

# Biochemistry and Molecular Biology

## *Interdisciplinary*

The intersection of chemistry and biology provides a creative focus for understanding the molecular processes of life. Kenyon's biology and chemistry departments administer an interdisciplinary program offering two majors, biochemistry and molecular biology. Each major combines courses from both departments.

### DEPARTMENT OF BIOLOGY

**Wade H. Powell**, Codirector, Associate Professor

**Kathryn L. Edwards**, Professor

**M. Siobhan Fennessy**, Professor

**Christopher M. Gillen**, Professor

**E. Raymond Heithaus**, Jordan Professor of Environmental Science

**Patricia A. Heithaus**, Instructor

**Karen A. Hicks**, Associate Professor

**Haruhiko Itagaki**, Professor (on leave)

**Andrew J. Kerkhoff**, Assistant Professor of Biology and Mathematics

**Robert A. Mauck**, Associate Professor

**Joan L. Slonczewski**, Professor

### DEPARTMENT OF CHEMISTRY

**Yutan D.Y.L. Getzler**, Codirector, Assistant Professor

**Scott D. Cummings**, Associate Professor (on leave)

**Simon P. Garcia**, Assistant Professor

**Sheryl A. Hemkin**, Associate Professor

**John E. Hofferberth**, Assistant Professor; Harvey F. Lodish Faculty Development Professor

**Mo Hunsen**, Associate Professor

**Kerry A. Lucas**, Assistant Professor

**James S. Keller**, Associate Professor

**Dudley G. Thomas**, Director of Chemistry Labs

**THE CURRICULUM**

The biochemistry major provides a chemistry-based curriculum with a significant biology component. The molecular biology major combines a substantial chemistry background with detailed studies in cellular and molecular biology. Both majors prepare students for postgraduate studies in biomedical sciences.

An oversight committee for biochemistry and molecular biology, composed of faculty members from the chemistry and biology departments, administers the program and determines requirements for the Senior Exercise and for the Honors Program. Students interested in these majors should contact either of the program codirectors, Wade Powell or Yutan Getzler.

**REQUIREMENTS FOR THE MAJORS**

The biochemistry major and the molecular biology major have many requirements in common. In addition, each of the majors has its own set of required courses.

**Courses Required for BOTH Majors (5.75 units)**

All 100- and 200-level courses on this list must be completed by the end of junior year.

- BIOL 115 Energy in Living Systems (.5 unit)
- BIOL 116 Information in Living Systems (.5 unit)
- CHEM 121 or 122, and 124 or 125; Introductory Chemistry (1 unit)
- CHEM 123 and 126; Introductory Chemistry Lab (.5 unit)
- CHEM 231,232 Organic Chemistry (1 unit)
- CHEM 233,234 Organic Chemistry Lab (.5 unit)
- CHEM 256 Biochemistry (.5 unit)
- BIOL 263 Molecular Biology and Genomics (.5 unit)
- BIOL 264 Gene Manipulation (lab) (.25 unit)
- CHEM 335 Chemical Kinetics and Thermodynamics (.5 unit)

**Additional Courses Required for the Major in Biochemistry (1.75 units)**

In addition to the requirements listed above (under courses required for both majors), students majoring in biochemistry must complete the following courses:

- CHEM 341 Instrumental Analysis (.5 unit)
- CHEM 371 Advanced Laboratory, Biochemistry (.25 unit)
- Two advanced lab courses from: CHEM 372, 373, 374, and 375 (.5 units of CHEM 375 must be completed to count as an advanced lab )
- One course from: BIOL 109Y-110Y, 233, 238, 245, 255, 266, 321, 333, 358, 366, or 375 (.5 unit)
- The Senior Exercise, under the supervision of the Department of Chemistry

**Additional Courses Required for the Major in Molecular Biology (1.75 units)**

In addition to the requirements listed above (under courses required for both majors), students majoring in molecular biology must complete the following courses:

- BIOL 109Y-110Y Introduction to Experimental Biology (.5 unit)

- Two additional lecture/discussion courses in biology at the 200- or 300-level (1 unit). At least one course must be taken from the “cellular and molecular biology” category (BIOL 238, 255, 266, 321, 333, 366, 375)
- One advanced laboratory from: BIOL 234, 239, 256, 267, 322, 346, 367, or CHEM 371 (.25 unit)
- The Senior Exercise, under the supervision of the Department of Biology

**SENIOR EXERCISE**

Students majoring in biochemistry perform the Senior Exercise under the supervision of the Department of Chemistry. Molecular biology majors perform the Senior Exercise with the Department of Biology. For details, please refer to each department's Senior Exercise requirements listed in the course catalog.

**HONORS**

Honors thesis projects may be conducted under the direct supervision of a faculty member in either department (biology or chemistry) for either major (molecular biology or biochemistry).

**PLANNING FOR THE GRE**

Majors planning to take the GRE in molecular biology should consider selecting BIOL 266 as an elective.