

Chemical Biology Course, Fall 2023

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 proposal presentation.

Tuesdays 1:00pm – 3:00pm **Carson Auditorium**

September 12	Tarun Kapoor Discovering Chemical Probes and Drugs
September 19	Student Retreat – no class
September 26	Student Retreat – no class
October 3	Tarun Kapoor Identifying the Physiological Targets of Chemical Inhibitors
October 10	Katya Vinogradova Post-translational modifications
October 17	Sean Brady Natural Product 1 - Polyketides
October 24	Sean Brady Natural Product 2 – Nonribosomal peptides
October 31	Sean Brady Natural Product 3 – Additional thoughts
November 7	Jiankun Lyu Computational Methods for Chemical Biology
November 14	Sean Brady Metabolites from the human microbiome
November 21	Katya Vinogradova Functional Proteomics and Activity Based Protein Profiling
November 28	Tarun Kapoor Using Chemical Probes to Examine Biological Mechanisms
December 5	Tarun Kapoor Using Chemical Probes to Examine Biological Mechanisms
December 12	Proposal Presentations

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

Class notes will be distributed as pdf files.

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