

UNIVERSITY  
OF  
CALIFORNIA  
MERCED

SCHOOL OF  
NATURAL SCIENCES

I WILL

EXPLORE, CREATE, TRANSFORM





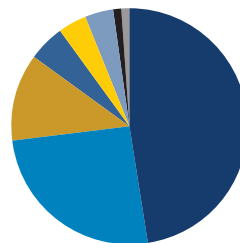
I WILL  
SEEK OUT ANSWERS

## WHAT IS EXCEPTIONAL ABOUT THE School of Natural Sciences?

At any given moment, a student in the School of Natural Sciences could be studying climate change ... conducting biological research ... testing a mathematical theory ... preparing for a career ...

The School of Natural Sciences places a high priority on increasing students' scientific literacy. Top-tier programs form the foundation for continued success in recruiting the best faculty members and inspiring students. Together they delve into such innovative topics as identifying mobile elements in bacteria, fighting disease, researching DNA sequencing and creating sustainable energy sources. Using the most technologically advanced equipment in state-of-the-art labs, students gain practical experience to match the foundation of theoretical knowledge amassed during their college careers.

As a student at the first American research university of the 21st century, you will be exposed to a unique learning environment with relatively small classrooms and a highly interdisciplinary atmosphere. With fewer than 7,500 undergraduate students, UC Merced provides a rare opportunity to have the advantages of a world-class public research university with the atmosphere of a small private college.



### SCHOOL OF NATURAL SCIENCES DIVERSITY

● CHICANO/LATINO	48%	● AFRICAN-AMERICAN	4%
● ASIAN	26%	● TWO OR MORE RACES	4%
● WHITE	12%	● PACIFIC ISLANDER	1%
● NONRESIDENT ALIEN	5%	● UNKNOWN	1%

*PLEASE NOTE: PERCENTAGES MAY NOT TOTAL 100% DUE TO ROUNDING.*

### CURRENT UNDERGRADUATE ENROLLMENT BY MAJOR – TOTAL ENROLLMENT 1,981

BIOLOGICAL SCIENCES	76%	UNDECLARED SCHOOL OF NATURAL SCIENCES	4%
CHEMICAL SCIENCES	10%	PHYSICS	3%
APPLIED MATHEMATICAL SCIENCES	5%	EARTH SYSTEMS SCIENCE	2%

**SOURCE:** UC MERCED INSTITUTIONAL RESEARCH AND DECISION SUPPORT, FALL 2016





UC Merced was named one of the Sierra Club's "Cool Schools" in 2017 for its commitment to sustainability

The Merced Vernal Pools and Grassland Reserve is one of 39 permanently protected reserves in California that make up the UC Natural Reserve System. Researchers, students and faculty, like UC Merced environmental geochemist Peggy O'Day, have access to the reserve to study natural systems and ecological processes.

I WILL  
IMPROVE OUR PLANET



# Academic Programs

## Majors

### Applied Mathematical Sciences, B.S.\*

#### Emphases

Computational and Data Sciences  
Computational Biology  
Computer Science  
Economics  
Engineering  
Environmental  
Physics

### Biological Sciences, B.S.\*

#### Emphases

Developmental Biology  
Ecology and Evolutionary Biology  
Human Biology  
Microbiology and Immunology  
Molecular and Cell Biology

### Chemical Sciences, B.S.\*

#### Emphases

Biological Chemistry  
Chemistry  
Environmental Chemistry  
Materials Chemistry

### Earth Systems Science, B.S.

### Physics, B.S.\*

#### Emphases

Atomic/Molecular/Optical/Condensed Matter  
Biophysics  
Mathematical Physics  
Physics

\*TRANSFER STUDENTS MUST CHOOSE AN EMPHASIS

## Minors

Applied Mathematics  
Chemical Sciences  
Environmental Science and Sustainability  
Natural Sciences Education  
Natural Sciences Education with Teaching Credential  
Physics



### ONE OF THE BEST PUBLIC UNIVERSITIES IN THE NATION

UC Merced is by far the youngest university  
to appear in the U.S News & World Report  
ranking of national universities

### Biological Sciences Three-Year Pathway Program

It is possible to earn your Biological Sciences  
degree in three years. Learn more at  
[advising.ucmerced.edu/acceleratedplan](http://advising.ucmerced.edu/acceleratedplan).





