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; post-translational protein modification and signaling; proteomics; mass spectrometry; biomolecular nuclear magnetic resonance spectroscopy; X-ray crystallography; enzyme mechanisms; drug metabolism; carbohydrate chemistry; glycobiology; immunology; bio-organic chemistry; membrane structure and function; and metabolic regulation. 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 www.chem.umd.edu/graduateprogram/phdinbiochemistry and 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 Programs Office
Department of Chemistry and Biochemistry
0129 Chemistry Building
8051 Regents Drive
University of Maryland
College Park, MD 20742
Telephone: 301.405.1028
Fax: 301.314.9121
Email: chembchadm@umd.edu
Website: http://www.chem.umd.edu

Courses: BCHM BIOE BIPH BISI CBMG CHEM 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)

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)
• CV/Resume
• Description of Research/Work Experience
• GRE Subject (optional/highly recommended)

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

Application Deadlines

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<th>Type of Applicant</th>
<th>Fall Deadline</th>
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<tr>
<td>Domestic Applicants</td>
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<td>US Citizens and Permanent Residents</td>
<td>17 Jan</td>
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<td>International Applicants</td>
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<td>F (student) or J (exchange visitor) visas; A, E, G, H, I and L visas and immigrants</td>
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Other Deadlines: Please visit the program website at http://www.chem.umd.edu

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), proteomics and genomics core facilities, mass spectrometers, X-ray diffractometers and SAXS, calorimetry, fluorescence/phosphorimagers, circular dichroism spectrometers, 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.

Faculty

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First/Middle Name</th>
<th>Graduate Faculty Status</th>
<th>Academic Credentials</th>
<th>Positions</th>
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<tbody>
<tr>
<td>Beckett</td>
<td>Dorothy</td>
<td>Full Member</td>
<td>B.A., Barnard College, 1980; Ph.D., University of Illinois-Urbana/Champaign, 1986.</td>
<td>Professor, Biochemistry Professor, Biophysics Professor, Chemistry</td>
</tr>
<tr>
<td>Dayie</td>
<td>Kwaku</td>
<td>Full Member</td>
<td>B.A. Physics, 1990, Hamilton College; Ph.D., Biophysics, 1996, Harvard University</td>
<td>Associate Professor, Biochemistry Associate Professor, Biophysics Associate Professor, Chemistry</td>
</tr>
<tr>
<td>Fenselau</td>
<td>Catherine C.</td>
<td>Full Member</td>
<td>A.B., Bryn Mawr College, 1961; Ph.D., Stanford University, 1965.</td>
<td>Professor, Biochemistry Professor, Chemistry</td>
</tr>
<tr>
<td>Fushman</td>
<td>David</td>
<td>Full Member</td>
<td>M.S., University of Kazan, 1978; Ph.D., University of Kazan, 1985.</td>
<td>Associate Director, Biophysics Professor, Biochemistry Professor, Chemical Physics Professor, Chemistry Professor Emeritus, Biochemistry Professor Emeritus, Chemistry</td>
</tr>
<tr>
<td>Hansen</td>
<td>J. Norman</td>
<td>Full Member</td>
<td>B.A., Drake University, 1964; Ph.D., University of California-Los Angeles, 1968.</td>
<td>Professor Emeritus, Biochemistry Professor Emeritus, Chemistry</td>
</tr>
</tbody>
</table>

Herzberg Osnat Full Member B.S., Technion-Israel Institute of Tech-Haifa, 1971; M.S., Weizmann Institute of Science-Rehovoth, 1976; Ph.D., 1982. Professor, Biochemistry Professor, Chemistry Affiliate Professor, Biological Sciences

Julin Douglas A. Full Member B.A., Haverford College, 1978 Ph.D., University of California-Berkeley, 1984. Associate Professor, Chemistry Graduate Director, Biochemistry

Kahn Jason D. Full Member B.A., Harvard University, 1983; Ph.D., University of California-Berkeley, 1990. Associate Professor, Biochemistry Associate Professor, Biological Sciences Affiliate Associate Professor, Chemistry Associate Professor, Bioengineering Associate Professor, Biochemistry Associate Professor, Chemistry

LaRonde Nicole Full Member B.S., University of St. Andrews, 1965; M.S., University of Illinois-Chicago, 1968; Ph.D., Michigan State University, 1972. Distinguished University Professor, Biochemistry Distinguished University Professor, Biophysics Distinguished University Professor, Chemical Physics Distinguished University Professor, Chemistry

Lorimer George H. Full Member B.S., University of St. Andrews, 1965; M.S., University of Illinois-Chicago, 1968; Ph.D., Michigan State University, 1972. Distinguished University Professor, Biochemistry Distinguished University Professor, Biophysics Distinguished University Professor, Chemical Physics Distinguished University Professor, Chemistry
Nemes Peter Full Member Associate Professor; Biochemistry Associate Professor; Chemistry

Orban John P. Full Member B.S., University of Adelaide, 1980; Ph.D., Australian National University-Canberra, 1985; Prof. Biochemistry

Paukstelis Paul Full Member B.S., Biology, 1997, University of Kansas; Ph.D. Molecular Biology, University of Texas at Austin; Associate Professor; Biochemistry Associate Professor; Chemistry

Poulin Myles Full Member Assistant Professor; Biochemistry Assistant Professor; Chemistry

Tiwary Pratyush Full Member Ph.D., Caltech, 2012 Assistant Professor; Biochemistry Assistant Professor; Biophysics Assistant Professor; Chemistry

Wang Lai-Xi Full Member PhD, Shanghai Institute of Organic Chemistry, Chinese Academy of SciencesPostdoc Fellow, Johns Hopkins University and Massachusetts Institute of Technology; Professor; Biochemistry Professor; Chemistry