DEADLINE FOR APPLICATIONS IS DECEMBER 1st.

How to Apply

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**Learning Objectives**

The goals of the Structural Biology and Biochemistry Program are to:

- Foster scientific excellence and innovation in the field of bimolecular structure and function.
- Develop and advance expertise and technology to support cutting-edge research in biomedical sciences.
- Provide training and career development for outstanding scientists.
- Identify and characterize molecular targets and develop innovative therapeutics and diagnostic tools.
- Exploit discoveries and intellectual properties through strategic partnerships with the industry.

**Learning Outcomes**

The PhD program in Structural Biology and Biochemistry trains graduate students to become proficient and successful investigators who are able to:

- Demonstrate a basic knowledge of central concepts in the biomedical sciences.
- Understand the current concepts in structural biology and biochemistry.
- Read and critically evaluate the scientific literature.
- Formulate hypotheses based on current concepts in the field and design, conduct, and interpret their own research projects.
- Present research results in peer-reviewed publications and in a dissertation.
- Communicate research results effectively through oral presentations at scientific seminars, conferences, and other venues.
- Write a competitive application for research funding.
- Develop ancillary skills, where necessary, to obtain positions outside of scientific research.

With this knowledge, they will understand molecular structures and mechanisms. Training is provided in the following exciting areas:

- Biomolecular Interactions.
- Protein and RNA structure, function, and dynamics.
- Computational studies of structure and function relationships of biomolecules.
- Structure-based design of new molecules important in biology, biochemistry, and pharmacology.
- Proteomics and metabolics.

The courses and research emphasize both breadth and flexibility while encouraging interdisciplinary training. Students may choose research projects from a variety of laboratories at the University of Colorado and the National Jewish Medical and Research Center. Training will result in a PhD degree awarded by the Program in Structural Biology and Biochemistry.

**Courses**

**BMSC 7806 - Core I: Foundations in Biomedical Sciences** (6 Credits)

Course will focus on the fundamental principles of biomedical sciences. Lectures and recitations/discussions will primarily address the basics of molecular biology, biochemistry, genetics, cell biology and energetic principles. Course is typically limited to biomedical science PhD and BSBT MS students. Previously offered as IDPT 7806.

Grading Basis: Letter Grade


Typically Offered: Fall.

**BMSC 7810 - Core Topics in Biomedical Science** (1-6 Credits)

Sections focus on different core topics in biomedical science, and will address subject areas such as protein structure and function, neurobiology, embryology, stem cell research, and cancer biology. Students can enroll in multiple Core Topic Courses topics in one semester. Previously offered as IDPT 7810.

Grading Basis: Letter Grade

Repeatable. Max Credits: 20.

AMC-PHD PhD Students only

Typically Offered: Fall.
PHCL 7605 - Responsible Conduct of Research (1 Credit)
The Department of Pharmacology in the University of Colorado School of Medicine organizes and offers an interactive course during the fall semester entitled "Responsible Conduct of Research". The course is designed to inform students, trainees and faculty to the NIH requirements for ethical and responsible research.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall.

STBB 7608 - Molecular Interactions (3 Credits)
Provides chemical/physical basis for protein structure, folding, function & stability; presents methods/principles of protein/peptide purification & enzyme catalysis including electron transfer & mutagenesis. The role of molecular dynamics & use of molecular simulations in the investigations of protein-ligand/protein-protein interactions. Cross-listed with PHSC 7608.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Spring.

STBB 7609 - Biophysics & Spectroscopy (3 Credits)
This course will teach fundamentals of modern molecular spectroscopies and biophysical techniques as applied to biomolecules and the structural/dynamic information they afford. Cross listed with PHSC 7609
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Spring.

STBB 7631 - Molecular Structure A (1.5 Credits)
Gain an in-depth understanding of the underlying principles of an NMR experiment, so that student can turn NMR theory into NMR practice for their research.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall.

STBB 7632 - Molecular Structure B (1.5 Credits)
Understand the theory and practice of structural determination using x-ray crystallography.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall.

STBB 7633 - Molecular Structure C (1.5 Credits)
The purpose of this course is to provide students with a concise understanding of biological mass spectrometry and its application to study and characterize various classes of biomolecules in state of the art research. Course is 7.5 weeks.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall.

STBB 7650 - Research in Structural Biology & Biochemistry (1-10 Credits)
Research work in Structural Biology and Biochemistry. 2 laboratory hours per week per credit.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 10.
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring, Summer.

STBB 7660 - Structure Seminar (1 Credit)
Seminar series provides a forum for the presentation of scientific experiments and information in structural biology by faculty, postdoctoral fellows and graduate students.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring.

STBB 8990 - Doctoral Thesis (1-10 Credits)
Doctoral thesis work in Structural Biology and Biochemistry.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 10.
A-GRAD Restricted to graduate students only.
Additional Information: Report as Full Time.
Typically Offered: Fall, Spring, Summer.

Policies
Please refer to the Graduate School Policies page (http://catalog.ucdenver.edu/cu-anschutz/schools-colleges-programs/graduate-school/#policiestext).

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