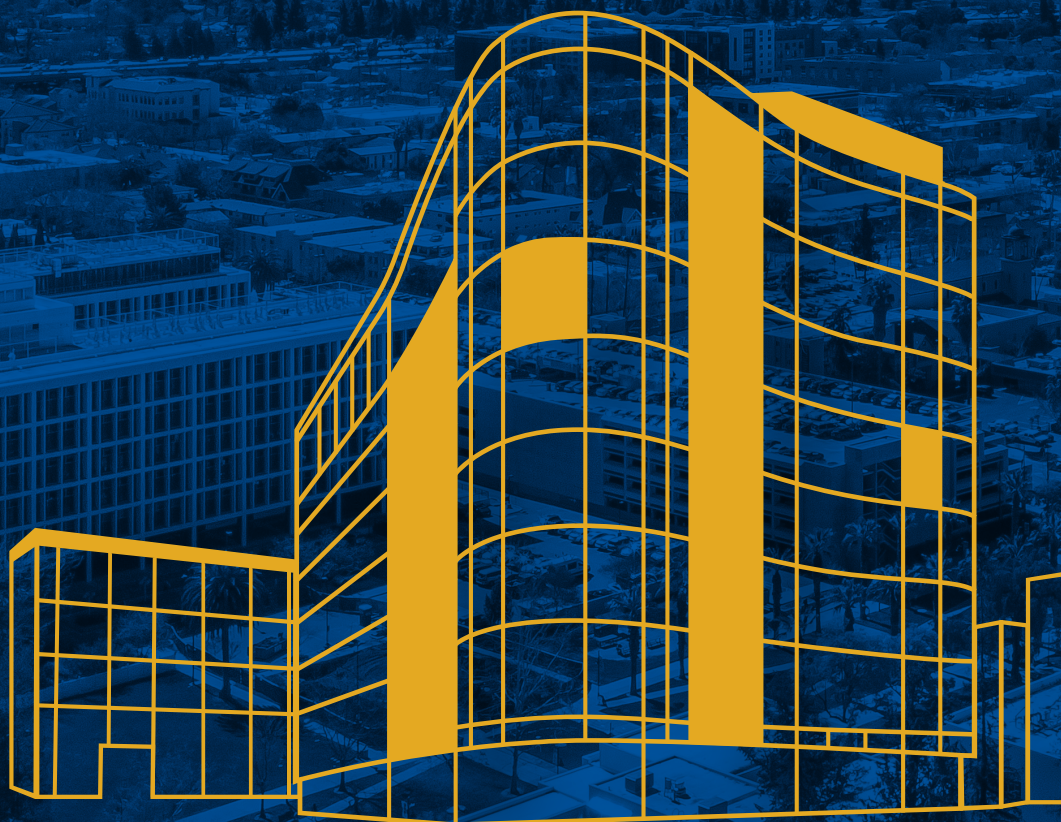


TRANSFORMING SCIENCE

AT SAN JOSÉ STATE UNIVERSITY



SJSU SAN JOSÉ STATE
UNIVERSITY

For more than a century, San José State University's College of Science faculty and students have made world-changing discoveries and fueled innovation, contributing to an evolving Silicon Valley and beyond. Our vision to transform the future of science and research at SJSU is not only manifested in the design of our brand-new, cutting-edge Interdisciplinary Science Building but also in the way our faculty and students engage with each other and the world around them.

College of Science researchers are exploring new ways to understand and treat heart disease, neurological disorders, cancers and infectious diseases. They are leaders in understanding and containing wildfires and predicting the impact and location of earthquakes in California and beyond. They are investigating marine sciences, climate change, quantum mechanics, applied mathematics, developing biofuels, using AI to address societal challenges, and so much more. With over \$60 million in annual research awards and more than 36,000 students — including over 8,000 graduate students — SJSU is bringing creativity, curiosity, and diverse perspectives and experiences that are integral to addressing today's most pressing challenges.