# I WILL

FIND MY CALLING

## Potential Careers

**APPLIED MATHEMATICAL SCIENCES CAREERS:** Actuary, fluid dynamics expert, mathematical physicist, statistician, teacher or professor, financial analyst, theoretical mathematician, computer systems analyst, computer programmer, biostatistician

**BIOLOGICAL SCIENCES CAREERS:** Medical and health services manager, genetics counselor, physician's assistant, nurse practitioner, health educator, biochemist, botanist, animal health technologist, entomologist, food scientist, forensic scientist, marine biologist, toxicologist, wildlife rehabilitator

**CHEMICAL SCIENCES CAREERS:** Agricultural and food scientist, biochemist, chemical engineer, environmental chemist, forensic scientist, geneticist, polymer chemist, water conservation specialist, industrial hygienist, hydrologist, EPA chemist, petroleum industry chemist

**EARTH SYSTEMS SCIENCE CAREERS:** Urban ecology researcher, environmental analyst, natural resource manager, wildlife manager, air quality and assessment expert, meteorologist, environmental health and safety director, conservation consultant, ecologist, clean technology expert, endangered species researcher

**PHYSICS CAREERS:** Systems engineer, biophysicist, computational chemist, cryptographer, medical physicist, renewable energy manager, astrophysicist, pyrotechnician, radar project manager, gravity researcher, laser fusion scientist, solar energy physicist, particle physicist

### **GRADUATE AND PROFESSIONAL SCHOOLS, AND MORE ...**

PLEASE NOTE: SOME OF THESE CAREERS MIGHT REQUIRE EDUCATION BEYOND A BACHELOR'S DEGREE.

# Undergraduate Research

## RESOURCES

The Undergraduate Research Opportunities Center (UROC) encourages and facilitates faculty-mentored undergraduate research projects and creative activities. The UROC website hosts a database of research opportunities, and workshops and events are ongoing. [uroc.ucmerced.edu](http://uroc.ucmerced.edu)

## RECENT PROJECTS

- Physics Professor Ajay Gopinathan and student researchers in his lab investigated the transport that occurs in biological systems across different levels of organization and scales in complex settings, such as the crowded interior of cells.
- Professor and biologist Miriam Barlow helped develop a method to restore the efficacy of antibiotics and help doctors deal with resistant bacteria.
- Three UC Merced undergraduates were the recipients of a fellowship under University of California President Janet Napolitano's Sustainability Student Fellowship/ Internship Program. The students – two Earth Systems Science majors and one Biological Sciences major – each received \$2,500 toward research projects that bring the campus closer to meeting carbon neutrality goals.

## FACILITIES AND CENTERS

The **Sierra Nevada Research Institute (SNRI)** operates a research facility in Yosemite National Park and has an enduring partnership with Yosemite for projects that include groundbreaking, cross-disciplinary research by faculty members and students on everything from climate change, water and wildfire to evolution, environmental engineering and archaeology.

The School of Natural Sciences also is home to other programs where students and faculty conduct research with global impacts:

- Center for Computational Biology
- Center of Excellence for the Study of Health Disparities
- Health Sciences Research Institute

# CalTeach

The CalTeach/University of California Science and Math Initiative is a special program that prepares and supports students who are interested in becoming K-12 math and science teachers. [calteach.ucmerced.edu](http://calteach.ucmerced.edu)

## CALTEACH MINORS

- **Natural Science Education Minor with Teaching Credential (NSEC)**  
Completing the NSEC minor allows you to graduate with both a bachelor's degree from UC Merced and a teaching credential in science or mathematics from UC Berkeley.
- **Natural Sciences Education (NSEd)**
- **NSED + Central Valley Teacher Preparation Partnership (CVTPP)**

