

# Comparative Biochemistry

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The interdisciplinary Graduate Group in Comparative Biochemistry administers the PhD degree for students interested in a biochemical and molecular approach to problems in the biological sciences. Students work under the supervision of faculty from diverse disciplines including Molecular and Cell Biology; Nutritional Science and Toxicology; Plant and Microbial Biology; Chemistry; Chemical Engineering; Environmental Science, Policy, and Management; Public Health; and the Lawrence Berkeley National Laboratory.

## Admission to the University

### Minimum Requirements for Admission

The following minimum requirements apply to all graduate programs and will be verified by the Graduate Division:

1. A bachelor's degree or recognized equivalent from an accredited institution;
2. A grade point average of B or better (3.0);
3. If the applicant comes from a country or political entity (e.g., Quebec) where English is not the official language, adequate proficiency in English to do graduate work, as evidenced by a TOEFL score of at least 90 on the iBT test, 570 on the paper-and-pencil test, 230 on the computer-based test, or an IELTS Band score of at least 7 (note that individual programs may set higher levels for any of these); and
4. Sufficient undergraduate training to do graduate work in the given field.

### Applicants Who Already Hold a Graduate Degree

The Graduate Council views academic degrees not as vocational training certificates but as evidence of broad training in research methods, independent study, and articulation of learning. Therefore, applicants who already have academic graduate degrees should be able to pursue new subject matter at an advanced level without need to enroll in a related or similar graduate program.

Programs may consider students for an additional academic master's or professional master's degree only if the additional degree is in a distinctly different field.

Applicants admitted to a doctoral program that requires a master's degree to be earned at Berkeley as a prerequisite (even though the applicant already has a master's degree from another institution in the same or a closely allied field of study) will be permitted to undertake the second master's degree, despite the overlap in field.

The Graduate Division will admit students for a second doctoral degree only if they meet the following guidelines:

1. Applicants with doctoral degrees may be admitted for an additional doctoral degree only if that degree program is in a general area of knowledge distinctly different from the field in which they earned their original degree. For example, a physics PhD could be admitted to a doctoral degree program in music or history; however, a

student with a doctoral degree in mathematics would not be permitted to add a PhD in statistics.

2. Applicants who hold the PhD degree may be admitted to a professional doctorate or professional master's degree program if there is no duplication of training involved.

Applicants may apply only to one single degree program or one concurrent degree program per admission cycle.

Any applicant who was previously registered at Berkeley as a graduate student, no matter how briefly, must apply for readmission, not admission, even if the new application is to a different program.

## Required Documents for Applications

1. **Transcripts:** Applicants may upload *unofficial* transcripts with your application for the departmental initial review. *If the applicant is admitted*, then *official* transcripts of all college-level work will be required. Admitted applicants must request a current transcript from every post-secondary school attended, including community colleges, summer sessions, and extension programs. Official transcripts must be in sealed envelopes as issued by the school(s) attended.

If you have attended Berkeley, upload your unofficial transcript with your application for the departmental initial review. *If you are admitted*, an official transcript with evidence of degree conferral *will not* be required.

2. **Letters of recommendation:** Applicants may request online letters of recommendation through the online application system. Hard copies of recommendation letters must be sent directly to the program, not the Graduate Division.
3. **Evidence of English language proficiency:** All applicants from countries or political entities in which the official language is not English are required to submit official evidence of English language proficiency. This applies to applicants from Bangladesh, Burma, Nepal, India, Pakistan, Latin America, the Middle East, the People's Republic of China, Taiwan, Japan, Korea, Southeast Asia, most European countries, and Quebec (Canada). However, applicants who, at the time of application, have already completed at least one year of full-time academic course work with grades of B or better at a US university may submit an official transcript from the US university to fulfill this requirement. The following courses will not fulfill this requirement: 1) courses in English as a Second Language, 2) courses conducted in a language other than English, 3) courses that will be completed after the application is submitted, and 4) courses of a non-academic nature. If applicants have previously been denied admission to Berkeley on the basis of their English language proficiency, they must submit new test scores that meet the current minimum from one of the standardized tests.

## Where to Apply

Visit the Berkeley Graduate Division application page (<http://grad.berkeley.edu/admissions/apply>) .

## Normative Time Requirements

Normative time is defined as the elapsed time in years that under normal circumstances would be needed to complete all requirements for the PhD degree assuming that the student engaged in full-time, uninterrupted study and is making desirable progress toward the degree. Normative time for Comparative Biochemistry is five years.

## Time to Advancement

### Curriculum

#### Courses Required

Advanced Biochemistry/Molecular Biology:		
MCELLBI 110	Molecular Biology: Macromolecular Synthesis and Cellular Function	4
MCELLBI 200A	Fundamentals of Molecular and Cell Biology	3
Enzymes/Metabolism/Cell Biology/Plant Microbial Biology:		
PLANTBI 200A	Plant Developmental Genetics	1.5
NUSCTX 250	Advanced Topics in Metabolic Biology	3
MCELLBI C214	Protein Chemistry, Enzymology, and Bio-organic Chemistry	2
MCELLBI 230	Advanced Cell Biology	4
Physical Biochemistry:		
MCELLBI 206	Physical Biochemistry	3
CHEM 270A/270B	Advanced Biophysical Chemistry I	1
COMPBIO 294	Comparative Biochemistry Seminar	1
Grad Elective Courses per approved study list		
Grad Elective Seminar per approved study list		
COMPBIO 299	Graduate Research	1-12

## Comparative Biochemistry

COMPBIO 294 Comparative Biochemistry Seminar 1 Unit

Terms offered: Fall 2017, Fall 2016, Fall 2015

The objective of this course is to provide an overview of the research activities conducted by faculty members of the Graduate Group in Comparative Biochemistry. The lectures will cover a wide range of interdisciplinary research topics reflecting the breadth of the Group. An important goal of this course is to enhance intellectual and collaborative interactions between students and faculty of the Graduate Group by increasing awareness of the range of research projects. The course will be conducted in a seminar format and is required for students new to the Graduate Group. It is also recommended for advanced students currently in the Group.

#### Rules & Requirements

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

#### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

#### Additional Details

**Subject/Course Level:** Comparative Biochemistry/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

COMPBIO 299 Graduate Research 1 - 12 Units

Terms offered: Fall 2017, Summer 2017 8 Week Session, Spring 2017

Graduate student research.

#### Rules & Requirements

**Prerequisites:** Graduate standing in the Comparative Biochemistry Graduate Group

**Repeat rules:** Course may be repeated for credit. Course may be repeated for credit when topic changes.

#### Hours & Format

**Fall and/or spring:** 15 weeks - 1-12 hours of independent study per week

#### Summer:

6 weeks - 2.5-30 hours of independent study per week

8 weeks - 1.5-22.5 hours of independent study per week

#### Additional Details

**Subject/Course Level:** Comparative Biochemistry/Graduate

**Grading:** Letter grade.