**HERE IN THE COLLEGE OF SCIENCE, WE ARE
CREATING KNOWLEDGE AND EXPANDING
OPPORTUNITY.**

A NEW HOME FOR TRANSFORMATION

As the first new science building in nearly 50 years, and the first new academic building on campus in more than 30 years, the eight floors of seamlessly integrated teaching and research space in the new Interdisciplinary Science Building will be historic for SJSU.

“This building is an investment in our faculty, the future scientists who we train, and the potential of Silicon Valley,” says College of Science Dean Michael Kaufman. “Our goal is to drive discovery and fuel diversity in science. This building is leading us into a new, more collaborative and transformative paradigm of discovery.”

Slated to open in 2023, the Interdisciplinary Science Building will offer agile and adaptive spaces dedicated to brainstorming, mentoring and collaborating. The facility will provide an environment that sparks ideas, fosters interdisciplinary relationships and inspires transformation.

THE INTERDISCIPLINARY SCIENCE BUILDING WILL FEATURE:

- Biology and chemistry teaching and research labs, collaboration spaces, faculty offices, and laboratory support areas
- The Wildfire Interdisciplinary Research Center, bringing faculty, staff and students from across the university to address this critical challenge
- A collaboration-mentoring hub on each floor where students can work on interdisciplinary projects, connect with faculty, and meet with industry partners
- An interdisciplinary collaboration space for high-performance computing, where faculty from different disciplines can synergize
- Data analytics, virtual reality, intelligent systems and metaverse labs in the Innovation Loft for the College of Professional and Global Education



UNDERGRADUATE AND MASTER'S STUDENT RESEARCH

Undergraduates and master's students play a pivotal role in research and discovery at SJSU, and the College of Science has prioritized expanding opportunities for students at these levels to join research teams as early as their first year at SJSU. Connecting with a group of student peers and faculty mentors is key to student success. These transformative research experiences also position our students to succeed in graduate school, professional school and in careers in Silicon Valley and beyond. To ensure as many students as possible have these experiences, we need your support.

Student perspectives and ideas are crucial to what we do. We believe hands-on experience not only allows our diverse group of students to gain valuable skills for their future careers as researchers, but it also gives them the tools to collaborate, problem solve and think critically, all essential skills in today's job market.

Your generous gift could name a laboratory space in our building, providing an environment essential for transformation. Your generosity can also help establish an endowment to support student research activity, meet faculty needs and ensure that labs have the latest equipment.



Alberto Rascon, associate professor of chemistry, trains a student researcher to address the threats of Dengue fever, Zika and Chikungunya viruses. They are targeting transmission through using biochemistry to more effectively control mosquitoes that spread the viruses.

MANY OF MY RESEARCH STUDENTS GO ON TO TOP-TIER GRADUATE AND MEDICAL SCHOOLS OR START CAREERS IN BIOTECHNOLOGY IN SILICON VALLEY.”

—Alberto Rascon, Associate Professor of Chemistry

“GUIDANCE AND MENTORSHIP FROM MY PROFESSOR HAVE OPENED CAREER DOORS THAT I WOULD NEVER HAVE KNOWN ABOUT.”

—Harnoor Virk '21 Molecular Biology, Minor in Chemistry

Bree Grillo-Hill, associate professor of biological sciences, and Harnoor Virk, '21 Biological Sciences with a concentration in molecular biology, examine tissues using an inverted live-cell imaging microscope that they built from components at SJSU. Her group's research on how intracellular pH influences the behavior of cells is helping to better understand the progression of diseases such as cancer.



A COMMITMENT TO DIVERSITY

The College of Science is committed to providing opportunities for all deserving students who want to explore the world around them.

