

# MICROBIOLOGY, B.S. (CALS)

The smallest living things – including bacteria, viruses, and yeast—may not be visible to the human eye, but they have big effects on health, food, medicine, energy, and the environment. These tiny organisms, called microbes, were the first life forms on Earth and continue to influence the planet in significant ways. Microbiomes—communities of microbes—are increasingly studied by researchers focusing on human health, global warming, infectious disease, environmental remediation, bioenergy, and much more.

The microbiology major prepares students for modern research in microbiology, with a heavy emphasis on practical laboratory experiences. Students learn the cellular biology, genetics, ecology, evolution, and physiology of microbes. Through courses, students learn laboratory techniques—gaining the type of hands-on experiences with modern equipment that employers and graduate and professional schools seek. Additionally, students can conduct mentored and independent research projects in faculty laboratories where they will learn to critically evaluate scientific data, carry out laboratory experiments, and communicate scientific information.

Microbiology majors graduate prepared for careers in biotechnology, education, healthcare, information technology, and food safety. Many students pursue graduate and professional studies, including medical school, dental school and biological sciences PhD programs.

## Learn through hands-on, real world experiences

With so many microbiologists on the faculty, students have numerous opportunities to conduct research in faculty labs. As one of the largest research buildings on campus, students have access to state-of-the-art facilities and are able to conduct cutting edge experiments using novel techniques that few other undergraduate programs allow. Through a senior-year capstone course, students conduct research under the direction of a professor or as part of class projects that have included culturing microbes from the gut of hibernating ground squirrels, comparing bacteria from the mouths of athletes and non-athletes, and culturing microbes found in deep sea vents. This kind of hands-on experience distinguishes microbiology majors from other graduates and enhances the real-world skills that are valued by post-secondary schools and employers.

## Build community and networks

Through the Microbiology Club, students establish study groups, explore careers, and teach others on campus and in the community about microbiology. Through events like cheese, yogurt, and kombucha making, the club offers opportunities for community-building both within the program and with the broader university community. This student organization is the official American Society of Microbiology undergraduate chapter for the UW–Madison and provides annual travel and research awards to outstanding students.

## Customize a path of study

Core courses focus on the diversity, genetics, biochemistry, and physiology of microorganisms. A variety of elective courses provide the opportunity to study environmental microbiology, food microbiology, microbial pathogenesis, immunology, virology, microbiomes, microbial biotechnology, and public health, as well as advanced topics in

microbial genetics and physiology. Students may also pursue Honors in Microbiology.

## Make a strong start

All courses in the program, including entry level courses, are taught by faculty who specialize in teaching microbiology.

## Gain global perspective

Majors can also choose from a variety of study abroad programs including short-term field experiences, summer research opportunities and semester-long exchange programs at top universities around the world. A study abroad program in Thailand specifically tailored for microbiology majors is frequently offered and led by microbiology faculty from UW–Madison. Students can explore studying abroad as a Microbiology major by utilizing the Microbiology Major Advising Page. Students work with their advisor and the CALS study abroad office to identify appropriate programs.

## HOW TO GET IN

Incoming or current students in good academic standing may declare the microbiology major at any time.

Schedule an appointment with a microbiology major advisor to discuss how to declare the major, appropriate coursework to take, and much more. Please see the Advising and Careers tab for information on how to schedule an appointment with a microbiology major advisor.

## REQUIREMENTS

### UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduestudytext>) section of the *Guide*.

#### General Education

- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A & Part B \*
- Ethnic Studies \*
- Quantitative Reasoning Part A & Part B \*

\* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

## COLLEGE OF AGRICULTURAL AND LIFE SCIENCES REQUIREMENTS

In addition to the University General Education Requirements, all undergraduate students in CALS must satisfy a set of college and major requirements. Courses may not double count within university requirements (General Education and Breadth) or within college requirements (First-Year Seminar, International Studies, Science, and Capstone), but courses counted toward university requirements may also be used to satisfy a college and/or a major requirement; similarly, courses counted toward college requirements may also be used to satisfy a university and/or a major requirement.

