PhD in Biochemistry and Molecular Genetics

Admission Requirements

Applicants to the PhD program in Biochemistry and Molecular Genetics should apply through the GEMS application process (http://chicago.medicine.uic.edu/education/masters_and_doctorate_programs/graduate_education_in_medical_sciences___g_e_m_s_/application_process). Students should select Biochemistry and Molecular Genetics as their first preference to be considered for admission into our program. In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- **Baccalaureate Field** No restrictions. Prior academic work should include 16 semester hours of chemistry (including organic chemistry, physical chemistry, and quantitative analysis), and at least one advanced course in biology. An undergraduate course in biochemistry is highly recommended.

- **Grade Point Average** At least 2.90/4.00 for the final 60 semester (90 quarter) hours of undergraduate study.

- **Tests Required** GRE General.

- **Minimum English Competency Test Score**
  - **TOEFL** The TOEFL score cannot be more than two years old. UIC’s Institutional Code is 1851. 80, with subscores of Reading 19, Listening 17, Speaking 20, and Writing 21 (IBT Internet-based); 60, with subscores of Reading 19, Listening 17, Writing 21 (New Paper-Based—after August 2018); 550 (Institutional Testing Paper-Based—prior to August 2018), OR,
  - **IELTS** 6.5, with subscores of 6.0 for all four subscores, OR,
  - **PTE-Academic** 54, with subscores of Reading 51, Listening 47, Speaking 53, and Writing 56.

- **Letters of Recommendation** Required.

- **Personal Statement** Required.

- **Deadlines** The application deadline for this program is earlier than the Graduate College deadline; please see the GEMS application website (http://chicago.medicine.uic.edu/education/masters_and_doctorate_programs/graduate_education_in_medical_sciences___g_e_m_s_/application_process) for the internal deadline for full consideration of your application.

- **Other** The department only admits applicants who wish to be candidates for the PhD degree. Applicants are not admitted as candidates for a terminal master’s degree.

Degree Requirements

In addition to the Graduate College minimum requirements, students must meet the following program requirements:

**Master of Science**

- **Minimum Semester Hours Required** 32.

- **Course Work** Two tracks (thesis and nonthesis) are available to students in this program.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>GEMS 501</td>
<td>Biochemistry</td>
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**Nonthesis Track Required Courses**

- **GEMS 501** Biochemistry
- **GEMS 502** Molecular Biology
- **GEMS 503** Cell Biology
- **BCMG 503** Research Methods in Biochemistry and Molecular Genetics (3 semesters or equivalent)
- **GEMS 504** Research Methods I
- **GEMS 505** Research Methods II
- **BCMG 515** Journal Club (2 semesters)

**Thesis Track Required Courses**

- **GEMS 502** Molecular Biology
- **GEMS 503** Cell Biology
- **BCMG 515** Masters Thesis Research
- **BCMG 515** Journal Club (2 semesters)

**Electives**

Select three of the following in the second semester of the first year, subject to the approval of the departmental graduate committee:

- **BCMG 513** Principles of Structure Determination and Analysis
- **GEMS 500** Physiology
- **GEMS 510** Integrative Biology
- **GEMS 511** Molecular Genetics

**Other 500-level courses**

- **Comprehensive Examination** None.

- **Thesis, Project, or Course-Work-Only Options** Thesis or course work only. No other options are available
  - **Thesis** Thesis students must earn at least 12 semester hours in BCMG 598.

- **Other Requirements** Supervised part-time teaching experiences during one term of each year are regularly assigned to students in the program.

**Doctor of Philosophy**

- **Minimum Semester Hours Required** 96 from the baccalaureate.

- **Course Work**

  **Required Core**
  Of the four core GEMS courses (GCLS 500, GCLS 501, GCLS 502, and GCLS 503), all students must take or show proficiency in the following:
  - **GEMS 501** Biochemistry
  - **GEMS 502** Molecular Biology
  - **GEMS 503** Cell Biology

  Students must also take or show proficiency in:
  - **GEMS 504** Research Methods I
  - **GEMS 505** Research Methods II
  - **GEMS 506** or **BCMG 503** GEMS Research Rotation
  - **BCMG 503** Research Methods in Biochemistry and Molecular Genetics

  Students must also take the following:
### Electives

Select three 500-level electives from the following:

<table>
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<tbody>
<tr>
<td>GEMS 500</td>
<td>Physiology</td>
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<tr>
<td>GEMS 510</td>
<td>Integrative Biology</td>
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<tr>
<td>GEMS 511</td>
<td>Molecular Genetics</td>
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<tr>
<td>GEMS 515</td>
<td>Receptor Pharmacology and Cell Signaling</td>
</tr>
<tr>
<td>BCMG 513</td>
<td>Principles of Structure Determination and Analysis</td>
</tr>
<tr>
<td>PHYB 586</td>
<td>Cell Physiology</td>
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</tbody>
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Other 500-level course (subject to approval of the director of graduate studies)

- **Preliminary Examination** Required. Students take a preliminary qualifying examination for advancement to PhD candidacy at the end of their second year of study. This examination will test a student's ability to design and orally defend a scientific research plan as well as his/her general knowledge of biochemistry and molecular genetics.

- **Dissertation** Required. A defined research experience and completion of an approved thesis is required. The thesis will be presented in a public forum and defended in front of a faculty jury. The research presented in the thesis is expected to be of publishable quality.

- **Other Requirements** Supervised part-time teaching experiences during one term of each year are regularly assigned to students in the program. The department requires every degree candidate to fulfill teaching assignments, regardless of the source of financial support for the student.

### Interdepartmental Concentrations

Students earning a graduate degree in this department may complement their courses by enrolling in select concentrations after consulting with their graduate advisor. Interdepartmental concentrations available for this degree include:

- Cardiovascular Science ([link](http://catalog.uic.edu/gcat/colleges-schools/medicine/bcmg/phd/Interdepartmental%20Graduate%20Concentration%20in%20Cardiovascular%20Science))
- Neuroscience ([link](http://catalog.uic.edu/gcat/colleges-schools/liberal-arts-sciences/bios/phd/Interdepartmental%20Concentration%20in%20Neuroscience))