BMB 509. Structural and Mechanistic Biochemistry

Course Director: Greg Van Duyne
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Classes: 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 & BIOM 600 or permission from course director.
Homework: Read 2-3 papers per week for discussion at Tuesday class
Grading: 25 % Exam 1, 25 % Exam 2, 30 % Presentations, 20 % Attendance/participation.

Synopsis: This course covers 13 topics with a focus on biochemistry. For each topic, there is a Thursday lecture by a BMB faculty member, followed by student presentations on the following Tuesday. The student presentations are based on papers from the literature. We begin with several basic topics in biochemistry, then cover a selection of more specific areas. Rather than attempt to survey a large number of topics, the course focuses on learning, presenting, and discussing concepts drawn from a small number of important areas of modern biochemistry.

Course Schedule:

1. **Chemical biology of DNA**
   - Student Presentations and Discussion 1
   Rahul Kohli 1/14

2. **DNA Packaging: nucleosomes and chromatin**
   - Student Presentations and Discussion 2
   Ben Black 1/21

3. **RNA Editing**
   - Student Presentations and Discussion 3
   Jeremy Wilusz 1/28

4. **Transcription**
   - Student Presentations and Discussion 4
   Kenji Murakami 2/4

5. **Glycoproteins**
   - Student Presentations and Discussion 5
   Yair Argon 2/11

6. **Protein acetylation and methylation**
   - Student Presentations and Discussion 6
   Ronen Marmorstein 2/18

7. **Myosin biochemistry & biophysics**
   - Student Presentations and Discussion 7
   Mike Ostap 2/25

   Review
   TA 3/3

   Midterm Exam (in class)

   8. **Composition and properties of membranes**
      - Student Presentations and Discussion 8
      Bohdana Discher 3/17

   9. **Electron transport & oxidative phosphorylation**
      - Student Presentations and Discussion 9
      Chris Moser 3/24

   10. **Overview of metabolism**
       - Student Presentations and Discussion 10
       Greg Van Duyne 3/31

   11. **IDH and the TCA cycle**
       - Student Presentations and Discussion 11
       Kim Sharp 4/5

   12. **Energy production and dormancy in TB**
       - Student Presentations and Discussion 12
       Harvey Rubin 4/14

   13. **Modeling cellular regulatory circuits**
       - Student Presentations and Discussion 13
       Mark Goulian 4/21

   Final Exam (take home)

   Due by noon on 5/3; 245 Anatomy-Chemistry