

BMB 509: Structural and Mechanistic Biochemistry

Spring 2020

Course Director:	Greg Van Duyne, vanduyne@penmedicine.upenn.edu; 809 SCL
Classes:	Tuesday and Thursday 2:30-4:00, 253 BRB II/III
Required textbook:	None
Prerequisites:	BMB 508 and BIOM 600 or equivalent background
Homework:	Read ~2 papers per week relating to lecture topics; complete ~10 paper-based assignments
Grading:	1/3 assignments, 1/3 exam I, 1/3 exam II

Synopsis: This course builds on BMB 508 and covers two overlapping areas: I) experimental approaches used in structural and mechanistic biochemical research, and II) topics in modern biochemical research drawn from our faculty's expertise, with an emphasis on molecular mechanisms and metabolism. Paper-based assignments are designed to reinforce experimental aspects of the lecture material and strengthen paper reading and writing skills. The course emphasizes elements of experimental design and experimental rigor and reproducibility.

Course Topics and Schedule:

Date	Topic	Lecturer
Jan 16	Biochemical methods I	Greg Van Duyne
Jan 21	Biochemical methods II	Greg Van Duyne
Jan 23	Screening methodologies	Sara Cherry
Jan 28	Biochemical methods III (Tour/Demo, 810 SCL)	Kushol Gupta
Jan 30	MS methods in biochemical research	Ben Garcia
Feb 4	Chemical biology of DNA	Rahul Kohli
Feb 6	Composition and properties of membranes	Paul Axelsen
Feb 11	DNA Packaging: nucleosomes and chromatin	Ben Black
Feb 13	DNA repair mechanisms	Eric Brown
Feb 18	RNA biochemistry	Kathy Liu
Feb 20	RNA/protein interactions	Jeremy Wilusz
Feb 25	Transcription mechanisms	Kenji Murakami
Feb 27	Epigenetic regulation of transcription	Alessandro Gardini
Mar 3	Review	Greg Van Duyne
Mar 5	Exam I (in class)	
Mar 10	Spring Break	
Mar 12	Spring Break	
Mar 17	Site-specific recombinases	Greg Van Duyne
Mar 19	Glycoproteins	Yair Argon
Mar 24	AAA+ protein function and mechanism	Jim Shorter
Mar 26	Protein acetylation and methylation	Ronen Marmorstein
Mar 31	Myosin biochemistry and biophysics	Mike Ostap
Apr 2	Chemical biology of imaging	Mark Sellmyer
Apr 7	Modeling cellular regulatory circuits	Mark Goulian
Apr 9	Modulation of the Ubiquitin Proteasome System	George Burslem
Apr 14	Metabolism and chromatin regulation	Katy Wellen
Apr 16	Insulin signaling	Paul Titchenell
Apr 21	Energy production and dormancy in TB	Harvey Rubin
Apr 23	Review	Greg Van Duyne
Apr 28	Exam II (in class)	