BMB 509. Structural and Mechanistic Biochemistry

Course Director: Greg Van Duyne vanduyne@mail.med.upenn.edu; 809 SCL
TA: Tuesday and Thursday 2:30-4:00, 253 BRB II/III
Textbook: None (use standard Biochem/Cell Biology texts to review topics)
Prerequisites: BMB 508 and BIOM 600
Homework: Read 2-4 papers per week relating to lecture topics
Grading: 1/3 Exam, 1/3 student presentation, 1/3 student participation

Synopsis: This course builds on BMB 508 and includes three overlapping areas: I) experimental and theoretical approaches used in mechanistic biochemistry and biophysics research, II) topics in modern biochemical research drawn from our faculty's expertise, with an emphasis on molecular mechanism, and III) topics in metabolism and bioenergetics that provide a foundation for many of the research programs at Penn. The course ends with student presentations, where the topics are drawn from research articles associated with the course lectures.

Course Topics and Schedule:

1. Biochemical/biophysical methods I (Lecture) Greg Van Duyne 1/12
2. Biochemical/biophysical methods II (Lecture) Greg Van Duyne 1/17
3. Biochemical/biophysical methods II (810 SCL) Kushol Gupta 1/19
4. MS Methods in biochemical research Ben Garcia 1/24
5. Screening methodologies Sara Cherry 1/26
6. Chemical biology of DNA Rahul Kohli 1/31
7. DNA Packaging: nucleosomes and chromatin Ben Black 2/2
8. Transcription Kenji Murakami* 2/7
9. Composition and properties of membranes Paul Axelsen 2/9
10. Protein acetylation and methylation Ronen Marmorstein 2/14
11. Glycoproteins Yair Argon* 2/16
12. Myosin biochemistry & biophysics Mike Ostap 2/21
13. AAA protein function & mechanism Jim Shorter 2/23
15. Energetics of metabolism Dave Wilson 3/2
16. IDH and the TCA cycle Kim Sharp 3/14
17. Electron transport & oxidative phosphorylation Les Dutton 3/16
18. RNA Editing Jeremy Wilusz* 3/21
19. Energy production and dormancy in TB Harvey Rubin* 3/23
20. Modeling cellular regulatory circuits Mark Goulian 3/28
Review 3/30
Exam 4/4
Student presentations 1 & 2 4/6
Student presentations 3 & 4 4/11
Student presentations 5 & 6 4/13
Student presentations 7 & 8 4/18
Student presentations 9 & 10 4/20
Student presentations 11 & 12 4/25

* Not yet confirmed