

## Chemical Biology Course, Fall 2019

The spirit of this course is to explore the complexities of modern biology using the tools of chemistry. The lectures cover amino acid chemistry, nucleic acid chemistry, posttranslational modifications of proteins, discovery and use of chemical probes to examine cellular mechanisms, membrane chemistry, chemical tools for imaging, and natural product biosynthesis. The method of evaluation is class attendance, active participation in the discussions and exams (midterm and final).

**Tuesdays 1:00pm – 3:00pm**

**CRC, Room 506**

September 10	Tarun Kapoor	Discovering Chemical Probes and Drugs
September 17	Tarun Kapoor	Identifying the Physiological Targets of Chemical Inhibitors
September 24	Tarun Kapoor	Using Chemical Probes to Examine Biological Mechanisms
October 1	Rosh Hashana / TA chemistry review, office hours	
October 8	Howard Hang	Protein synthesis and engineering
October 15	Howard Hang	Posttranslational modifications
October 22	Tarun Kapoor	Using Chemical Probes to Examine Biological Mechanisms
October 29	MIDTERM	
November 5	Howard Hang	Bioorthogonal chemistry
November 12	Howard Hang	Activity-based protein profiling
November 19	Sean Brady	Natural Product 1 - Polyketides
November 26	Sean Brady	Natural Product 2 – Nonribosomal peptides
December 3	Sean Brady	Natural Product 3 – Additional thoughts
December 10	Sean Brady	Metabolites from the human microbiome
December 17	FINAL	

Attendance is required. If you have to miss a class please email Dr. Kapoor (kapoor@rockefeller.edu) in advance to discuss your absence. Teaching assistant: Tandrila Das (tdas@rockefeller.edu)

There will be two (2) in-class exams based on the material covered in the preceding lectures and a review with the teaching assistant on October 1.

Class notes will be distributed as pdf files via the class email: ruchembiol@gmail.com

Recommended background materials (not required):

Posttranslational Modification of Proteins: Expanding Nature's Inventory, Christopher Walsh

The Organic Chemistry of Biological Pathways, McMurry and Begley

Chemical Biology From Small Molecules to Systems Biology and Drug Design, Volumes 1-3, Schreiber, Kapoor, and Wess

Structure and Mechanism in Protein Science, Alan Fersht

The Molecules of Life Physical and Chemical Principles, Kuriyan, Konforti, Wemmer