Ph.D. in Biochemistry & Biophysics; Microbiology; or Molecular, Cellular, & Developmental Biology

Molecular Biosciences Doctoral Programs

Molecular Biosciences is an interdisciplinary group of faculty, postdoctoral fellows and graduate students who perform cutting edge research across a wide range of areas (http://molecularbiosciences.ku.edu/research), including biochemistry, biophysics, structural biology, bioinformatics, cancer biology, genetics, genomics, immunology, microbiology, virology, neurobiology, molecular, cellular and developmental biology. Our researchers investigate fundamental biological and biomedical problems on all levels, from molecules to cells to organisms. Our research labs collaborate to solve complex questions using a range of approaches, and make use of the world-class core facilities at KU. The Department of Molecular Biosciences at the University of Kansas is an excellent environment for research and graduate training in biology.

The department offers Doctor of Philosophy degrees in Biochemistry and Biophysics (http://molecularbiosciences.ku.edu/biochemistry-graduate-program), in Molecular, Cellular, and Developmental Biology (MCDB (http://molecularbiosciences.ku.edu/mcdb-graduate-program)), and in Microbiology (http://molecularbiosciences.ku.edu/microbiology-0). General information about the department, our faculty and students, and alumni of our graduate programs can be found on our website (http://molecularbiosciences.ku.edu). Detailed information about admission (http://molecularbiosciences.ku.edu/admissions) to our graduate program, curricula (http://molecularbiosciences.ku.edu/Ph.D.-Overview), and financial support (http://molecularbiosciences.ku.edu/stipend) is also available.

Note that the various B.A. and B.S. undergraduate degree programs in biology are listed at the Biology Undergraduate Programs (http://catalog.ku.edu/liberal-arts-sciences/biology) page.

Admission to Graduate Studies

An applicant seeking to pursue graduate study in the College may be admitted as either a degree-seeking or non-degree seeking student. Policies and procedures of Graduate Studies govern the process of Graduate admission. These may be found in the Graduate Studies (http://catalog.ku.edu/graduate-studies) section of the online catalog.

Please consult the Departments & Programs (http://catalog.ku.edu/liberal-arts-sciences) section of the online catalog for information regarding program-specific admissions criteria and requirements. Special admissions requirements pertain to Interdisciplinary Studies degrees, which may be found in the Graduate Studies section of the online catalog.

Graduate Admission

The Department of Molecular Biosciences (http://molecularbiosciences.ku.edu) recognizes the importance of investing in the careers of future biomedical scientists. We welcome graduate students into our vibrant scientific community, where they have the opportunity to become outstanding researchers and prepare for an exciting future in science.

All students seeking a graduate degree must submit a formal application to the Molecular Biosciences graduate program. Full information on the application process, and a link to apply online can be found on our website (http://molecularbiosciences.ku.edu/admissions). Application materials for the Molecular Biosciences graduate program include:

1. An application form
2. 1 official copy of all academic transcripts (international students must also provide a translated copy);
3. A Curriculum Vitae or résumé (1 to 2 pages);
4. 3 letters of recommendation from qualified individuals using the Graduate Letter of Recommendation form;
5. A Statement of Research Interests and Goals. A strong statement will include: (a) A description of previous research experiences, discussing how these have prepared you for graduate school both professionally and personally, (b) A discussion of your broad research interests, and (c) A description of your future career goals, discussing how a PhD from our department will help further these goals. (1-2 pages)
6. Application Fee
7. Non-native speakers of English must meet the English proficiency requirements for employment as a GTA/GRA: minimum TOEFL (iBT) SPEAKING score of 22, AND all other part scores at least 20; or IELTS SPEAKING score of 8, with no other part score below 5.5. Scores must be less than 2 years old from the time of initial enrollment.

More information can be found here: http://graduate.ku.edu/english-proficiency-requirements.

GRE scores are not required for your application. You may submit your official GRE scores if you feel it will help the admissions committee better understand your academic capabilities. But electing not to submit scores will not impact your chance of admission.

Complete applications received by December 1st are reviewed by the Molecular Biosciences graduate admissions committee. Admission into our program is competitive, and we receive a large number of applications each year. Our holistic evaluation is based on several criteria, including grades, the strength of recommendation letters, previous research experience, and the fit of your career goals with our educational program. Students will be informed of admission decisions early in the new year, admissions decisions are finalized by April 15, and newly admitted students matriculate in August.

