

# BIOLOGICAL SCIENCES - CELL BIOLOGY AND MOLECULAR GENETICS - PH.D.

College of Arts and Sciences  
Department of Biological Sciences  
www.kent.edu/biology/graduate

## About This Program

The Ph.D. degree in Biological Sciences - Cell Biology and Molecular Genetics is an individualized program of study and research that prepares students for career opportunities in teaching and research in academic, governmental and industrial settings. A core series of courses sets a rigorous foundation in theory, experimental design and technical knowledge of contemporary investigations at the cellular level of organization. Areas of research include developmental biology, cellular and developmental neuroscience, immunology, reproductive biology, cellular endocrinology and molecular genetics.

## Contact Information

- Program Coordinator: **Oscar Rocha** | bscigrad@kent.edu | 330-672-2297
- Connect with an Admissions Counselor: U.S. Student | International Student

## Program Delivery

- **Delivery:**
  - In person
- **Location:**
  - Kent Campus

## Examples of Possible Careers and Salaries\*

### Biological science teachers, postsecondary

- 9.3% much faster than the average
- 64,700 number of jobs
- \$85,600 potential earnings

### Biological scientists, all other

- 2.2% slower than the average
- 44,700 number of jobs
- \$85,290 potential earnings

### Medical scientists, except epidemiologists

- 6.1% faster than the average
- 138,300 number of jobs
- \$91,510 potential earnings

## Microbiologists

- 3.1% about as fast as the average
- 20,200 number of jobs
- \$84,400 potential earnings

\* Source of occupation titles and labor data comes from the U.S. Bureau of Labor Statistics' Occupational Outlook Handbook. Data comprises projected percent change in employment over the next 10 years; nation-wide employment numbers; and the yearly median wage at which half of the workers in the occupation earned more than that amount and half earned less.

For more information about graduate admissions, visit the graduate admission website. For more information on international admissions, visit the international admission website.

## Admission Requirements

- Bachelor's degree or higher from an accredited college or university
- Minimum 2.750 GPA on a 4.000-point scale
- Strong background in biology and related subjects such as chemistry and mathematics<sup>1</sup>
- Official transcript(s) - copies of official transcripts can be submitted for initial review of application
- Résumé or curriculum vitae
- Personal statement that clearly explains why the applicant wishes to pursue an advanced degree and describes research experience and interest; statement must include a list of potential faculty mentors
- Three letters of recommendation that comment on chance of success in an advanced degree program, with minimum one from someone who can comment on research aptitude
- English language proficiency - all international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning one of the following:
  - Minimum 587 TOEFL PBT score (paper-based version)
  - Minimum 94 TOEFL IBT score (Internet-based version)
  - Minimum 82 MELAB score
  - Minimum 7.0 IELTS score
  - Minimum 65 PTE score
  - Minimum 120 Duolingo English test score

<sup>1</sup> Student deficiencies in these areas at the time of admission shall be rectified during the first year of graduate study.

## Application Deadlines

- **Fall Semester**
  - Priority deadline: December 1

*Applications submitted by this deadline will receive the strongest consideration for admission.*

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements</b>		
BSCI 70104	BIOLOGICAL STATISTICS <sup>1</sup>	4
BSCI 70142	BIOENERGETICS	3
BSCI 70143	EUKARYOTIC CELL BIOLOGY	3

BSCI 70144	SELECTED READINGS IN EUKARYOTIC CELL BIOLOGY	1
BSCI 70184	RESPONSIBLE CONDUCT IN RESEARCH AND TEACHING-BIOLOGICAL SCIENCES <sup>2</sup>	2
BSCI 70191	SEMINAR IN BIOLOGY (taken 2-4 times)	2-4
Additional Electives <sup>3</sup>		13-15
Student Seminar Presentation <sup>4</sup>		
<i>Culminating Requirement</i>		
BSCI 80199	DISSERTATION I <sup>5</sup>	30
<b>Minimum Total Credit Hours for Post-Baccalaureate Students</b>		<b>90</b>
<b>Minimum Total Credit Hours for Post-Master's Students</b>		<b>60</b>

<sup>1</sup> Students may substitute a different graduate-level statistics course for BSCI 70104, if deemed appropriate by the students' advisor/guidance committee.

<sup>2</sup> Students are required to take BSCI 70184 their first semester (or the following fall semester for those starting their studies in the spring semester).

<sup>3</sup> Students are to select courses in consultation with their academic faculty advisor. It is recommended that students enroll in BSCI 70195 for selected current topics. Additional coursework should provide the necessary skills and/or knowledge base to aid in the completion of the student's research project and be beneficial for their professional development.

<sup>4</sup> Students are required to present at least one departmental seminar about their work.

<sup>5</sup> Doctoral candidates, upon admission to candidacy, must register for BSCI 80199 for a total of 30 hours. It is expected that doctoral candidates will continuously register for BSCI 80199, and thereafter BSCI 80299, each semester, until all requirements for the degree have been met. It is expected that candidates will present the results of their research in a defense open to students and faculty, at which the dissertation will be presented and defended before the dissertation committee, with not more than one negative vote, in order to be recommended to the Department of Biological Sciences and the College of Arts and Sciences for degree conferral.

## Graduation Requirements

Students entering the program with a bachelor's degree must complete a minimum 20 credit hours of graduate courses beyond BSCI 80198 toward their degree. Students entering the program with a master's degree should consult with their guidance committee to determine how many courses are required.

### Candidacy for the Degree

Following completion of the candidacy exam, doctoral students must successfully prepare, present and defend a formal prospectus of the research project before the dissertation committee.

**Candidacy Exams:** Students are admitted to doctoral candidacy following successful completion of both written and oral candidacy examinations. These exams are based on prior coursework and coursework taken in this graduate program as determined by students' academic Guidance Committee, which must consist of at least three eligible faculty members. The advisor(s) and a majority of members of the Guidance Committee must be members of the appropriate graduate program. This committee is responsible for determining the student's academic curriculum and for administering the candidacy exams. Following successful completion of

candidacy exams, students register for dissertation - BSCI 80199 for two semesters and, thereafter, for BSCI 80299 continually until complete.

**Prospectus:** Following completion of the candidacy exam, doctoral students must successfully prepare, present and defend a formal prospectus of the research project before their dissertation committee.

**Dissertation and Final Defense:** Doctoral candidates must complete a dissertation. It is expected that candidates will present the results of their research in a defense open to students and faculty, during which they will present and defend their dissertation before their dissertation committee, with not more than one negative vote, in order to be recommended to the department and College of Arts and Sciences for degree conferral

## Program Learning Outcomes

Graduates of this program will be able to:

1. Understand advanced biological concepts beyond the scope of the typical undergraduate degree and increase the depth of their knowledge through coursework and hands-on experiences.
2. Apply scientific principles and appreciate work outside of their particular field.
3. Effectively communicate about science with colleagues as well as those outside of the student's area of expertise.
4. Develop the necessary laboratory skills that will allow testing of hypotheses.