**BIOCHEMISTRY**

http://mcb.illinois.edu/departments/biochemistry

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Major: Biochemistry
Degrees offered: M.S., Ph.D.

Medical Scholars Program: Doctor of Philosophy (Ph.D.) in Biochemistry and Doctor of Medicine (M.D.) through the Medical Scholars Program (http://www.med.illinois.edu/msp).

**Graduate Degree Programs**

The Department of Biochemistry offers graduate programs leading to the Master of Science and the Doctor of Philosophy degrees. For an application and departmental materials that provide greater detail on programs, offerings, admission, degree requirements, and financial aid, visit our website at www.mcb.illinois.edu/graduate/gradprospect.html.

The Department of Biochemistry is a part of the School of Molecular and Cellular Biology (MCB), which also includes the Departments of Cell and Developmental Biology, Microbiology and Molecular and Integrative Physiology as well as Programs in Biophysics and Neurosciences. The Department is part of an umbrella program in MCB that encompasses over 70 different research laboratories. Students admitted into any of these departmental graduate programs can select faculty thesis advisors from these active research laboratories in the School. In addition, dual degrees via the Medical Scholars Program are offered. Close ties are also maintained with the School of Integrative Biology, the School of Chemical Sciences, the College of Medicine, and the College of Veterinary Medicine.

**Admission**

Interested students must apply directly to the School of Molecular and Cellular Biology (www.mcb.illinois.edu/graduate/gradprospect.html). During the first semester, students perform three laboratory rotations, choosing from any laboratory in the School. Students select a laboratory for their thesis research in December in mutual agreement with their desired advisor and formally join the appropriate graduate program/department at that time.

Students electing biochemistry as a major for an advanced degree should have a strong background in chemistry, biology, physics, and calculus and a grade point average of a 3.0 or higher (A = 4.0). Admission requirements include: a bachelor’s degree; Graduate Record Examination (GRE) scores. In addition to the above requirements, international students must attain a minimum paper-based Test of English as a Foreign Language (TOEFL) score of 590 (243 on the computer-based test). A score of 96 on the internet-based test (iBT), with a score of 24 on the speaking section, is also accepted. The department does not normally admit students directly into the M.S. program.

**Medical Scholars Program**

The Medical Scholars Program permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Biochemistry. Students may apply to the Medical Scholars Program prior to beginning graduate school or while in the graduate program. Applicants to the Medical Scholars Program must meet the admissions standards for and be accepted into both the doctoral graduate program and the College of Medicine. Students in the dual degree program must meet the specific requirements for both the medical and graduate degrees. On average, students take eight years to complete both degrees. Further information on this program is available by contacting the Medical Scholars Program, 125 Medical Sciences Building, (217) 333-8146 or at www.med.illinois.edu/msp (http://www.med.illinois.edu/msp).

**Graduate Teaching Experience**

Experience in teaching is considered a vital part of the graduate program and is required as part of the academic work of all Ph.D. candidates in this program.

**Faculty Research Interests**

Faculty research in the Department of Biochemistry covers a broad spectrum of the most dynamic areas of current research in biological chemistry and molecular biology: physical approaches to the structure and function of macromolecules and membranes; nucleic acid biochemistry and enzymology, enzyme mechanisms and evolution; membrane biochemistry and bioenergetics; protein-lipid interactions; protein-nucleic acid interactions and molecular recognition; molecular biological approaches to gene organization and expression; immunology; microbial physiology, and signal transduction.

**Centers, Programs, and Institutes**

Biochemistry faculty are appointed and active in several cross-campus academic and research units, including the Center for Biophysics & Computational Biology, the Beckman Institute for Advanced Science and Technology, the Institute for Genomic Biology, as well as the interdepartmental graduate programs in Biophysics & Computational Biology, and Neuroscience, and the joint M.D./Ph.D. Medical Scholars Program of the College of Medicine.

**Facilities and Resources**

Campus resources for science research are state-of-the-art and available to all faculty research programs. Notably among these is the Roy J. Carver Biotechnology Center, which comprises the W.M. Keck Center for Comparative and Functional Genomics (Custom Library Services, High-Throughput Sequencing and Genotyping, DNA Core Sequencing, Fragment Analysis, Oligonucleotide Synthesis, Functional Genomics and Bioinformatics), Proteomics Services (Protein Science Facility, Immunological Resource Center and Flow Cytometry Facility), a Metabolomics Center and a Transgenic Mouse Facility. It also provides career counseling through the Career Services Office. Many other cross-campus facilities are important for the faculty research programs in Biochemistry, including the Fred Seitz Materials Research Laboratory, the National Center for Supercomputing Applications (NCSA), the high-field VOICE NMR Laboratory, Mass Spectrometry Center, Microanalysis Laboratory, Cell Media Facility, and many electronics, machine and glass shop service facilities. The University of Illinois is also a full member
of the LS-CAT beamline for macromolecular crystallography at the Advanced Photon Source, Argonne National Laboratory.

Financial Aid

Financial aid for Ph.D. graduate students in biochemistry is available in the form of fellowships, teaching and research assistantships, and tuition and partial fee waivers. In addition, interdepartmental training grants from the National Institutes of Health support multidisciplinary training programs. Qualified candidates are considered for financial support upon application. Graduate students making satisfactory progress toward their degrees generally receive a stipend, as well as a full tuition waiver and a partial fee waiver.

Master of Science Biochemistry

A coursework master's degree requires a minimum of two full-time semesters. A thesis master's degree usually requires a minimum of three semesters.

**Thesis Option**

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core curriculum</td>
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<td>20</td>
</tr>
<tr>
<td>BIOC 599</td>
<td>Thesis Research (12 max applied toward degree)</td>
<td>0-12</td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>32</td>
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</tbody>
</table>

**Other Requirements**

- Other requirements may overlap
- Minimum Hours Required Within the Unit: 8
- Minimum 500-level Hours Required Overall: 12
- Minimum GPA: 3.0

**Non-Thesis Option**

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>Core curriculum</td>
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<td>32</td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

**Other Requirements**

- Other requirements may overlap
- Minimum Hours Required Within the Unit: 8
- Minimum 500-level Hours Required Overall: 12
- Minimum GPA: 3.0

Doctor of Philosophy in Biochemistry

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry/MCB core courses and advanced elective courses</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>BIOP 599</td>
<td>Thesis Research (min/max applied toward degree)</td>
<td>64</td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
<td>96</td>
</tr>
</tbody>
</table>

**Other Requirements**

- Other requirements may overlap
- A minimum of one semester at 50% FTE or two semesters of 25% FTE of teaching in lecture or laboratory courses is required.
- A thesis based on original research must be presented to a review committee at least two weeks before the final oral examination.
- Masters Degree Required Before Admission to PhD? No, but Masters level requirements must be met (32 hours)
- Preliminary Exam Required Yes, administered by the end of the second year.
- Final Exam/Dissertation Defense Required Yes, and the final examination is limited to a defense of the thesis research.
- Dissertation Deposit Required Yes
- Minimum GPA: 3.0

1 For additional details and requirements refer to the department's Program of Study (http://www.mcb.illinois.edu/departments/biochemistry/gradpgmstudy.html) and the Graduate College Handbook (http://www.grad.illinois.edu/gradhandbook).