 20	Mitochondria and Nucleus <i>Small Groups</i>	TAs

THEME III: THE CYTOSKELETON, ADHESION, AND MOTILITY

Wed, Oct 22	Actin Cytoskeleton	Roberto Dominguez
Fri, Oct 24	Myosins & Actin-Based Motility	Michael Ostap
Mon, Oct 27	Cell Adhesion	John Weisel
Wed, Oct 29	Cell/Extracellular Interactions	John Weisel
Fri, Oct 31	Microtubules	Erika Holzbaur
Mon, Nov 3	Microtubule-Based Motility	Erika Holzbaur
Wed, Nov 5	Intermediate Filaments	Paul Janmey

**BIOM6000 Cell Biology and Biochemistry
Fall 2025**

Fri, Nov 7	Mitosis and Cytokinesis/Cell Size	Matthew Good
Mon, Nov 10	Exam Review	TAs
Wed, Nov 12	Theme III Exam 10:15am - 12:15pm Austrian (CRB)/ Class of '62 (John Morgan) Auditoriums	

THEME IV: SOLUTE TRANSPORT AND ION CHANNELS

Fri, Nov 14	Principles of Solute Transport	Kevin Foskett
Mon, Nov 17	Ion Channels I (live Q&A - view 2023 recording)	Toshinori Hoshi
Wed, Nov 19	Ion Channels II (live Q&A - view 2023 recording)	Toshinori Hoshi
Fri, Nov 21	Integrated Functions of Ion Channels	Kevin Foskett
Mon, Nov 24	Lecture Assessment: Problem Set Small Groups	TAs
Wed, Nov 26	No Class (Thanksgiving break)	
Fri, Nov 28	No Class (Thanksgiving break)	

THEME V: COORDINATION OF CELL GROWTH, METABOLISM, DEATH

Mon, Dec 1	Autophagy	Sara Cherry
Wed, Dec 3	Metabolism	Zoltan Arany
Fri, Dec 5	Signaling & Metabolism	Kathryn Wellen
Mon, Dec 8	Cell Cycle 1: Cyclins and CDKs	Frank Luca
Wed, Dec 10	Cell Cycle 2: The Rb-E2F Pathway Small Groups	TAs
Fri, Dec 12	Cell Death Pathways	Cornelius Taabazuing
Mon, Dec 15	Exam Review	TAs
Wed, Dec 17	Theme V Exam 10:15am - 12:15pm Austrian (CRB)/ Class of '62 (John Morgan) Auditoriums	

BIOM6000 Cell Biology and Biochemistry

Fall 2025

Faculty Lecturers

Zoltan Arany (zarany@pennmedicine.upenn.edu) – 898-3482
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