STRUCTURAL BIOLOGY

Courses offered by the Department of Structural Biology are listed under the subject code SBIO on the Stanford Bulletin's ExploreCourses web site.

The department offers course work and opportunities for research in structural biology.

The emphasis of research in the department is on understanding fundamental cellular processes in terms of the structure and function of biological macromolecules and their assemblies. Techniques used include standard methods of biochemistry, cell culture, single-molecule fluorescence spectroscopy, genetic engineering, and three dimensional structure determination by x-ray diffraction, nuclear magnetic resonance spectroscopy and electron microscopy, coupled with the development of computational methods.

Doctor of Philosophy in Structural Biology

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

The graduate program in Structural Biology leads to the Ph.D. degree. The department also participates in the Medical Scientists Training Program (MSTP) in which individuals are candidates for both Ph.D. and M.D. degrees.

The graduate program is intended to prepare students for careers as independent investigators in cell and molecular biology. The principal requirement of a Ph.D. degree is the completion of research constituting an original and significant contribution to the advancement of knowledge.

The requirements and recommendations for applying to the Ph.D. program in the Department of Structural Biology include:

		Units
CHEM 131	Organic Polyfunctional Compounds	3
CHEM 171	Physical Chemistry I	4
CHEM 173	Physical Chemistry II	3
CHEM 175	Physical Chemistry III	3
BIOC 200	Applied Biochemistry	2

Ph.D. students in the Department of Structural Biology are required to complete all the following requirements:

		Units
BIOS 200	Foundations in Experimental Biology	5
SBIO 241	Biological Macromolecules	3-5
or BIOE 300A	Molecular and Cellular Bioengineering	
SBIO 242	Methods in Molecular Biophysics (offered every other year)	3
BIOPHYS 250	Seminar in Biophysics	1
MED 255	The Responsible Conduct of Research	1
AND, at least 3 additional graduate level courses in physical or biological science, with		
at least 1 course in physical science		
at least 1 course in literature-based biological science		

1. Training in a major with connections to biophysics (e.g., physics, chemistry, or biology, with a quantitative background equivalent to that of an undergraduate physics or chemistry major at Stanford).
2. Opportunities for teaching are available during the first nine quarters at the discretion of the advising committee.
3. The student must prepare a dissertation proposal defining the research to be undertaken including methods of procedure. This proposal should be submitted by the end of summer quarter of the second year, and it must be approved by a committee of at least three members including the principal research adviser and at least one member from the Department of Structural Biology. The candidate must defend the dissertation proposal in an oral examination. The dissertation reading committee normally evolves from the dissertation proposal review committee.
4. The student must present a Ph.D. dissertation as the result of independent investigation and expressing a contribution to knowledge in the field of structural biology.
5. The student must pass the University oral examination, taken only after the student has substantially completed the research. The examination is preceded by a public seminar in which the research is presented by the candidate.

Applicants to the program should have a bachelor's degree and should have completed at least a year of course work in biology, mathematics, organic chemistry, physical chemistry, and physics. Application forms must be received by the department before December 15 for notification by April 15. Application to the National Science Foundation for fellowship support is also encouraged. Remission of fees and a personal stipend are available to graduate students in the department. Prospective applicants should contact the Department of Structural Biology for further information.

Current topics of research in the department lie in the areas of gene expression; theoretical, crystallographic, and genetic analysis of protein structure; and cell-cell interaction. See Stanford's School of Medicine (http://www.med.stanford.edu/school/structuralbio) web site for further information.

Graduate Advising Expectations

The Department of Structural 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.

Chair: William I. Weis

Associate Chair: Michael Levitt

Professors:

- K. Christopher Garcia
- Theodore Jardetzky
- Roger D. Kornberg
- Michael Levitt
- Peter Parham

- Joseph D. Puglisi
- Soichi Wakatsuki
- William I. Weis

Associate Professor (Research):

- Yahli Lorch

Assistant Professor (Research):

- Elizabetta Viani Puglisi

Assistant Professor:

- *Adam de la Zerda*

Courtesy Professor:

- Axel Brunger
- Vijay Pande

Courtesy Associate Professor:

- Zev Bryant