### COLLEGE REQUIREMENTS FOR ALL CALS B.S. DEGREE PROGRAMS

Code	Title	Credits
Quality of Work: Students must maintain a minimum cumulative grade point average of 2.000 to remain in good standing and be eligible for graduation.		
Residency: Students must complete 30 degree credits in residence at UW–Madison after earning 86 credits toward their undergraduate degree.		
First Year Seminar ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses</a> )		1
International Studies ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSThirdYearSeminarCourses</a> )		3
Physical Science Fundamentals		4-5
CHEM 103	General Chemistry I	
or CHEM 108	Chemistry in Our World	
or CHEM 109	Advanced General Chemistry	
Biological Science		5
Additional Science (Biological, Physical, or Natural)		3
Science Breadth (Biological, Physical, Natural, or Social)		3
CALS Capstone Learning Experience: included in the requirements for each CALS major (see "Major Requirements") ( <a href="http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCapstoneRequirement">http://guide.wisc.edu/undergraduate/agricultural-life-sciences/#CALSCapstoneRequirement</a> )		

### REQUIREMENTS FOR THE MAJOR

Code	Title	Credits
<b>Mathematics</b>		
Complete one of the following:		5-10
MATH 171 & MATH 217	Calculus with Algebra and Trigonometry I and Calculus with Algebra and Trigonometry II	
MATH 221	Calculus and Analytic Geometry I	
<b>Statistics</b>		
Complete one of the following:		3
STAT 301	Introduction to Statistical Methods	
STAT 371	Introductory Applied Statistics for the Life Sciences	

#### General Chemistry

Complete one of the following:		5-10
CHEM 103 & CHEM 104	General Chemistry I and General Chemistry II	
CHEM 109	Advanced General Chemistry	
CHEM 115 & CHEM 116	Chemical Principles I and Chemical Principles II	

#### Organic Chemistry

Complete ALL of the following:		
CHEM 343	Organic Chemistry I	3
CHEM 344	Introductory Organic Chemistry Laboratory	2
CHEM 345	Organic Chemistry II	3

#### Biology Foundation

Complete one of the following:		10-13
BIOLOGY/ BOTANY/ ZOOLOGY 151 & BIOLOGY/ BOTANY/ ZOOLOGY 152	Introductory Biology and Introductory Biology <sup>1</sup>	
BIOCORE 381 & BIOCORE 382 & BIOCORE 383 & BIOCORE 384 & BIOCORE 485	Evolution, Ecology, and Genetics and Evolution, Ecology, and Genetics Laboratory and Cellular Biology and Cellular Biology Laboratory and Principles of Physiology <sup>1</sup>	
ZOOLOGY/ BIOLOGY 101 & ZOOLOGY/ BIOLOGY 102 & BOTANY/ BIOLOGY 130	Animal Biology and Animal Biology Laboratory and General Botany	

#### Physics

Select one of the following:		8-10
PHYSICS 103 & PHYSICS 104	General Physics and General Physics <sup>2</sup>	
PHYSICS 207 & PHYSICS 208	General Physics and General Physics <sup>2</sup>	
PHYSICS 201 & PHYSICS 202	General Physics and General Physics	

#### Biochemistry

Complete one of the following:		3-6
BIOCHEM 501	Introduction to Biochemistry	
BIOCHEM 507 & BIOCHEM 508	General Biochemistry I and General Biochemistry II	

#### Microbiology Courses

##### Microbiology Core (all required):

Except where noted, all Microbiology Core courses are offered every fall and spring semester.

MICROBIO 303	Biology of Microorganisms	3
MICROBIO 304	Biology of Microorganisms Laboratory	2
MICROBIO 305	Critical Analyses in Microbiology	1
MICROBIO 450	Diversity, Ecology and Evolution of Microorganisms	3

MICROBIO 470	Microbial Genetics & Molecular Machines	3
MICROBIO 526	Physiology of Microorganisms	3
MICROBIO 527	Advanced Laboratory Techniques in Microbiology (FALL ONLY)	2

*Microbiology Capstone (required):*

MICROBIO 551	Capstone Research Project in Microbiology (SPRING ONLY)	2
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*Microbiology Electives*

Complete at least 6 credits; at least 3 credits must come from Set A. Note that not all elective courses are offered every semester.

