

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

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

## Contact Information

- Director: **John Johnson** | jjohns72@kent.edu | 330-672-3849
- Chat with an Admissions Counselor

## Fully Offered

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

## Admission Terms

- Fall

## 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.

Program faculty are drawn from several departments at Kent State University, Cleveland Clinic Foundation and Northeast Ohio Medical University (NEOMED). 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 M.S. degree in Biomedical Sciences–Cellular and Molecular Biology is offered in consortium with the Cleveland Clinic and Northeast Ohio Medical University.

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

- Cellular Biology and Structure
- Molecular Biology and Genetics

## 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 (typically two years of chemistry, one year of mathematics, one year of physics and courses in anthropology, biology and/or psychology)
- Official transcript(s)
- GRE scores (*effective for spring 2023 admissions, the GRE will no longer be required*)
- Goal statement
- 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 (paper-based version)
  - Minimum 100 TOEFL IBT score (Internet-based version)
  - Minimum 85 MELAB score
  - Minimum 7.0 IELTS score
  - Minimum 68 PTE score
  - Minimum 120 Duolingo English test score

Admission with deficiencies may be accorded, but these must be made up during the first two years of graduate study. For more information about graduate admissions, visit the graduate admission website. For more information on international admission, visit the Office of Global Education's admission website.

## 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

## Program Requirements

### Major requirements

Code	Title	Credit Hours
<b>Major Requirements</b>		
ANTH 68637	BIOANTHROPOLOGICAL DATA ANALYSIS I	3-5
or BSCI 60104	BIOLOGICAL STATISTICS	
or PSYC 61651	QUANTITATIVE STATISTICAL ANALYSIS I	
BMS 61001	INTRODUCTION TO BIOMEDICAL SCIENCES	1
BMS 61000	RESPONSIBLE CONDUCT OF RESEARCH	1
Electives <sup>1</sup>		12-15
<i>Culminating Requirement</i>		
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	EUKARYOTIC CELL BIOLOGY	3
or BSCI 50158	MOLECULAR BIOLOGY	
or CHEM 60254	BIOMEMBRANES	
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).