

**BIOM6000 Cell Biology and Biochemistry
Fall 2024**

Course Coordinator: Kurt A. Engleka, PhD (“Ingelkay” hard “g”) (he/him)
Office: 09_134 Smilow (SCTR)
kengleka@pennmedicine.upenn.edu
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: Ariana Campbell (ariana.campbell@pennmedicine.upenn.edu)
(use Google calendar for scheduling) Michael Hogarty (michael.hogarty@pennmedicine.upenn.edu)
Kisha Patel (kisha.patel@pennmedicine.upenn.edu)
Alaina Wojciechowski (alaina.wojciechowski@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, not to substitute for regular class attendance and preparation.

The first two lectures ~ August 28 and August 30 ~ 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 09-146AB Smilow.**

Biochemistry Quiz: Open notes/on-line. **To be completed by Monday, September 16, 2024.**

Lecture Assessments: **10:15 am – 12:35 pm** (open notes as assigned)
Wed Sep 25 Austrian (CRB)/Gaulton (BRB) Auditoriums
Wed Nov 13 Austrian (CRB)/ Gaulton (BRB) Auditoriums
Mon Dec 18 Austrian (CRB)/Rubenstein (Smilow) Auditoriums

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 28	Course Introduction (Engleka)/Keynote Address	Glennis Logsdon
Fri, Aug 30	Intro to Signal Transduction	Kurt Engleka
Mon, Sep 2	<i>No Class (Labor Day)</i>	
Wed, Sep 4	Protein-Protein Interactions	Ronen Marmorstein
Fri, Sep 6	G-Protein Coupled Receptors and G-Proteins <i>Small Groups</i>	TAs
Mon, Sep 9	Protein Phosphorylation <i>Small Groups</i>	TAs
Wed, Sep 11	Phosphoinositides and Monomeric GTPases	Margaret Chou
Fri, Sep 13	Nuclear Receptor Signaling	Mitchell Lazar
Mon, Sep 16	Calcium Signaling and Phospholipases Biochemistry quiz due 11:59 PM	Kevin Foscett
Wed, Sep 18	Ubiquitin-Mediated Proteolysis	Luca Busino
Fri, Sep 20	Exam Review	TAs
Mon, Sep 23	Overview of Light Microscopy	Andrea Stout
Wed, Sep 25	Theme I Exam: 10:15am - 12:15pm Austrian (CRB)/Gaulton (BRB) Auditoriums	

THEME II: CELLULAR COMPARTMENTATION

Fri, Sep 27	Biomembranes <i>Small Groups</i>	TAs
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Mon, Sep 30	Protein Biogenesis and Translocation into the Endoplasmic Reticulum	Crys Conn
Wed, Oct 2	Protein Folding and Assembly in the Endoplasmic Reticulum	Michael Marks
Fri, Oct 4	ER Protein Translocation/Folding <i>Small Groups</i>	TAs
Mon, Oct 7	Mechanisms of Vesicular Transport	Michael Marks
Wed, Oct 9	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Fri, Oct 11	Endocytosis and Lysosomal Degradation	Michael Marks
Mon, Oct 14	Golgi Function and Protein Sorting in the Secretory Pathway/ Exocytosis and Secretion <i>Small Groups</i>	TAs
Wed, Oct 16	Mitochondria Biogenesis & Function	Rebecca Ganetzky
Fri, Oct 18	Nuclear Architecture and Nucleocytoplasmic Transport	Ben Black
Mon, Oct 21	Mitochondria and Nucleus <i>Small Groups</i>	TAs

THEME III: THE CYTOSKELETON, ADHESION, AND MOTILITY

Wed, Oct 23	Actin Cytoskeleton	Roberto Dominguez
Fri, Oct 25	Myosins & Actin-Based Motility	Michael Ostap
Mon, Oct 28	Cell Adhesion	John Weisel
Wed, Oct 30	Cell/Extracellular Interactions	John Weisel
Fri, Nov 1	Intermediate Filaments	Paul Janmey
Mon, Nov 4	Microtubules	Erika Holzbaur
Wed, Nov 6	Microtubule-Based Motility	Erika Holzbaur