## Set A: 3-6

MICROBIO/ FOOD SCI 324	Food Microbiology Laboratory
MICROBIO/ FOOD SCI 325	Food Microbiology
MICROBIO 330	Host-Parasite Interactions
MICROBIO/ AN SCI/ BOTANY 335	The Microbiome of Plants, Animals, and Humans
MICROBIO 345	Introduction to Disease Biology
MICROBIO/SOIL SCI 425	Environmental Microbiology
MICROBIO 520	Planetary Microbiology: What Life Here Tells Us About Life Out There
MICROBIO/SOIL SCI 523	Soil Microbiology and Biochemistry
MICROBIO 525	Field Studies of Planetary Microbiology and Life in the Universe
MICROBIO/ ONCOLOGY 545	Topics in Biotechnology (topics vary by semester)
MICROBIO 607	Advanced Microbial Genetics
MICROBIO/ BIOCHEM/ GENETICS 612	Prokaryotic Molecular Biology
MICROBIO 626	Microbial and Cellular Metabolomics
MICROBIO 657	Bioinformatics for Microbiologists
MICROBIO/ BMOLCHEM 668	Microbiology at Atomic Resolution

## Set B: 0-3

BIOCHEM 570	Computational Modeling of Biological Systems
BIOCHEM/M M & I 575	Biology of Viruses
BIOCHEM 601	Protein and Enzyme Structure and Function
BOTANY 330	Algae
BOTANY/PL PATH 332	Fungi
BOTANY/ ENTOM/PL PATH 505	Plant-Microbe Interactions: Molecular and Ecological Aspects
CHEM 565	Biophysical Chemistry

COMP SCI/ B M I 576	Introduction to Bioinformatics
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F&W ECOL/SURG SCI 548	Diseases of Wildlife
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FOOD SCI 550	Fermented Foods and Beverages
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M M & I 301	Pathogenic Bacteriology
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M M & I 341	Immunology
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M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350	Parasitology
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M M & I 554	Emerging Infectious Diseases and Bioterrorism
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M M & I/POP HLTH 603	
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ONCOLOGY/ PL PATH 640	General Virology-Multiplication of Viruses
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PATH-BIO/ M M & I 528	Immunology
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PL PATH 622	Plant-Bacterial Interactions
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PL PATH/ BOTANY/ GENETICS/ M M & I 655	Biology and Genetics of Fungi
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**Total Credits 64-88****1**

(BIOLOGY/BOTANY/ZOOLOGY 151 and BIOLOGY/BOTANY/ZOOLOGY 152) or (BIOCORE 381 / BIOCORE 382 / BIOCORE 383 / BIOCORE 384 / BIOCORE 485) are recommended.

**2**

(PHYSICS 103 / PHYSICS 104) or (PHYSICS 207 / PHYSICS 208) are recommended.

## HONORS IN THE MAJOR

Students admitted to the university and to the College of Agricultural and Life Sciences are invited to apply to be considered for admission to the CALS Honors Program.

**Admission Criteria for New First-Year Students:**

- Complete program application including essay questions

**Admission Criteria for Transfer and Continuing UW-Madison Students:**

- UW-Madison cumulative GPA of at least 3.25
- Complete program application including essay questions

## HOW TO APPLY

The application is available on the CALS Honors Program website (<https://cals.wisc.edu/academics/undergraduate/current-students/honors-program/>). Applications are accepted at any time.

New first-year students with accepted applications will automatically be enrolled in Honors in Research. It is possible to switch to Honors in the Major in the student's first semester on campus after receiving approval from the advisor for that major. Transfer and continuing students may apply directly to Honors in Research or Honors in the Major (after approval from the major advisor).

REQUIREMENTS

All CALS Honors programs have the following requirements:

- Earn at least a cumulative 3.25 GPA at UW-Madison (some programs have higher requirements)
- Complete the program-specific requirements listed below
- Submit completed thesis documentation to CALS Academic Affairs

HONORS IN THE MAJOR IN MICROBIOLOGY: REQUIREMENTS

To earn Honors in the Major in Microbiology, students must satisfy the Requirements for the Major (above) as well as the following requirements. All courses used for Honors in the Major requirements must receive "B" or better grades to fulfill requirements.

