

**BIOM6000 Cell Biology and Biochemistry
Fall 2022**

- Course Coordinator:** Kurt A. Engleka, PhD (“Ingelkay” hard “g”) (he/him)
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- BGS Coordinator:** Colleen Dunn
BGS Office: 160 BRB II/III
dunncoll@penndmedicine.upenn.edu
- Weekly Office Hours:** Kurt A. Engleka, PhD (kengleka@penndmedicine.upenn.edu)
(use Google calendar) Thursdays, 3:00 – 5:00 pm (also by appointment)
- Teaching Assistants:** Stephen Carro (sdcarro@penndmedicine.upenn.edu)
(use Google calendar for scheduling; virtual or) Tuesdays, 3:00 – 5:00 pm
09-134, Smilow) Hannah Loo (hloo@penndmedicine.upenn.edu)
Thursdays, 1:00 – 3:00 pm
- Eliana von Krusenstiern (elianav@penndmedicine.upenn.edu)
Mondays, 3:00 – 5:00 pm
- 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
CRB Austrian Auditorium. Lectures are recorded (MediaSite).
- The first two lectures - August 31 and September - will be held in Rubenstein Auditorium, Smilow.*
- Small Group Sessions:** Participation is mandatory during normal class time as scheduled in **251 or 252 BRB or 09-146AB Smilow**
- Biochemistry Quiz:** Open notes/on-line. **Due date: September 19, 2022.**
- Exams:** Open notes as assigned:
10:15 am – 12:15 pm

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, Aug 31	Course Introduction (Engleka)/Keynote Address	Juan Alvarez-Dominguez
Fri, Sep 2	Intro to Signal Transduction	Kurt Engleka
Mon, Sep 5	<i>No Class (Labor Day)</i>	
Wed, Sep 7	Nuclear Receptor Signaling	Mitch Lazar
Fri, Sep 9	G-Protein Coupled Receptors and G-Proteins <i>Small Groups</i>	TAs
Mon, Sep 12	Protein Phosphorylation <i>Small Groups</i>	TAs
Wed, Sep 14	Protein-Protein Interactions	Ronen Marmorstein
Fri, Sep 16	Ubiquitin-Mediated Proteolysis	Luca Busino
Mon, Sep 19	Calcium Signaling and Phospholipases	Kevin Foskett
Wed, Sep 21	GTPases and Phosphoinositides	Margaret Chou
Fri, Sep 23	Exam Review	TAs
Mon, Sep 26	Overview of Light Microscopy	Andrea Stout
Wed, Sep 28	Theme I Exam: Rubenstein Auditorium, Smilow 10:15am-12:15pm	

THEME II: COMPARTMENTATION

Fri, Sep 30	Biological Membranes <i>Small Groups</i>	TAs
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Wed, Oct 3	Protein Folding and Assembly in the Endoplasmic Reticulum	Mickey Marks
Mon, Oct 5	Protein Biogenesis and Translocation into the Endoplasmic Reticulum	Crystal Conn
Fri, Oct 7	ER Protein Translocation/Folding <i>Small Groups</i>	TAs
Mon, Oct 10	Mechanisms of Vesicular Transport	Mickey Marks
Wed, Oct 12	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Fri, Oct 14	Endocytosis and Lysosomal Degradation	Mickey Marks
Mon, Oct 17	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Wed, Oct 19	Mitochondria Biogenesis & Function	Rebecca Ganetzky
Fri, Oct 21	Nuclear Architecture and Nucleocytoplasmic Transport	Ben Black
Mon, Oct 24	Mitochondria and Nucleus <i>Small Groups</i>	TAs

THEME III: THE CYTOSKELETON, ADHESION, AND MOTILITY

Wed, Oct 26	Actin Cytoskeleton	Roberto Dominguez
Fri, Oct 28	Myosins	Mike Ostap
Mon, Oct 31	Microtubules	Erika Holzbaur
Wed, Nov 2	Microtubule-Based Motility	Erika Holzbaur
Fri, Nov 4	Cell Adhesion	John Weisel
Mon, Nov 7	Cell/Extracellular Interactions	John Weisel
Wed, Nov 9	Intermediate Filaments	Paul Janmey

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Fri, Nov 11	Mitosis and Cytokinesis/Cell Size	Matthew Good
Mon, Nov 14	Exam Review	TAs
Wed, Nov 16	Theme III Exam: Gaulton Auditorium, BRB 10:15am-12:15pm	

THEME IV: SOLUTE TRANSPORT AND ION CHANNELS

Fri, Nov 18	Principles of Solute Transport	Kevin Foskett
Mon, Nov 21	Ion Channels 1	Toshi Hoshi
Wed, Nov 23	Ion Channels 2	Toshi Hoshi
Fri, Nov 26	<i>No Class (Thanksgiving Break)</i>	
Mon, Nov 28	Integrated Functions of Ion Channels	Kevin Foskett
Wed, Nov 30	Lecture Assessment: Problem Set <i>Small Groups</i>	TAs

THEME V: COORDINATION OF CELL GROWTH, METABOLISM, DEATH

Fri, Dec 2	Cell Death Pathways	Cornelius Taabazuing
Mon, Dec 5	Cell Cycle 1:Cyclins and CDKs	Frank Luca
Wed, Dec 7	Cell Cycle 2: The Rb-E2F Pathway <i>Small Groups</i>	TAs
Fri, Dec 9	Autophagy	Sara Cherry
Mon, Dec 12	Metabolism	Zoltan Arany
Wed, Dec 14	Energy Homeostasis	Katy Wellen
Fri, Dec 16	Exam Review	TAs
Mon, Dec 19	Theme V Exam: Rubenstein Auditorium, Smilow 10:15am-12:15pm	

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Faculty Lecturers

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