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Fri, Nov 8	Mitosis and Cytokinesis/Cell Size	Matthew Good
Mon, Nov 11	Exam Review	TAs
Wed, Nov 13	Theme III Exam 10:15am - 12:15pm Austrian (CRB)/Gaulton (BRB) Auditoriums	

THEME IV: SOLUTE TRANSPORT AND ION CHANNELS

Fri, Nov 15	Principles of Solute Transport	Kevin Foskett
Mon, Nov 18	Ion Channels I (no class - view 2023 recording)	Toshinori Hoshi
Wed, Nov 20	Ion Channels II (no class - view 2023 recording)	Toshinori Hoshi
Fri, Nov 22	Integrated Functions of Ion Channels	Kevin Foskett
Mon, Nov 25	Lecture Assessment: Problem Set Small Groups	TAs
Wed, Nov 27	No Class (Thanksgiving break)	
Fri, Nov 29	No Class (Thanksgiving break)	

THEME V: COORDINATION OF CELL GROWTH, METABOLISM, DEATH

Mon, Dec 2	Cell Cycle 1: Cyclins and CDKs	Frank Luca
Wed, Dec 4	Cell Cycle 2: The Rb-E2F Pathway Small Groups	TAs
Fri, Dec 6	Cell Death Pathways	Cornelius Taabazuing
Mon, Dec 9	Metabolism	Zoltan Arany
Wed, Dec 11	Signaling & Metabolism	Kathryn Wellen
Fri, Dec 13	Autophagy	Sara Cherry
Mon, Dec 16	Exam Review	TAs
Wed, Dec 18	Theme V Exam 10:15am - 12:15pm Austrian (CRB)/Rubenstein (Smilow) Auditoriums	

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Faculty Lecturers

Zoltan Arany (zarany@pennmedicine.upenn.edu) – 898-3482
Ben Black (blackbe@pennmedicine.upenn.edu) – 898-5669
Luca Busino (businol@upenn.edu) – 746-2569
Sara Cherry (cherrys@pennmedicine.upenn.edu) – 746-2384
Margaret Chou (mmc@pennmedicine.upenn.edu) – 267-426-9228
Crys Conn (crystal.conn@pennmedicine.upenn.edu) – 215-898-0064
Roberto Dominguez (droberto@pennmedicine.upenn.edu) – 573-4559
Kurt Engleka (kengleka@pennmedicine.upenn.edu) – 573-0903
Kevin Foscett (foskett@pennmedicine.upenn.edu) – 898-1354
Rebecca Ganetzky (ganetzkyr@email.chop.edu, ganetzkyr@chop.edu) - 215-439-5375
Matthew Good (mattgood@pennmedicine.upenn.edu) – 573-1099
Erika Holzbaur (holzbaur@pennmedicine.upenn.edu) – 573-3257
Paul Janmey (janmey@pennmedicine.upenn.edu) – 573-7380
Mitchell Lazar (lazar@pennmedicine.upenn.edu) – 898-0198
Frank Luca (fluca@vet.upenn.edu) – 573-5664
Michael Marks (marksm@pennmedicine.upenn.edu) – 590-3664
Ronen Marmorstein (marmor@upenn.edu) – 898-7740
Mike Ostap (ostap@pennmedicine.upenn.edu) – 573-9758
Andrea Stout (astout@pennmedicine.upenn.edu) – 573-3942
Cornelius Taabazuing (cornelius.taabazuing@pennmedicine.upenn.edu) - 617-755-4838
John Weisel (weisel@pennmedicine.upenn.edu) – 898-3573
Kathryn Wellen (wellenk@pennmedicine.upenn.edu) – 746-8599

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