# Internship Opportunities

In addition to working in professors' labs, there are ongoing opportunities for internships in various industries related to Natural Sciences:

**APPLIED MATHEMATICAL SCIENCES:** Juniper Networks, Lawrence Berkeley National Laboratory, Morgan Stanley Smith Barney, Northrop Grumman, NASA Ames Research Center

**BIOLOGICAL SCIENCES:** Bristol-Myers Squibb, Cedars Sinai Medical Center, Genentech, Gilead Sciences, Google, Kaiser Permanente, Medtronic, NASA, Stanford University Medical Center, Stryker, U.S. Forest Service

**CHEMICAL SCIENCES:** Biomarin, CVS Pharmacy, General Mills, Google, Loma Linda Dental School, Thermo Fisher Scientific

**EARTH SYSTEMS SCIENCE:** Build it Green, Desert Research Institute, Genentech, LEGO Robotics, National Science Foundation, U.S. Fish and Wildlife Service, USDA Forest Service

**PHYSICS:** Gamma Scientific, Delaware North Companies, Google, University of Illinois – Urbana Champagne, UC Berkeley, University of Washington



**UC Merced Ranked No. 5** in the nation out of more than 300 universities for social mobility in the Washington Monthly 2017 College Guide





FACULTY PROFILE  
**LINDA S. HIRST**

PROFESSOR

Ph.D., University of Manchester, England

**Professor Linda Hirst’s research interests focus on soft condensed matter, a branch of physics that looks at the structure and function of all kinds of soft materials including liquid crystals, complex fluids, polymers and biological materials.** The lab uses mainly experimental techniques to investigate how structure at the molecular level in soft systems translates to macroscopic properties. Recently the lab has focused on developing nano-particle/liquid crystal composites for applications in information display and sensing. Hirst also has worked extensively in biophysics, publishing on lipid self-assembly (the molecules that form biological membranes) and biopolymer network formation. Hirst is a member of the board of directors of the International Liquid Crystal Society and author of the undergraduate text “Fundamentals of Soft Matter Science.”



## FACULTY PROFILE

# RUDY M. ORTIZ

PROFESSOR

Ph.D., University of California, Santa Cruz

Professor Rudy Ortiz is a founding faculty member in the School of Natural Sciences at UC Merced. **His research focuses on the impact of altered nutritional status on the development of cardiovascular and renal disease** and other metabolic dysfunctions with a specific interest in insulin and angiotensin II signaling. Additionally, Ortiz's research includes an examination of the contribution of oxidant/antioxidant balance on impaired cellular signaling during the manifestation of insulin resistance in peripheral tissues. **Ortiz has been the recipient of UC Merced's Academic Senate Award for Distinction in Research** and awards from the American Physiological Society. He serves as a standing member of the National Institutes of Health's Atherosclerosis and Inflammation of the Cardiovascular System study section and is an elected member of the Council of the American Physiological Society. He also serves on the editorial review board of the American Journal of Physiology.