All supporting documentation should be uploaded online when you apply. If this is not possible, please send documentation to:

John Connolly
Graduate Program Coordinator
The University of Kansas
Department of Molecular Biosciences
Haworth Hall
1200 Sunnyside Ave., Room 2034
Lawrence, KS 66045-7566
Ph.D. Degree Requirements

Biochemistry and Biophysics

General requirements for all Molecular Biosciences Ph.D. Students

1. Complete a common first-year curriculum (see below). This includes BIOL 804, which satisfies the responsible scholarship requirement, and BIOL 818, which satisfies the research skills requirement.

2. From the start of the second year of graduate study, enroll every semester in one of the following courses: BIOL 701 CELLULAR and MOLECULAR PROTEINS or BIOL 905 ADVANCED MOLECULAR GENETICS.

3. Complete a minimum of two semesters of GTA teaching during the program.

4. Establish a graduate advisory committee during the first semester of the second year of graduate study. This committee must meet a minimum of once per year; Annual committee meetings are mandatory.

5. Enroll in BIOL 925 RESEARCH GRANT PROPOSAL PREPARATION during the second year of graduate study to help prepare the proposal required for the orals examination.

6. Have a graduate advisory committee meeting that includes all members of the committee and the mentor during (or before) December of the second year of graduate study. Prior to this meeting the student must submit a summary of the specific aims of the orals proposal to the committee and the mentor. At this meeting the aims will be discussed and approved, possibly after modification in light of the discussion. Once approved the student will prepare the full proposal for the Comprehensive Orals Examination.

7. Submit a full draft of the proposal to the "readers" (the mentor, the Chair of the Orals committee, and one other member of the committee) by the end of March of the second year of graduate study.

8. Schedule the Comprehensive Orals Examination between May 1 and June 30 of the second year of graduate study.

9. Generate a dissertation based on original research, provide this document for evaluation by the dissertation examination committee, and also present the research in a formal, public oral presentation.

10. Complete the degree within seven years. Exceptions to this requirement require a recommendation from the Director of Graduate Studies.

First-year curriculum for Molecular Biosciences PhD Students

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 701</td>
<td>Topics in: ____ (Molecular Biosciences Seminar.</td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>Enroll in both Fall and Spring semester of the first year.)</td>
<td></td>
</tr>
<tr>
<td>BIOL 804</td>
<td>Scientific Integrity: Molecular Biosciences</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 807</td>
<td>Graduate Molecular Biosciences</td>
<td>6</td>
</tr>
<tr>
<td>BIOL 818</td>
<td>Techniques in Molecular Biosciences</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 985</td>
<td>Advanced Study (fall and spring semester)</td>
<td>1-10</td>
</tr>
</tbody>
</table>

Specific Ph.D. Requirements: Biochemistry and Biophysics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 750</td>
<td>Advanced Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 901</td>
<td>Graduate Seminar in Biochemistry and Biophysics (one semester)</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 918</td>
<td>Modern Biochemical and Biophysical Methods</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 952</td>
<td>Introduction to Molecular Modeling</td>
<td>3</td>
</tr>
</tbody>
</table>

Note that the graduate advisory committee may recommend that additional courses be taken.

Microbiology

General Requirements for all Molecular Biosciences Ph.D. Students

1. Complete a common first-year curriculum (see below). This includes BIOL 804, which satisfies the responsible scholarship requirement, and BIOL 818, which satisfies the research skills requirement.

2. From the start of the second year of graduate study, enroll every semester in one of the following courses: BIOL 701 CELLULAR and MOLECULAR PROTEINS or BIOL 905 ADVANCED MOLECULAR GENETICS.

3. Complete a minimum of two semesters of GTA teaching during the program.

4. Establish a graduate advisory committee during the first semester of the second year of graduate study. This committee must meet a minimum of once per year; Annual committee meetings are mandatory.

5. Enroll in BIOL 925 RESEARCH GRANT PROPOSAL PREPARATION during the second year of graduate study to help prepare the proposal required for the orals examination.

6. Have a graduate advisory committee meeting that includes all members of the committee and the mentor during (or before) December of the second year of graduate study. Prior to this meeting the student must submit a summary of the specific aims of the orals proposal to the committee and the mentor. At this meeting the aims will be discussed and approved, possibly after modification in light of the discussion. Once approved the student will prepare the full proposal for the Comprehensive Orals Examination.

