

# BIOCHEMISTRY (BCHM)

Graduate Degree Program  
College: Computer, Mathematical, and Natural Sciences

## Abstract

The Graduate Program in Biochemistry offers study leading to Doctor of Philosophy and Master of Science degrees. The program emphasizes intensive mentoring, formal and informal training in presentation skills, scientific writing, bioinformatics, teaching chemistry and biochemistry, and professional ethics. Research specialization is available in protein structure, dynamics, and function; protein-protein and protein-nucleic acid interaction; protein and nucleic acid biochemistry; RNA and DNA structure, dynamics, interactions, and function; macromolecular folding and supramolecular assembly; biomolecular nuclear magnetic resonance spectroscopy, X-ray crystallography; proteomics, metabolomics mass spectrometry; membrane proteins, protein-lipid interaction, membrane structure and function; carbohydrate chemistry, glycobiology; immunology; bio-organic chemistry; post-translational protein modification and signaling; metabolic regulation; enzyme mechanisms; drug metabolism. Several of the biochemistry program faculty are members of the Institute for Bioscience and Biotechnology Research (IBBR) or other Related Programs and Campus Units listed below. Further information about the Biochemistry Graduate Program can be found at <https://www.chem.umd.edu/graduateprogram/phdinbiochemistry> (<http://www.chem.umd.edu/graduateprogram/phdinbiochemistry/>) and <http://www.chem.umd.edu/>.

## Financial Assistance

Ph.D. candidates are normally supported on graduate teaching assistantships during their first year as graduate students. Teaching assistants usually instruct undergraduate laboratory and recitation classes and receive in return a tuition waiver of ten credits each semester, salary, and health care benefits. Ph.D. candidates are normally supported in subsequent years on graduate research assistantships. Financial support is not generally available to M.S. candidates.

## Contact

Graduate Program Office (chem-gradoffice@umd.edu)  
Dept. of Chemistry & Biochemistry  
8051 Regents Drive, Room 1206A  
University of Maryland  
College Park, MD 20742-21111  
**Telephone:** 301-405-1028 | 301-405-7022  
**Email:** chem-gradoffice@umd.edu

**Website:** <http://www.chem.umd.edu>

**Courses:** BCHM (<https://academiccatalog.umd.edu/graduate/courses/bchm/>) BIOE (<https://academiccatalog.umd.edu/graduate/courses/bioe/>) BIPH (<https://academiccatalog.umd.edu/graduate/courses/biph/>) BISI (<https://academiccatalog.umd.edu/graduate/courses/bisi/>) CBMG (<https://academiccatalog.umd.edu/graduate/courses/cbm/>) CHEM (<https://academiccatalog.umd.edu/graduate/courses/chem/>) CHPH (<https://academiccatalog.umd.edu/graduate/courses/chph/>)

**Relationships:** Bioengineering (BIOE) (<https://academiccatalog.umd.edu/graduate/programs/bioengineering-bioe/>), Biological Sciences (BISI) (<https://academiccatalog.umd.edu/graduate/programs/biological-sciences-bisi/>), Biophysics (BIPH)

(<https://academiccatalog.umd.edu/graduate/programs/biophysics-biph/>), Chemical Physics (CHPH) (<https://academiccatalog.umd.edu/graduate/programs/chemical-physics-chph/>), Chemistry (CHEM) (<https://academiccatalog.umd.edu/graduate/programs/chemistry-chem/>)

## ADMISSIONS

### GENERAL REQUIREMENTS

- Statement of Purpose
- Transcript(s)
- TOEFL/IELTS/PTE (international graduate students (<https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/>))

### PROGRAM-SPECIFIC REQUIREMENTS

- Letters of Recommendation (3)
- Graduate Record Examination (GRE) (optional)
- GRE Subject (optional)
- CV/Resume
- Description of Research/Work Experience
- Supplementary Application (contact department)

Admission to graduate study in Biochemistry at the University of Maryland requires a minimum of a Bachelor of Science (B.S.), Bachelor of Arts (B.A.) or equivalent degree. Applications are normally accepted only from Ph.D.-seeking students. The area in which the undergraduate degree has been earned need not be chemistry or biochemistry, but previous coursework must normally include a minimum of 30 semester or 40 quarter hours of chemistry, including at least 1 year of general chemistry, 1 year of organic chemistry and 1 semester of biochemistry, as well as laboratory courses in organic chemistry and biochemistry. A course in physical chemistry and a laboratory course in analytical chemistry are also desirable. Typical overall grade point averages for successful applicants are 3.0 or greater (on a scale where the average grade is 2.0), and averages in science and math courses are generally higher than this. Three letters of reference indicating a potential for independent, creative scientific research are also required.

The competition for available space may limit admissions to persons with credentials above these minimum requirements.

For more admissions information or to apply to the program, please visit our Graduate School website: [www.gradschool.umd.edu/admissions](http://www.gradschool.umd.edu/admissions) (<http://www.gradschool.umd.edu/admissions/>)

## APPLICATION DEADLINES

Type of Applicant	Fall Deadline
<b>Domestic Applicants</b>	
US Citizens and Permanent Residents	November 26, 2024
<b>International Applicants</b>	
F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	March 6, 2025

### RESOURCES AND LINKS:

**Other Deadlines:** [chem.umd.edu](http://www.chem.umd.edu) (<http://www.chem.umd.edu>)

**Program Website:** [chem.umd.edu/graduateprogram](http://www.chem.umd.edu/graduateprogram) (<http://www.chem.umd.edu/graduateprogram/>)

**Application Process:** [gradschool.umd.edu/admissions/application-process/step-step-guide-applying](https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying) (<https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying/>)

## REQUIREMENTS

- Biochemistry, Doctor of Philosophy (Ph.D.) (<https://academiccatalog.umd.edu/graduate/programs/biochemistry-bchm/biochemistry-phd/>)
- Biochemistry, Master of Science (M.S.) (<https://academiccatalog.umd.edu/graduate/programs/biochemistry-bchm/biochemistry-ms/>)

## FACILITIES AND SPECIAL RESOURCES

Biochemistry faculty and graduate students work in well-equipped, state-of-the-art research laboratories. Instrumentation and facilities that are available for research in biochemistry include analytical and preparative ultracentrifuges, high- and ultra-high field nuclear magnetic resonance spectrometers (600, 800, 900, 950 MHz), X-ray diffractometers and SAXS, fluorimeters, circular dichroism spectrometers, fluorescence- and phosphor-imagers, calorimeter, mass spectrometers, proteomics and genomics core facilities, Sanger and next-generation DNA sequencing, microarray, quantitative PCR, electron microscopes, atomic force microscopes, confocal and TIRF fluorescence microscopes, flow cytometer, animal colony, fermentation pilot plant, high-performance computing, and a chemistry-biochemistry library.