- Earn a 3.300 overall university GPA.
- Earn a 3.300 GPA for all MICROBIO courses, and all courses accepted in the major.
- Complete a two-semester Senior Honors Thesis (MICROBIO 681 and MICROBIO 682) for 6 credits total and present research in a public forum. Students completing their senior honors theses in laboratories or departments outside of Microbiology may be able to count that thesis toward Honors in the Major.
- Complete at least 20 credits of any combination of the following coursework:
  - Honors courses that fulfill Requirements for the Major (see above); independent study and thesis credits do not count here.
  - Non-honors coursework credits from this list: CHEM 115, CHEM 311, CHEM 327, GENETICS 466, MATH 222, MATH 234. These courses do not need to be taken for honors to count.
- At least 10 of the 20 credits of coursework above must come from courses taken for honors from this Microbiology course list: MICROBIO 303, MICROBIO 304, MICROBIO/FOOD SCI 325, MICROBIO 330, MICROBIO/AN SCI/BOTANY 335, MICROBIO 345, MICROBIO/SOIL SCI 425, MICROBIO 450, MICROBIO 470, MICROBIO 526, MICROBIO 607, MICROBIO/BIOCHEM/GENETICS 612, MICROBIO 657, MICROBIO/BMOLCHEM 668.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree	To receive a bachelor's degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.
Residency	Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.
Quality of Work	Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

1. Develop a fundamental understanding of the principles of microbiology and the necessary skills for a professional career in microbiology
2. Apply the scientific method to questions. Formulate a hypothesis, gather data, and analyze that data to assess the degree to which their work supports the hypothesis.
3. Demonstrate proficiency in the techniques used in microbiology and an ability to critically analyze data and integrate ideas for problem solving
4. Access the primary and secondary literature and, in combination with their own findings, effectively communicate their ideas both orally and in written form.
5. Learn about and demonstrate personal and professional ethics.

FOUR-YEAR PLAN

FOUR-YEAR PLAN  
SAMPLE MICROBIOLOGY FOUR-YEAR PLAN

Freshman			
Fall	Credits	Spring	Credits
General Chemistry <sup>1</sup>	4-5	Gen Chem or Electives <sup>1</sup>	5
Math <sup>2</sup>	3	Math <sup>2</sup>	3-5
COMM-A	3	Electives <sup>3</sup>	6
First-Year Seminar	1		
Elective <sup>3</sup>	3		
14-15		14-16	
Sophomore			
Fall	Credits	Spring	Credits
CHEM 343	3	CHEM 344	2
Math <sup>2</sup>	3-5	CHEM 345	3
Intro Biology, Semester 4	5	Intro Biology, Semester 2 <sup>4</sup>	5
Elective <sup>3</sup>	3	Electives <sup>3</sup>	6
14-16		16	
Junior			
Fall	Credits	Spring	Credits
General Physics, Semester 1 <sup>5</sup>	4-5	General Physics, Semester 2 <sup>5</sup>	4-5
MICROBIO 303	3	MICROBIO 470	3
MICROBIO 304	2	BIOCHEM 501 <sup>7</sup>	3
MICROBIO 305	1	Research <sup>6</sup>	1-4
Research <sup>6</sup>	1-4	Electives (for major or other) <sup>3</sup>	0-4
Electives (to reach 15 crs) <sup>3</sup>	0-4		
11-19		11-19	
Senior			
Fall	Credits	Spring	Credits
MICROBIO 526	3	MICROBIO 450	3
MICROBIO 527	2	MICROBIO 551	2

Research <sup>6</sup>	1-4 Research <sup>6</sup>	1-4
Electives (for major or other) <sup>3</sup>	6-9 Electives (for major or other) <sup>3</sup>	7-10
<b>12-18</b>		<b>13-19</b>

**Total Credits 105-138****\***

Students planning to pursue graduate studies in a biological science are encouraged to take MATH 222, PHYSICS 201/ PHYSICS 202 or PHYSICS 207/PHYSICS 208, and BIOCHEM 507/BIOCHEM 508 (see Note 7). Also recommended: CHEM 565 Biophysical Chemistry and MICROBIO/BIOCHEM/GENETICS 612 Prokaryotic Molecular Biology.

**1**

Choose 1 of 3 sequences: (CHEM 103/CHEM 104) or CHEM 109 or (CHEM 115/CHEM 116). Students who take CHEM 109 and plan to attend medical or other professional schools are advised to take one additional inorganic course (CHEM 311 or CHEM 327).

