

BMB 509: Structural and Mechanistic Biochemistry

Spring 2022

Course Director: Greg Van Duyne
vanduyne@upenn.edu
809 Stellar-Chance Building

Class time/location: Tuesday and Thursday 1:45-3:15
BRB 253

Link for Jan 18-20: <https://penmedicine.zoom.us/j/99879032686?pwd=TTVLbWZ6RmU1a25sU0M5eWpsTGI0dz09>

Prerequisites: BMB 508 and BIOM 600 or equivalent background; lecturers will assume that you understand the material taught in those courses.

Homework: Read 2-4 papers per week relating to lecture topics; complete ~12 assignments based on lecture material and papers

Grading: Based on two exams (60%) and assignments (40%)

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 faculty expertise, with an emphasis on structure, molecular mechanisms and metabolism. Assignments are designed to reinforce experimental aspects of the lecture material. The course emphasizes elements of experimental design and experimental rigor and reproducibility.

<u>Date</u>	<u>Topic</u>	<u>Lecturer</u>
Jan 18	Biochemical/biophysical methods I	Greg Van Duyne
Jan 20	Biochemical/biophysical methods II	Greg Van Duyne
Jan 25	Biochemical/biophysical methods III	Kushol Gupta
Jan 27	Screening methodologies	Sara Cherry
Feb 1	Chemical biology of DNA	Rahul Kohli
Feb 3	DNA Packaging: nucleosomes and chromatin	Ben Black
Feb 8	DNA repair mechanisms	Eric Brown
Feb 10	RNA biochemistry I	Kathy Liu
Feb 15	RNA biochemistry II	Bin Tian
Feb 17	Transcription mechanisms	Kenji Murakami
Feb 22	Epigenetic regulation of transcription	Alessandro Gardini
Feb 24	Composition and properties of membranes	Paul Axelsen
Mar 1	Glycoproteins	Greg Van Duyne
Mar 3	AAA+ protein function and mechanism	Jim Shorter
Mar 8	University Spring Break - No Class	
Mar 10	University Spring Break - No Class	
Mar 15	Protein acetylation and methylation	Ronen Marmorstein
Mar 17	Myosin biochemistry and biophysics	Mike Ostap
Mar 22	Chemical biology of imaging	Mark Sellmyer
Mar 24	Biochemistry of immunology	Nik Sgourakis
Mar 29	Biochemistry of Cell Death	Cornelius Taabazuing
Mar 31	Modulation of the Ubiquitin Proteasome System	George Burslem
Apr 5	NAD metabolism and aging	Joe Baur
Apr 7	Metabolism and chromatin regulation	Katy Wellen

Apr 12	Insulin signaling	Paul Titchenell
Apr 14	Metals in biology	Donita Brady
Apr 19	Biochemistry of tuberculosis and pathways to treatment	Harvey Rubin
Apr 21	Modeling cellular regulatory circuits	Mark Goulian
Apr 26	Gene regulation and development tools	Mustafa Mir