## FACULTY PROFILE

# CAROLIN FRANK

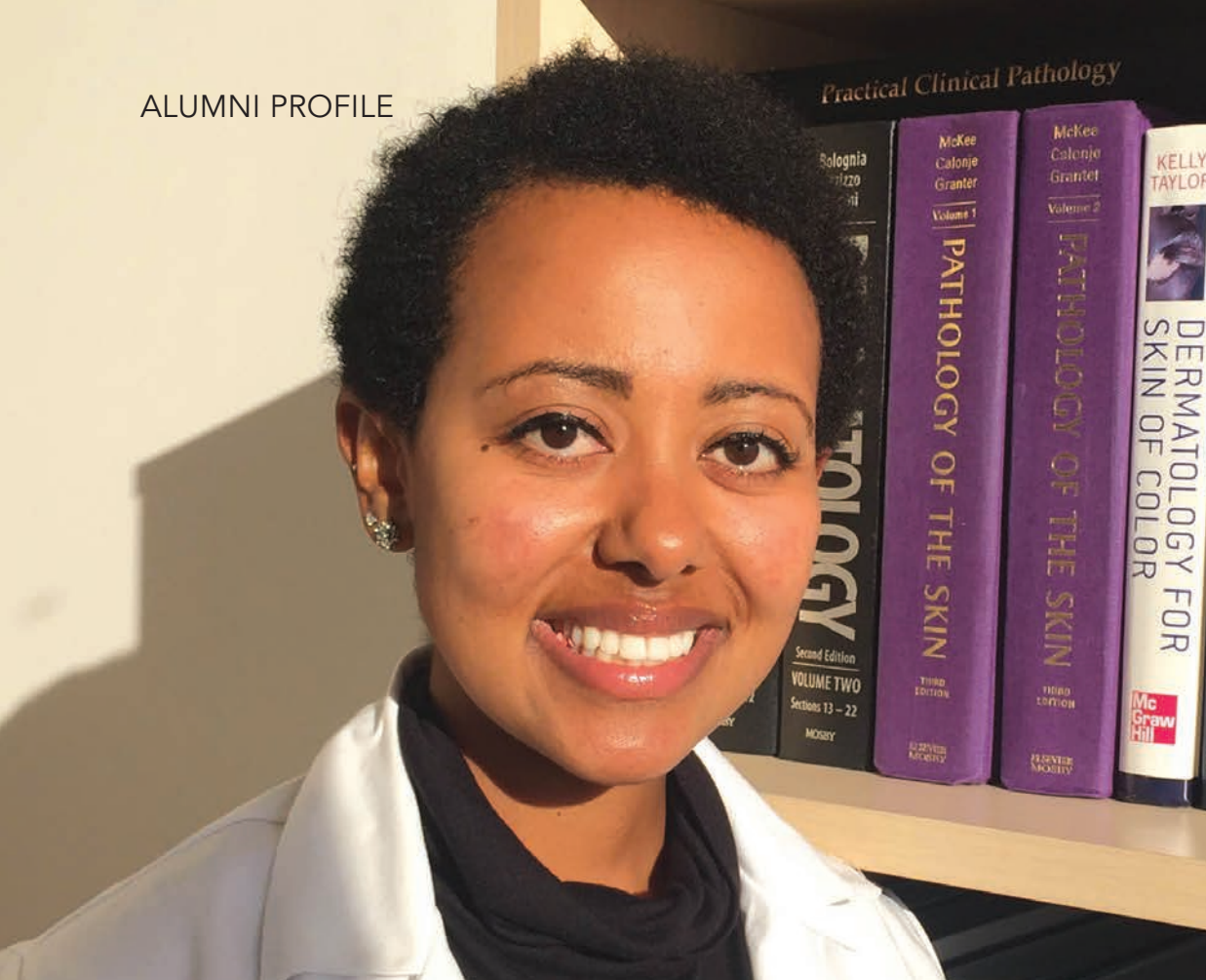
PROFESSOR

Ph.D., Uppsala University, Sweden

Professor Carolin Frank and her students work on bacteria called endophytes that live inside plants. Just like humans and other animals, plants are colonized by bacteria that are essential to plant health, but almost nothing is known about endophytic bacteria in natural ecosystems. Frank's students use DNA sequencing and genome analysis to study this endophytic "dark matter" in plants —particularly conifers — in the nearby Sierra Nevada and in other high-elevation ecosystems across the western United States. They have recently discovered what appears to be a previously unknown kind of symbiosis between pines and bacteria that fix atmospheric nitrogen. **The research has the potential to radically change our perspective on how some plants acquire nitrogen, and also our understanding of the terrestrial nitrogen cycle.**



## ALUMNI PROFILE



## SENAIT MICAEL TEWOLDE

**HOMETOWN:** Santa Rosa, Calif.

**GRADUATED:** 2014

**DEGREE:** B.S., Biological Sciences with an emphasis in Molecular and Cell Biology

**CURRENT LINE OF WORK:** I work for the UCLA Health System in the Pathology Outreach Laboratory as a hospital laboratory technician.

