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