Chemical Biology Course, Fall 2025

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

October 7	Carson Auditorium, **Tarun Kapoor** Discovering Chemical Probes and Drugs
October 14	Carson Auditorium, **Katya Vinogradova** Posttranslational modifications
October 21	Carson Auditorium, **Katya Vinogradova** Bioorthogonal Chemistry
October 28	Weiss 305, **Katya Vinogradova** Posttranslational modifications
November 4	Carson Auditorium, **Sean Brady** Natural Product 1 – Polyketides
November 11*	Carson Auditorium, **Sean Brady** Natural Product 2 – Nonribosomal peptides
November 18	Carson Auditorium, **Sean Brady** Natural Product 3 – Additional natural products and practice problems
November 25	**No lecture** [*week of Thanksgiving*]
December 2	Carson Auditorium, **Tom Sakmar** Chemical Biology of Membrane Proteins
December 9	Carson Auditorium, **Tarun Kapoor** Using Chemical Probes to Examine Biological Mechanisms
December 16 (2-4pm)	Weiss 301, **Tarun Kapoor** Identifying the Physiological Targets of Chemical Inhibitors
January 6	Carson Auditorium, **Jiankun Lyu** Computational methods for chemical biology: structure-centric approaches
January 13	Carson Auditorium, **Jiankun Lyu** Computational methods for chemical biology: ligand-centric approaches
January 16 (Fri)	Weiss 301, Proposal Presentations [lunch 12-2]

* Starting time is at 1:15pm for the following lecture

Attendance is required. If you have to miss a class please email Dr. Vinogradova (vinograd@rockefeller.edu) and 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