**2**

Math course determined by placement scores. Microbiology majors must complete math through calculus (choose from MATH 171/MATH 217 or MATH 221), and statistics (choose from STAT 301 or STAT 371).

**3**

Electives can be scheduled according to the student's preference. Consult your advisor and the Requirements tab.

**4**

The three choices are 1) ZOOLOGY/BIOLOGY/BOTANY 151 and ZOOLOGY/BIOLOGY/BOTANY 152; 2) ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY 102 and BOTANY/BIOLOGY 130; or 3) Biocore. Biocore is a 3 to 4 semester sequence. Students must complete the first three lectures and the first two labs. The Biocore courses are BIOCORE 381, BIOCORE 382, BIOCORE 383, BIOCORE 384, BIOCORE 485, BIOCORE 486, BIOCORE 587.

**5**

Physics may be taken in year 1, 2, 3, or 4 depending on the student's schedule.

**6**

Undergraduate research courses include 299, 699, 681#682 (Honors Thesis), 691#692 (Thesis). Both semesters are required for thesis credit. Students are encouraged to take several semesters of research (internship opportunities, 399, are also encouraged).

**7**

If BIOCHEM 507 General Biochemistry I and BIOCHEM 508 General Biochemistry II are taken, both semesters must be completed (with the recommendation of BIOCHEM 507 in fall semester of year 3 and BIOCHEM 508 in spring semester of year 3).

## THREE-YEAR PLAN

This sample three-year plan is a tool to assist students and their advisor(s). Students should use it –along with their DARS report, the Degree Planner, and Course Search & Enroll tools – to make their own three-year plan based on their placement scores, credit for transferred courses and approved examinations, and individual interests.

Three-year plans may vary considerably from student to student, depending on their individual preparation and circumstances. Students interested in graduating in three years should meet with an academic

advisor early and often to discuss feasibility, appropriate course sequencing, post-graduation plans (careers, graduate school, etc.), and considerations they might make in pursuit of a three-year graduation plan.

While there are many advantages to attending four years of college, including making the most of research and study abroad opportunities, exploring alternative majors, completing additional majors and certificates, developing skills and interests through student groups, and personal growth, students may have reasons for wishing to graduate in fewer than four years.

The example plan assumes that students will:

- enter their freshman year with 20 advanced standing credits, including equivalency credit for MATH 221
- declare their major freshman year
- take two summer terms
- enroll in at least 15-16 credits in the fall/spring semesters

Code	Title	Credits
<b>Courses taken the summer before arriving on campus</b>		
INTER-AG 140	CALS QuickStart: Foundations	1
INTER-AG 141	QuickStart: Connect2Campus	1
<b>Total Credits:</b>		<b>2</b>

**First Year**

Fall	Credits	Spring	Credits	Summer	Credits
CHEM 103	4	CHEM 104	5	MICROBIO 303	3
Comm A Requirement	3	BIOLOGY/ BOTANY/ ZOOLOGY 151	5	MICROBIO 304	2
STAT 371 or 301	3	Elective	3		
Humanities breadth	3	Humanities breadth	3		
Social Science breadth	3				
<b>16</b>		<b>16</b>		<b>5</b>	

**Second Year**

Fall	Credits	Spring	Credits
CHEM 343	3	CHEM 345	3
BIOLOGY/ BOTANY/ ZOOLOGY 152	5	CHEM 344	2
MICROBIO 470	3	BIOCHEM 501	3
International Studies CALS requirement	3	MICROBIO 305	1
Elective	2	Elective <sup>2</sup>	3
		Ethnic Studies	3
<b>16</b>		<b>15</b>	

**Third Year**

Fall	Credits	Spring	Credits
MICROBIO 527	2	MICROBIO 551	2
MICROBIO 450	3	MICROBIO 526	3
PHYSICS 103 or 207	4-5	PHYSICS 104 or 208	4-5



Major Elective	3 Major Elective	3
Elective <sup>2</sup>	3 Elective <sup>2</sup>	3
<b>15-16</b>		<b>15-16</b>

**Total Credits 98-100**

Students must earn **120 total credits** to graduate, including accepted advanced standing or transfer credits. The above charts reflect 100-102 total credits from six fall/spring semesters and two summer terms, including courses taken in the summer before the first year.