7. Submit a full draft of the proposal to the "readers" (the mentor, the Chair of the Orals committee, and one other member of the committee) by the end of March of the second year of graduate study.

8. Schedule the Comprehensive Orals Examination between May 1 and June 30 of the second year of graduate study.

9. Generate a dissertation based on original research, provide this document for evaluation by the dissertation examination committee, and also present the research in a formal, public oral presentation.

10. Complete the degree within seven years. Exceptions to this requirement require a recommendation from the Director of Graduate Studies.

First-year curriculum for all Molecular Biosciences PhD Students

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<tr>
<th>Code</th>
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<th>Hours</th>
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<tr>
<td>BIOL 701</td>
<td>Topics in: ____ (Molecular Biosciences Seminar.</td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>Enroll in both Fall and Spring Semester of the first year.)</td>
<td></td>
</tr>
</tbody>
</table>
BIOL 804  Scientific Integrity: Molecular Biosciences  1
BIOL 807  Graduate Molecular Biosciences  6
BIOL 818  Techniques in Molecular Biosciences  2
BIOL 985  Advanced Study (fall and spring semester)  1-10

Specific Ph.D. Requirements: Microbiology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 811</td>
<td>Advanced Molecular and Cellular Immunology</td>
<td></td>
</tr>
<tr>
<td>BIOL 812</td>
<td>Mechanisms of Host-Parasite Relationships</td>
<td></td>
</tr>
<tr>
<td>BIOL 814</td>
<td>Advanced Molecular Virology</td>
<td></td>
</tr>
<tr>
<td>BIOL 815</td>
<td>Advanced Molecular Genetics</td>
<td></td>
</tr>
</tbody>
</table>

Note that the graduate advisory committee may recommend that additional courses be taken.

**Molecular, Cellular, and Developmental Biology**

**General Requirements for all Molecular Biosciences Ph.D. Students**

1. Complete a common first-year curriculum (see below). This includes BIOL 804, which satisfies the responsible scholarship requirement, and BIOL 818, which satisfies the research skills requirement.
2. From the start of the second year of graduate study, enroll every semester in one of the following courses: BIOL 701 Cellular and Molecular Proteins or BIOL 905 Advanced Molecular Genetics.
3. Complete a minimum of two semesters of GTA teaching during the program.
4. Establish a graduate advisory committee during the first semester of the second year of graduate study. This committee must meet a minimum of once per year; Annual committee meetings are mandatory.
5. Enroll in BIOL 925 Research Grant Proposal Preparation during the second year of graduate study to help prepare the proposal required for the orals examination.
6. Have a graduate advisory committee meeting that includes all members of the committee and the mentor during (or before) December of the second year of graduate study. Prior to this meeting the student must submit a summary of the specific aims of the orals proposal to the committee and the mentor. At this meeting the aims will be discussed and approved, possibly after modification in light of the discussion. Once approved the student will prepare the full proposal for the Comprehensive Orals Examination.
7. Submit a full draft of the proposal to the "readers" (the mentor, the Chair of the Orals committee, and one other member of the committee) by the end of March of the second year of graduate study.
8. Schedule the Comprehensive Orals Examination between May 1 and June 30 of the second year of graduate study.
9. Generate a dissertation based on original research, provide this document for evaluation by the dissertation examination committee, and also present the research in a formal, public oral presentation.
10. Complete the degree within seven years. Exceptions to this requirement require a recommendation from the Director of Graduate Studies.

**First-year curriculum for all Molecular Biosciences PhD Students**

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<td>BIOL 701</td>
<td>Topics in: _____ (Molecular Biosciences Seminar. Enroll in both Fall and Spring semester of the first year)</td>
<td>1-3</td>
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<td>BIOL 804</td>
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<td>BIOL 985</td>
<td>Advanced Study (fall and spring semester)</td>
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</tbody>
</table>

**Specific Ph.D. Requirements: Molecular, Cellular, and Developmental Biology**

In addition to those courses listed above, all MCDB PhD students are required to take a minimum of three (3) graduate-level courses (numbered 600 and above) that are collectively worth a minimum of nine (9) credits. All such classes must be completed by the end of the second year of graduate study. A number of acceptable classes are offered each year. Please see the graduate handbook for an up-to-date list of possible courses.