

# BIOMOLECULAR SCIENCE

Kathie Towler, Regents Science 260

507-786-3100

towler2@stolaf.edu

wp.stolaf.edu/bmols/biomolecular-science

Biomolecular science explores the interface between the traditional disciplines of biology and chemistry. Students who meet the requirements of the concentration have the opportunity to have their degree accredited by the American Society for Biochemistry and Molecular Biology.

## Overview of the Concentration

The concentration in biomolecular science will appeal to any student who is seeking an understanding of the core sciences of biology and chemistry but wishes to pursue an integrated selection of upper-level courses or to apply the study of biology and chemistry to a different major. An experiential learning component takes biomolecular science out of the traditional classroom and enables students to explore its applications in the laboratory.

## Intended Learning Outcomes for the Concentration

## Requirements

### Requirements for the Concentration

Code	Title	Credits
<b>The following core courses must be completed:</b>		
BIO 150	Evolutionary Foundations of Biodiversity	1.00
BIO 227	Cell Biology	1.00
BIO 233	Intermediate Genetics	1.00
CHEM 122	Introductory Chemistry	1.00
or CHEM 125	Structural Chemistry and Equilibrium	
CHEM 126	Energies and Rates of Chemical Reactions	1.00
CHEM 247 & CHEM 253	Organic Chemistry I and Synthesis Laboratory I (0.25)	1.25
CHEM 248 & CHEM 254	Organic Chemistry II and Synthesis Laboratory II (0.25)	1.25
CHEM 379 & CHEM 373	Biochemistry I and Laboratory Research in Biochemistry (0.25)	1.25

### Experiential Learning Component

Participation in an experiential learning component (see below)

### Electives

Select at least two level III electives from the following: 2.00

BIO 315	Principles of Bioinformatics
BIO 324	Evolutionary Genetics
BIO 364	Molecular Biology
BIO 372	Developmental Biology

BIO 382	Immunology
BIO 383	Evolutionary Biology
BIO 391	Selected Topics (when appropriate, by petition)
CHEM 384	Bioanalytical Chemistry
CHEM 385	Biochemistry II
CHEM 391	Selected Topics in Chemistry (when taught as Biophysical Chemistry)

Students are encouraged to consult with their advisor and the program director about the appropriate physics and mathematical sequences for their interests as well as appropriate complementary courses.

## Experiential Learning Component

Participation in an experimentally based research experience or employment that takes biomolecular sciences beyond the traditional classroom is required of each concentrator. This can occur either on- or off-campus. This activity must be approved by the Biomolecular Science Director and presented to the biomolecular science community.

## Faculty

### Program Director, 2024-2025

#### Kim A. Kandl

Professor of Biology; Paul and Mildred Hardy Distinguished Professor of Science

cell biology; molecular biology; genetics

#### Douglas J. Beussman

Professor of Chemistry

analytical area - mass spectrometry; chemical instrumentation; proteomics; forensic science; bioanalytical

#### Lisa M. Bowers (on sabbatical 2024-25)

Associate Professor of Biology

microbiology; genetics; molecular biology; synthetic biology

#### Eric Cole

Professor of Biology

developmental biology; invertebrate zoology; cell biology

#### Jay A. Demas (on sabbatical 2024-25)

Associate Professor of Biology and Physics

neuronal biophysics; sensory circuits; retinal neurophysiology

#### Steven A. Freedberg

Professor of Biology

evolutionary biology; computer simulation modeling; bioinformatics

#### Cassandra Joiner

Assistant Professor of Chemistry

chemical biology and protein biochemistry

#### Laura L. Listenberger

Professor of Biology and Chemistry

lipid biochemistry; cell and molecular biology

#### Greg W. Muth (on sabbatical 2024-25)

Associate Professor of Chemistry

biochemistry

**Jeff J. Schwinefus**

Professor of Chemistry; Edolph A. Larson and Truman E. Anderson, Sr.  
Chair of Chemistry  
physical and biophysical chemistry