**1**

The Microbiology major recommends QuickStart (INTER-AG 140 and INTER-AG 141) for the First-Year Seminar requirement. However, this requirement can be fulfilled through courses offered in Fall and Spring semester of the first year.

**2**

The Microbiology major encourages students with an interest in research to work with faculty through Independent Research courses as electives.

## ADVISING AND CAREERS

**Advising**

Each student is assigned a professional academic advisor who works to understand student goals and helps to craft a path that best suits their needs. Additionally, faculty provide students with ongoing professional and scientific mentorship. More than 60% of students in the major conduct faculty-directed research. With low ratios of students to faculty, students also receive additional faculty mentoring in the classroom.

Current UW–Madison students should use Starfish to schedule an appointment with an advisor in the Biochemistry & Microbiology Undergraduate Advising Hub (<https://biochemmicrobio.wisc.edu/>).

**Career opportunities**

Alumni hold professional positions as physicians, research scientists, public health officials, dentists, optometrists, physician assistants, physical therapists, master brewers, quality control officers, health inspectors, professors, and more.

Graduates are recognized for their skills in laboratory research and scientific communication – skills that are valued by potential employers and professional schools.

## PEOPLE

**RESEARCH FACULTY**

Daniel Amador-Noguez  
Karthik Anantharaman  
Jean-Michel Ané  
Briana Burton  
Kerri Coon  
Cameron R. Currie  
Timothy J. Donohue  
Katrina T. Forest (Chair)  
David Hershey  
Betül Kaçar  
Charles W. Kaspar  
Erica L-W Majumder

Katherine D. McMahon  
Charlie Mo  
Sabine Pellett  
Federico E. Rey  
Garret Suen  
Michael G. Thomas  
Jade Wang  
Karen M. Wassarman  
Jae-Hyuk Yu

**TEACHING FACULTY**

Melissa Christopherson  
Timothy D. Paustian  
Jon T. Roll  
Michelle R. Rondon  
Betty Slinger

**ACADEMIC ADVISORS**

Biochemistry & Microbiology Undergraduate Advising Hub (<https://biochemmicrobio.wisc.edu/advising/>)  
For more information, see the Department of Bacteriology directory (<https://bact.wisc.edu/people.php>).

## WISCONSIN EXPERIENCE

**A rich history of microbiology**

The UW–Madison is recognized as one of the birthplaces of Microbiology, as recognized by the American Society for Microbiology's *Milestones in Microbiology*. The UW–Madison is the first school to teach microbiology in the US and it is consistently ranked as one of the top public schools in the field.

**Research experience**

The majority of microbiology majors conduct research in a faculty-led research lab where they receive direct mentorship from professors, scientists, and graduate students. Because the UW–Madison has the highest concentration of microbiologists on any U.S. campus, students have many research options.

**Student organization**

The Microbiology Club is the undergraduate-led student chapter of the American Society of Microbiology. Follow them on Twitter at @MadisonMicrobio (<https://twitter.com/madisonmicrobio/>).

**Global engagement**

Microbiology majors can participate in several international academic experiences including short-term field experiences, summer research opportunities, and semester-long exchange programs at top universities around the world. The UW Microbiology and Public Health in Northern Thailand program occurs during the summer.

**Community engagement and volunteering**

Our students engage in numerous volunteer activities spearheaded by the Microbiology Club. This involves explaining microbiology and its impact during public educational events at UW–Madison. Many students also volunteer at local public schools to teach microbiology to elementary-aged students.

## RESOURCES AND SCHOLARSHIPS

Students in the College of Agricultural and Life Sciences receive more than \$1.25 million in scholarships annually. Learn more about college scholarships at <https://cals.wisc.edu/academics/undergraduate-students/financing-your-education/cals-scholarships/>

The Department of Bacteriology offers several scholarships to students in the Microbiology major. Awards are given annually and fund undergraduate research, provide travel stipends to microbiology students attending professional scientific conferences, or recognize outstanding graduating seniors. Learn more: <https://bs.microbiology.wisc.edu/awards-and-scholarships/>