# CHEMICAL AND SYSTEMS BIOLOGY

Courses offered by the Department of Chemical and Systems Biology are listed under the subject code CSB on the (https://explorecourses.stanford.edu/search?q=CSB&view=catalog&page=0&catalog=71&filter-term-Autumn=on&filter-term-Winter=on&filter-term-Spring=on&filter-term-Summer=on&filter-coursestatus-Active=on&collapse=&filter-catalognumber-CSB=on&filter-catalognumber-CSB=on) Stanford Bulletin's ExploreCourses web site.

The department emphasizes individualized training at the interface of physical science and biomedical science. The program encourages students to draw upon a variety of modern scientific techniques, ranging from recent advances in molecular biology and protein biochemistry to synthetic organic chemistry and single cell imaging. Graduate students in the department take courses in signal transduction networks, chemical biology, and other areas of importance to their research goals.

## Master of Science in Chemical and Systems Biology

Students in the Ph.D. program may apply for an M.S. degree after having satisfactorily completed the course and laboratory requirements of the first two years. The degree also requires a written thesis based on literature or laboratory research. Postdoctoral research training is available to graduates having the Ph.D. or M.D. degree.

## Doctor of Philosophy in Chemical and Systems Biology

University requirements for the Ph.D. are described in the "Graduate Degrees (http://exploredegrees.stanford.edu/schoolofmedicine/chemicalandsystemsbiology/%20/graduatedegrees)" section of this bulletin.

The Department of Chemical and Systems Biology offers interdisciplinary training to prepare students for independent careers in biomedical science. The main focus of the program is cell signaling, chemical biology, and systems biology.

The program leading to the Ph.D. degree includes formal and informal study in chemical biology, systems biology, drug discovery, biochemistry, and other areas of relevance to the interests of particular students. First-year students spend one quarter in each of three different laboratories, working closely with other graduate students, a professor, and postdoctoral fellows on various research projects. During the fourth quarter, the student chooses a faculty mentor with whom to undertake thesis research, based on available positions and the student's interest. During or before the eighth quarter of study, students must pass a qualifying exam which consists of an oral exam on general knowledge and a defense of a research proposal. Course requirements are fulfilled during the first two years of study; the later years of the four- to six-year program are devoted to full-time dissertation research. Close tutorial contact between students and faculty is stressed throughout the program.

Research opportunities also exist for medical students and undergraduates. The limited size of the labs in the department allows for close tutorial contact between students, postdoctoral fellows, and faculty.

The department participates in the four quarter Health and Human Disease and Practice of Medicine sequence which provides medical students with a comprehensive, systems-based education in physiology, pathology, microbiology, and pharmacology.

## Graduate Advising Expectations

The Department of Chemical and Systems Biology is committed to providing academic advising in support of graduate student scholarly and professional development. When most effective, this advising relationship entails collaborative and sustained engagement by both the adviser and the advisee. As a best practice, advising expectations should be periodically discussed and reviewed to ensure mutual understanding. Both the adviser and the advisee are expected to maintain professionalism and integrity.

Faculty advisers guide students in key areas such as selecting courses, designing and conducting research, developing of teaching pedagogy, navigating policies and degree requirements, and exploring academic opportunities and professional pathways.

Graduate students are active contributors to the advising relationship, proactively seeking academic and professional guidance and taking responsibility for informing themselves of policies and degree requirements for their graduate program.

For a statement of University policy on graduate advising, see the "Graduate Advising (http://exploredegrees.stanford.edu/graduatedegrees/#advisingandcredentialstext)" section of this bulletin.

*Emeriti: (Professors)* Robert H. Dreisbach, Avram Goldstein, Dora B. Goldstein, Stuart Kim, Tag E. Mansour, Oleg Jardetzky, Richard A. Roth, James P. Whitlock

*Chair:* James K. Chen

*Professors:* James K. Chen, Karlene A. Cimprich, James E. Ferrell, Jr., Tobias Meyer, Daria Mochly-Rosen, Thomas J. Wandless, Joanna K. Wysocka

*Professor (Teaching):* Kevin Grimes

*Assistant Professors:* Joshua Elias, Daniel F. Jarosz, Lei Stanley Qi, Mary Teruel

*Courtesy Professors:* Philip Beachy, Carolyn Bertozzi, Matthew Bogyo, Beverly S. Mitchell, Paul A. Wender

*Courtesy Associate Professors:* Markus W. Covert, Justin Du Bois, Michael Z. Lin, Jan M. Skotheim, Aaron F. Straight, Marius Wernig