

MICROBIOLOGY

Did you know that microbes make up 60 percent of the earth's biomass? And they were likely the first form of life on earth, predating plants and animals by more than three billion years. Microbiologists study the role of bacteria, fungi, and viruses in our world. One of their key goals is to find new ways to use microbes, such as engineering bacteria to produce cancer drugs or clean up toxic waste sites.

Your future in the biological sciences

There couldn't be a better time to major in the biological sciences. Advances in genomics and related applications in biotechnology are dramatically increasing demand for biological scientists in the work force. According to the 2002 edition of *Jobs Rated Almanac*, biological scientists top a list of 250 occupations ranked by earnings potential and job prospects. The report is based on statistics from the U.S. Department of Labor, the census, professional organizations, and surveys.

Many students who earn bachelors degrees in the biological sciences go on to graduate school to pursue research and academic careers, or to a health science professional school. An increasing number, however, are employed by the biotechnology industry.

The CBS Career Center provides students with information about career planning.

Curriculum

Students majoring in microbiology take an advanced microbiology class and six upper division electives. These include two advanced laboratory courses, one of which can be directed research. Topics for electives and advanced lab courses include physiology of bacteria, microbial ecology, immunology, biology of viruses, medical microbiology, and applied microbial biochemistry.

All CBS students are required to take a year each of calculus, general chemistry, and physics along with coursework in general biology and organic chemistry. Students also take courses in organismal biology, cell biology, ecology, and evolution. There are lots of choices that satisfy these requirements, so students may select courses that relate to their interests.

The curriculum is designed to integrate a strong basic research program with traditional and innovative classroom teaching and mentoring.



Meet Sara Vetter, microbiology major

Sara Vetter, who grew up in Janesville, Wisconsin, has always liked biology. And ever since a high school microbiology class, she's been fascinated by the world of creatures that she discovered under a microscope.

Sara chose the University of Minnesota because it's a big school that offers lots of academic opportunities and because she liked the small-school feel of the College of Biological Sciences.

"CBS has small and large school advantages," she says.

As a microbiology major, Sara became interested in infectious diseases. Her adviser, Leslie Schiff, helped her arrange an internship at the Minnesota Department of Health, where Sara did research on the mechanism that enables *Bordetella pertussis* to resist antibiotics.

Sara plans to enter the University's graduate program in microbiology, immunology, and cancer biology to prepare for a teaching and research career.

Research opportunities

As part of a large public research university, the College of Biological Sciences offers a wealth of opportunities for hands-on research experience. This gives the college a distinct advantage over small private colleges. There are more than 1,200 life sciences faculty on the Minneapolis and St. Paul campuses, and as many kinds of research to experience. Most CBS students complete



a directed research project guided by a faculty member. Projects are done for credits that apply toward the major. Students may also volunteer to assist with faculty research projects or gain experience by working as paid lab technicians.

Administration

The microbiology major is administered by the Department of Microbiology. For more information about the department, visit <http://www.microbiology.med.umn.edu/>.

The CBS advantage

Here are some of the advantages offered by the College of Biological Sciences:

- The University of Minnesota is ranked among the top three public research universities in the U.S.
- Molecular and Cellular Biology is one of the University's five designated priorities.
- Many classrooms and instructional laboratories for undergraduates are located in the new \$80 million Molecular and Cellular Biology Building.
- CBS is a gateway to the Academic Health Center, which trains health professionals in medicine, pharmacy, dentistry, veterinary medicine, public health, and nursing.
- CBS operates two outstanding sites for field biology: Cedar Creek Natural History Area and Lake Itasca Forestry and Biological Station.
- Although CBS offers the advantages of access to a large public university, with 1,300 students it retains a small-college atmosphere.
- CBS offers a number of special programs to help students make a successful transition to college life and to meet other students.

For more information

If you are interested in visiting CBS, call the University of Minnesota Visit Office at 612-625-0000 or 1-800-752-1000


For more information about admissions, including an application, contact the Office of Admissions at <http://admissions.tc.umn.edu> or 612-625-2008; toll-free 800-752-1000; TTY 612-625-9051.

Twin Cities campus information is available on the Web at www.umn.edu/tc. The Undergraduate Catalog is available at www.umn.edu/commpub. To request a copy of the Undergraduate Catalog, call University Bookstores, 800-442-8636.

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