**ACTIVITIES/ORGANIZATIONS:** I had the honor of serving as vice president for the UC Merced chapter of the National Society of Black Engineers (NSBE), internal vice president/co-founder of the African Student Union (ASU), a mentor for the UC Merced Police Mentor Program, and a member of Chi Alpha Campus Ministry. Through NSBE, I was able to develop professionally. Through ASU, I was able to turn my vision of establishing UC Merced's first annual African Culture Show into a reality. Through the mentor program, I was able to recognize the extent of internal fulfillment I receive teaching and providing guidance to young minds. Through Chi Alpha Campus Ministry, I discovered my true eternal identity in Jesus.

“UC MERCED PROVIDED SMALLER CLASSROOM SIZES, which allowed me to build relationships with professors who were passionate for their fields. Needless to say, the passion was contagious! The campus broadened my ideas on what is possible. As a proud Bobcat, I proudly profess all of the school's accomplishments and the positive impact we had and will have on the world.”



## FAVORITE QUOTE

"TO DREAM ANYTHING THAT YOU WANT TO DREAM. That is the beauty of the human mind. To do anything that you want to do. That is the strength of the human will. To trust yourself to test your limits. That is the courage to succeed."

– BERNARD EDMONDS, WRITER

## ALUMNI PROFILE

### NAMY HERR

**HOMETOWN:** Elk Grove, Calif.

**GRADUATED:** 2016

**DEGREE:** B.S., Biological Sciences with an emphasis in Molecular and Cell Biology

**CURRENT ENDEAVORS:** I recently started the graduate nursing program at UNLV. I plan to become a nurse practitioner and come back to the Central Valley to provide education and assistance in the area. My goal and aspiration with my nursing degree is to be able to travel to different countries and provide proper health care to those who lack it. I hope to one day open a health clinic overseas and bring other aspiring health care providers there to volunteer and get experience while assisting those in need.

**ACTIVITIES/ORGANIZATIONS:** American Medical Student Association, Project Prevention Coalition, Office of Admissions, Office of the Registrar, Project Protect with Professor Miriam Barlow, Hmong Student Association, Air Quality Research with Professor Ricardo Cisneros, Delta Gamma Fraternity, UC Merced Police Mentors



# COME VISIT UC MERCED AND FIND OUT WHAT MAKES OUR CAMPUS SO SPECIAL.

Schedule a tour online at [tours.ucmerced.edu](https://tours.ucmerced.edu), or call us to arrange a guided tour of the campus any weekday and on most Saturdays during the year. Visiting UC Merced will give you first-hand knowledge of our academic programs, housing and student life.



The Merced Vernal Pools and Grassland Reserve, part of the UC Natural Reserve System, provides unique and important opportunities for student and faculty research at UC Merced. The reserve, one of the largest of its type in the world, is a habitat for some of California's rarest, most-endangered plants and animals, such as the extremely rare Conservancy Fairy Shrimp.

## School of Natural Sciences

TEL: 209-228-4309

EMAIL: [nsstudentservices@ucmerced.edu](mailto:nsstudentservices@ucmerced.edu)

WEB: [naturalsciences.ucmerced.edu](https://naturalsciences.ucmerced.edu)

## Office of Admissions

TEL: 209-228-7178

EMAIL: [admissions@ucmerced.edu](mailto:admissions@ucmerced.edu)

WEB: [admissions.ucmerced.edu](https://admissions.ucmerced.edu)

LOCATION: 5200 N. Lake Road | Merced, CA 95343

## Tours

TEL: 209-228-6316

EMAIL: [tours@ucmerced.edu](mailto:tours@ucmerced.edu)

WEB: [tours.ucmerced.edu](https://tours.ucmerced.edu)

VIRTUAL TOUR: [admissions.ucmerced.edu/virtualtour](https://admissions.ucmerced.edu/virtualtour)

