

# BIOMEDICAL SCIENCES - CELLULAR AND MOLECULAR BIOLOGY - M.S.

College of Arts and Sciences  
School of Biomedical Sciences  
www.kent.edu/biomedical

## About This Program

The Biomedical Sciences - Cellular and Molecular Biology M.S. program is designed for students who are passionate about biomedical research and want to develop advanced skills in cellular and molecular biology. With a focus on hands-on research, you will gain practical experience in laboratory techniques and data analysis, preparing you for a career in research, academia or industry. Read more...

## Contact Information

- Director: **John Johnson** | BMS@kent.edu | 330-672-3849
- Connect with an Admissions Counselor: U.S. Student | International Student

## Program Delivery

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

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 from an accredited college or university
- Minimum 2.750 undergraduate GPA on a 4.000-point scale
- Academic preparation adequate to perform graduate work in the desired field (recommended courses in chemistry, cell biology, genetics and biochemistry)
- Official transcript(s)
- Curriculum vitae/résumé
- Goal statement (applicants should describe their research experience and goals in pursuing an advanced degree)
- Three letters of recommendation
- 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 600 TOEFL PBT score
  - Minimum 100 TOEFL IBT score
  - Minimum 85 MELAB score
  - Minimum 7.0 IELTS score
  - Minimum 68 PTE score
  - Minimum 120 Duolingo English score

## Application Deadlines

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

Applications submitted after this deadline will be considered on a space-available basis.

## Program Requirements

### Major Requirements

Code	Title	Credit Hours
<b>Major Requirements</b>		
ANTH 68637 or BSCI 60104 or PSYC 61651	BIOANTHROPOLOGICAL DATA ANALYSIS I BIOLOGICAL STATISTICS QUANTITATIVE STATISTICAL ANALYSIS I	3-5
BMS 61001	INTRODUCTION TO BIOMEDICAL SCIENCES	1
BMS 61000	RESPONSIBLE CONDUCT OF RESEARCH	1
Electives <sup>1</sup>		12-15
<b>Culminating Requirement</b>		
BMS 60199	THESIS I	6
<b>Concentrations</b>		
Choose from the following:		6
Cellular Biology and Structure		
Molecular Biology and Genetics		
<b>Minimum Total Credit Hours:</b>		<b>32</b>

<sup>1</sup> Elective courses and research must be approved by the student's thesis committee.

## Cellular Biology and Structure Concentration Requirements

Code	Title	Credit Hours
<b>Concentration Requirements</b>		
BSCI 50142	BIOENERGETICS	3
BSCI 50143	EUKARYOTIC CELL BIOLOGY	3
<b>Minimum Total Credit Hours:</b>		<b>6</b>

## Molecular Biology and Genetics Concentration Requirements

Code	Title	Credit Hours
<b>Concentration Requirements</b>		
BSCI 50143 or BSCI 50158 or CHEM 60254	EUKARYOTIC CELL BIOLOGY MOLECULAR BIOLOGY BIOMEMBRANES	3
Electives		3
<b>Minimum Total Credit Hours:</b>		<b>6</b>

## Graduation Requirements

- Minimum 17 credit hours of overall hours must be letter graded (required and elective courses).

## Program Learning Outcomes

Graduates of this program will be able to:

1. Publish their research in peer-reviewed journals.
2. Demonstrate the ability to teach undergraduate students.
3. Seek employment in fields that reflect their area of training.

## Full Description

The Master of Science degree in Biomedical Sciences–Cellular and Molecular Biology prepares creative research scientists for careers in teaching, research and biotechnology. Graduates possess an in-depth comprehension of experimental design at the cellular and molecular levels of biological organization, as well as competency in current techniques in the discipline. Major research emphases include signal transduction, biochemistry and pathobiology, gene regulation, cell systems biology, cell and tissue ultrastructure, membrane structure and function, molecular aspects of neurobiology and endocrinology, genetics and metabolism of microorganisms, virology and immunology and enzymology with an emphasis on protein dynamics and folding, as well as cytochrome P-450s.

The M.S. degree in Biomedical Sciences–Cellular and Molecular Biology is offered in consortium with the Cleveland Clinic and Northeast Ohio Medical University (NEOMED). Program faculty are drawn from several departments at Kent State and the other two institutions. Additional participant faculty are located at area clinical facilities and hospitals. This multi-departmental and inter-institutional structure gives master's student access to the talents of a broadly diverse research faculty, as well as significant research facilities and resources.

The Biomedical Sciences–Cellular and Molecular Biology major comprises the following concentrations:

- Cellular Biology and Structure
- Molecular Biology and Genetics