CHEMISTRY AND CHEMICAL BIOLOGY (PHD)

Visit program website. (https://ccb.ucsf.edu/)

Degree Offered: PhD
Program Leadership:
Jason Gestwicki, PhD, Program Director
Adam Renslo, PhD, Associate Program Director
Admissions Inquiries:
Arezou Razavi, Program Coordinator

Program Description

The Chemistry and Chemical Biology Graduate Program (CCB) prepares scientists to address problems at the intersection of chemistry and biology. In this program, students build a foundation of knowledge in chemistry and then combine it with the skills to understand and probe complex biological processes at the atomic, molecular, and cellular levels.

The CCB program at UCSF ranks among the top such programs in the nation. UCSF is a highly interdisciplinary educational environment, which fosters collaborations across the clinical, translational and basic sciences. The CCB program also has strong connections throughout the San Francisco Bay Area, providing exciting opportunities for trainees to pursue teaching, mentorship, entrepreneurship, science communication, consulting and pharmaceutical experiences.

Faculty

The CCB program brings together about 50 faculty members from many departments across the UCSF campus, including Pharmaceutical Chemistry, Bioengineering and Therapeutic Sciences, Cellular and Molecular Pharmacology, Biochemistry and Biophysics, Physiology, Otolaryngology and Radiology. The CCB faculty pursue many types of research projects, but share a common passion for chemistry and chemical biology. CCB faculty are also highly committed to excellence in mentoring and diversity, equity and inclusion (DEI), and are required to complete formal training in these areas. The CCB laboratories and its main office are located on the Mission Bay campus at UCSF, and are part of research units that include the Institute for Neurodegenerative Diseases, the Helen Diller Cancer Center, the Gladstone Institutes, and the Cardiovascular Research Institute.

Sub-Disciplines

Faculty in CCB provide training in chemistry and chemical biology, with a focus on six related areas:

- Biological chemistry and synthetic biology
- Chemical synthesis and natural products
- Computational chemistry and biology
- Drug discovery and design
- Macromolecular structure and function
- Protein and cellular engineering

Visit the program website (https://ccb.ucsf.edu/) for more information.

The CCB program is offered by the UCSF Graduate Division, administered by the UCSF School of Pharmacy, and delivered by faculty members in the UCSF schools of pharmacy and medicine.

Additional Information

Program Faculty

- *Find a* program faculty list *(*https://ccb.ucsf.edu/people/faculty/*) on the program website.*

Career Outcomes

- *Find* career outcomes and other data on PhD programs *(*https://graduate.ucsf.edu/program-statistics/#career*) on the Graduate Division website.*

Degree Requirements

- Minimum GPA of 3.0
- All core courses and required activities taken and passed
- Six quarters in residence including a minimum of three registered quarters after advancement to candidacy
- Pass qualifying examination
- Completion and submission of the dissertation
- Thesis talk
- For additional details, please see: graduate.ucsf.edu/phd-degree (https://graduate.ucsf.edu/phd-degree/)

Learning Outcomes

- Identify important problems at the chemistry-biology interface.
- Develop feasible and testable hypotheses.
- Design and implement experimental and/or computational approaches to addressing a scientific problem.
- Establish and disseminate new scientific knowledge.

Core Courses

Course	Title	Units
Fall		
CHEMISTRY 243	Chemical Biology	5
CHEMISTRY 223	Scientific Communication Seminar	1
CHEMISTRY 206	Laboratory Rotation in Chemistry and Chemical Biology	1-10
CHEMISTRY 221	Research Conf in Chem, Chem Biol & Biophysics	1
CHEMISTRY 297	Chemistry and Chemical Biology Journal Club (first two years in program)	1
CHEMISTRY 250	Research	1-8
CHEMISTRY 266	Research Planning Conference	1
BIOPHYSICS 204A	Macromolecular Structure and Interactions	4
BIOPHYSICS 204B	Methods in Macromolecular Structure	4
GRAD 202	Racism in Science	3
	Units	**22-38**
Winter		
CHEMISTRY 244	Reaction Mechanisms	3
CHEMISTRY 223	Scientific Communication Seminar	1
CHEMISTRY 206	Laboratory Rotation in Chemistry and Chemical Biology	1-10
CHEMISTRY 221	Research Conf in Chem, Chem Biol & Biophysics	1
CHEMISTRY 297	Chemistry and Chemical Biology Journal Club (first two years in program)	1
CHEMISTRY 250	Research	1-8
CHEMISTRY 266	Research Planning Conference	1
BIOPHYSICS 204B	Methods in Macromolecular Structure	4
	Units	**13-29**

Spring		
CHEMISTRY 219	Special Topics in Basic and Translational Chemical Biology [1]	3
CHEMISTRY 223	Scientific Communication Seminar	1
CHEMISTRY 206	Laboratory Rotation in Chemistry and Chemical Biology	1-10
CHEMISTRY 221	Research Conf in Chem, Chem Biol & Biophysics	1
CHEMISTRY 297	Chemistry and Chemical Biology Journal Club (first two years in program)	1
CHEMISTRY 250	Research	1-8
CHEMISTRY 266	Research Planning Conference	1
GRAD 214	Responsible Conduct of Research and Rigor & Reproducibility	1.5
	Units	**10.5-26.5**
	Total Units	**45.5-93.5**

[1] Choose three from all Basic Science programs, courses offered change annually

Non-course Core Requirements

- Introductory bootcamp before start of Fall quarter
- QBC (Quantitative Biosciences Consortium) annual retreat (Fall quarter)