

**BIOM 600 Cell Biology and Biochemistry  
Fall 2021**

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<b>Weekly Office Hours:</b> (use the Google calendar)	Kurt A. Engleka, PhD (kengleka@pennmedicine.upenn.edu) Thursdays, 3:00 – 5:00 pm (also by appointment)
<b>Teaching Assistants:</b> (use the Google calendar for scheduling)	Emily Hodgson (emily.hodgson@pennmedicine.upenn.edu) Mondays, 1:00 – 3:00 PM  Bridget McVeigh (mcveighb@pennmedicine.upenn.edu) Fridays, 1:00 – 3:00 PM  Christopher Pai (they/them) (cpai@pennmedicine.upenn.edu) Tuesdays, 10:00 am– 12:00 pm
<b>Textbook:</b>	<b>Molecular Biology of the Cell</b> , Eds. Alberts, et al. 6 <sup>th</sup> edition (recommended but not required).  Some assignment/small group problems with answers are obtained from <b>The Problems Book: for Molecular Biology of the Cell (Sixth Edition) by John Wilson and Tim Hunt</b> (not required).
<b>Lectures:</b>	Live as indicated Mon, Wed, and Fri – 10:15 –11:45 AM
<b>On-Line Lectures</b>	Pre-recorded and available on Mediasite as indicated.
<b>Small Group Sessions:</b>	Participation is mandatory during normal class time.
<b>Biochemistry Quiz:</b>	Open notes/on-line. <b>To be completed by September 20, 2021.</b>
<b>Lecture Assessments:</b>	Open notes as scheduled and assigned.
<b>Exams:</b>	Open notes as assigned: <b>Mon Sep 27, Wed Nov 17, Mon Dec 20. 10:15 am – 12:15 pm in Smilow Auditorium.</b>

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 as 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, Sep 1	Course Introduction(Engleka)/Keynote Address	Mustafa Mir
Fri, Sep 3	Intro to Signal Transduction	Kurt Engleka
Mon, Sep 6	<b><i>No Class (Labor Day)</i></b>	
Wed, Sep 8	Protein-Protein Interactions	Ronen Marmorstein
Fri, Sep 10	G-Protein Coupled Receptors and G-Proteins <b><i>Small Groups</i></b>	TAs
Mon, Sep 13	Protein Phosphorylation <b><i>Small Groups</i></b>	TAs
Wed, Sep 15	Ubiquitin-Mediated Proteolysis	Luca Busino
Fri, Sep 17	Nuclear Receptor Signaling	Mitch Lazar
Mon, Sep 20	Calcium Signaling and Phospholipases	Kevin Foskett
Wed, Sep 22	GTPases and Phosphoinositides	Margaret Chou
Fri, Sep 24	Exam Review	TAs
Mon, Sep 27	<b>Theme I Exam: Smilow Auditorium ~ 10:15am-12:15pm</b>	

### THEME II: COMPARTMENTATION

Wed, Sep 29	Overview of Light Microscopy	Andrea Stout
Fri, Oct 1	Biological Membranes <b><i>Small Groups</i></b>	TAs
Mon, Oct 4	Protein Biogenesis and Translocation into the Endoplasmic Reticulum	Jeremy Wilusz

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Wed, Oct 6	Protein Folding and Assembly in the Endoplasmic Reticulum	Mickey Marks
Fri, Oct 8	ER Protein Translocation/Folding <b>Small Groups</b>	TAs
Mon, Oct 11	Mechanisms of Vesicular Transport	Mickey Marks
Wed, Oct 13	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <b>Small Groups</b>	TAs
Fri, Oct 15	Endocytosis and Lysosomal Degradation	Mickey Marks
Mon, Oct 18	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <b>Small Groups</b>	TAs
Wed, Oct 20	Mitochondria Biogenesis & Function	Rebecca Ganetzky
Fri, Oct 22	Nuclear Architecture and Nucleocytoplasmic Transport	Ben Black
Mon, Oct 25	Mitochondria and Nucleus <b>Small Groups</b>	TAs

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

Wed, Oct 27	Myosins	Mike Ostap
Fri, Oct 29	Actin Cytoskeleton	Roberto Dominguez
Mon, Nov 1	Microtubules	Erika Holzbaur
Wed, Nov 3	Microtubule-Based Motility	Erika Holzbaur
Fri, Nov 5	Cell Adhesion	John Weisel
Mon, Nov 8	Cell/Extracellular Interactions	John Weisel
Wed, Nov 10	Intermediate Filaments	Paul Janmey
Fri, Nov 12	Mitosis and Cytokinesis/Cell Size	Matthew Good
Mon, Nov 15	Exam Review	TAs
Wed, Nov 17	<b>Theme III Exam: Smilow Auditorium ~ 10:15am-12:15pm</b>	

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

Fri, Nov 19	Principles of Solute Transport	Kevin Foskett
Mon, Nov 22	Ion Channels 1	Toshi Hoshi
Wed, Nov 24	Ion Channels 2	Tosh Hoshi
Fri, Nov 26	<b><i>No Class (Thanksgiving Break)</i></b>	
Mon, Nov 29	Integrated Functions of Ion Channels	Kevin Foskett
Wed, Dec 1	Lecture Assessment: Problem Set <b>Small Groups</b>	TAs

**THEME V: CELL FATE**

Fri, Dec 3	Cell Cycle 1: Cyclins and CDKs	Frank Luca
Mon, Dec 6	Cell Cycle 2: The Rb-E2F Pathway <b>Small Groups</b>	TAs
Wed, Dec 8	Autophagy	Sara Cherry
Fri, Dec 10	Metabolism	Zoltan Arany
Mon, Dec 13	Energy Homeostasis	Katy Wellen
Wed, Dec 15	Apoptosis	Igor Brodsky
Fri, Dec 17	Exam Review	TAs
Mon, Dec 20	<b>Theme V Exam: Smilow Auditorium ~ 10:15am-12:15pm</b>	

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**Faculty Lecturers**

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