

**BIOM6000 Cell Biology and Biochemistry**  
**Fall 2023 (as of 8/2/23)**

- 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@penmedicine.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:** Austin Kriews (austin.kriews@pennmedicine.upenn.edu)  
Marissa Maroni ([mmaroni@pennmedicine.upenn.edu](mailto:mmaroni@pennmedicine.upenn.edu))  
(use Google calendar for scheduling) Renyta Moses (renyta.moses@pennmedicine.upenn.edu)  
Taylor Yount (tyount@pennmedicine.upenn.edu)
- Textbook:** **Molecular Biology of the Cell**, Eds. Alberts, et al. 7<sup>th</sup> 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  
CRB Austrian Auditorium. Lectures are recorded (MediaSite).
- The first two lectures~August 30 and September 1~ will be held in Rubenstein Auditorium (Smilow)***
- Small Group Sessions:** Participation is mandatory during normal class time as scheduled in **251, 252, 253 BRB or 09-146AB Smilow**
- Biochemistry Quiz:** Open notes/on-line. **To be completed by Monday, September 18, 2023.**
- Lecture Assessments:** Open notes as assigned:  
**Wed Sep 27, Wed Nov 15, and Mon Dec 18 10:15 am – 12:15 pm in Rubenstein Auditorium (Smilow).**

Please see the Course Overview document for further information.

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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 30	Course Introduction (Engleka)/Keynote Address	Mustafa Mir
Fri, Sep 1	Intro to Signal Transduction	Kurt Engleka
Mon, Sep 4	<b><i>No Class (Labor Day)</i></b>	
Wed, Sep 6	Protein-Protein Interactions	Ronen Marmorstein
Fri, Sep 8	G-Protein Coupled Receptors and G-Proteins <b><i>Small Groups</i></b>	TAs
Mon, Sep 11	Protein Phosphorylation <b><i>Small Groups</i></b>	TAs
Wed, Sep 13	Ubiquitin-Mediated Proteolysis	Luca Busino
Fri, Sep 15	Nuclear Receptor Signaling	Mitchell Lazar
Mon, Sep 18	Calcium Signaling and Phospholipases	Kevin Foskett
Wed, Sep 20	GTPases and Phosphoinositides	Margaret Chou
Fri, Sep 22	Exam Review	TAs
Mon, Sep 25	Overview of Light Microscopy	Andrea Stout
Wed, Sep 27	<b>Theme I Exam: Smilow Auditorium ~ 10:15am-12:15pm</b>	

**THEME II: COMPARTMENTATION**

Fri, Sep 29	Biological Membranes <b><i>Small Groups</i></b>	TAs
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Mon, Oct 2	Protein Biogenesis and Translocation into the Endoplasmic Reticulum	Crystal Conn
Wed, Oct 4	Protein Folding and Assembly in the Endoplasmic Reticulum	Michael Marks
Fri, Oct 6	ER Protein Translocation/Folding <i>Small Groups</i>	TAs
Mon, Oct 9	Mechanisms of Vesicular Transport	Michael Marks
Wed, Oct 11	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Fri, Oct 13	Endocytosis and Lysosomal Degradation	Michael Marks
Mon, Oct 16	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Wed, Oct 18	Mitochondria Biogenesis & Function	Rebecca Ganetzky
Fri, Oct 20	Nuclear Architecture and Nucleocytoplasmic Transport	Ben Black
Mon, Oct 23	Mitochondria and Nucleus <i>Small Groups</i>	TAs

**THEME III: THE CYTOSKELETON, ADHESION, AND MOTILITY**

Wed, Oct 25	Actin Cytoskeleton	Roberto Dominguez
Fri, Oct 27	Myosins	Michael Ostap
Mon, Oct 30	Cell Adhesion	John Weisel
Wed, Nov 1	Cell/Extracellular Interactions	John Weisel
Fri, Nov 3	Microtubules	Erika Holzbaur
Mon, Nov 6	Microtubule-based Motility	Erika Holzbaur
Wed, Nov 8	Intermediate Filaments	Paul Janmey
Fri, Nov 10	Mitosis and Cytokinesis/Cell Size	Matthew Good

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Mon, Nov 13      Exam Review      TAs

Wed, Nov 15      **Theme III Exam: BRB Auditorium ~ 10:15am-12:15pm**

**THEME IV: SOLUTE TRANSPORT AND ION CHANNELS**

Fri, Nov 17      Principles of Solute Transport      Kevin Foskett

Mon, Nov 20      Ion Channels 1      Toshinori Hoshi

Wed, Nov 22      Ion Channels 2      Toshinori Hoshi

Fri, Nov 24      ***No Class (Thanksgiving Break)***

Mon, Nov 27      Integrated Functions of Ion Channels      Kevin Foskett

Wed, Nov 29      Lecture Assessment: Problem Set  
***Small Groups***      TAs

**THEME V: COORDINATION OF CELL GROWTH, METABOLISM, DEATH**

Fri, Dec 1      Cell Cycle 1: Cyclins and CDKs      Frank Luca

Mon, Dec 4      Cell Cycle 2: The Rb-E2F Pathway  
***Small Groups***      TAs

Wed, Dec 6      Autophagy      Sara Cherry

Fri, Dec 8      Metabolism      Zoltan Arany

Mon, Dec 11      Energy Homeostasis      Kathryn Wellen

Wed, Dec 13      Cell Death Pathways      Cornelius Taabazuing

Fri, Dec 15      Exam Review      TAs

Mon, Dec 18      **Theme V Exam: Smilow Auditorium ~ 10:15am-12:15pm**

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**Faculty Lecturers**

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Ben Black (blackbe@pennmedicine.upenn.edu) – 898-5669  
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