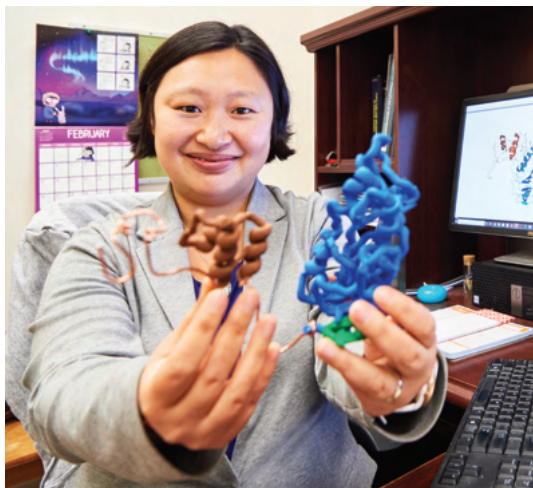
- Thirty percent of students in the Departments of Biological Sciences and Chemistry are from underrepresented groups.
- Sixty-six percent of students in the Departments of Biological Sciences and Chemistry are female.
- Participation of students at the undergraduate and master's level is essential to the research projects that will take place in the Interdisciplinary Science Building, and our faculty welcome ideas and perspectives from all backgrounds.

FACULTY SPOTLIGHTS

Ningkun Wang

THE SECRET LIFE OF ENZYMES

DEPARTMENT OF CHEMISTRY



Proteins may hold the key to unlocking treatments for age-related diseases. So it's a good thing Ningkun Wang finds them so intriguing. "Proteins are not rigid — they move, breathe and fluctuate. I'm fascinated by their ever-changing properties and the importance of those properties in regulating protein function," she says.

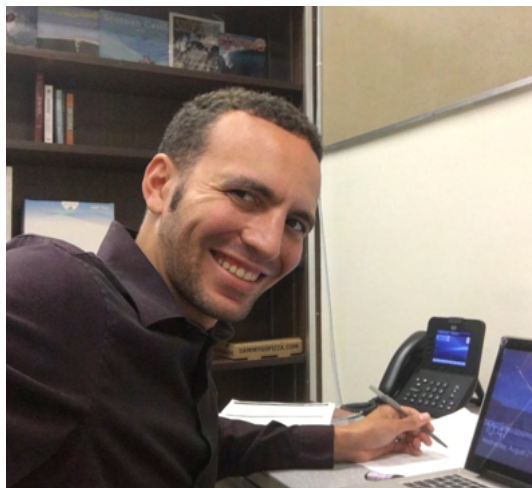
Wang and her undergraduate and graduate students study enzymes, a subset of proteins, specifically one known as SIRT1 that lives in the nucleus of cells. By increasing the enzyme's production, the cell can alleviate the effects of diseases like **Alzheimer's** and **diabetes**.

"The data we are collecting is giving us tantalizing hints on how different domains of SIRT1 move in response to a drug-like molecule," Wang explains. "If we can understand how to artificially activate SIRT1 using drugs, then we have a new way to treat diseases."

Walter Adams

FIGHTING INFECTIOUS DISEASE

DEPARTMENT OF BIOLOGICAL SCIENCES



Walter Adams and his students focus on understanding the dynamic, microbial battle between bad bacteria and white blood cells. Adams refers to this microbial warfare as a "Game of Thrones" under a microscope, which takes place in our bodies every day."

To more effectively treat infectious diseases in the respiratory system like **pneumonia**, Adams mentors his diverse lab members in seeking to understand how white blood cells fight off pathogens like *Streptococcus pneumoniae*, a dangerous bacterium that infects our lungs. White blood cells and *S. pneumoniae* use different strategies and tools to eliminate each other. Who wins can mean life or death.

"By identifying what tactics and weapons each side uses, we aim to uncover novel treatments for patients with respiratory infections," Adams says. Throughout their work, his students learn collaboration and critical-thinking skills that will benefit them in whatever path they choose after graduation.

Elizabeth Skovran

BIORECYCLING OF RARE EARTH ELEMENTS

DEPARTMENT OF BIOLOGICAL SCIENCES



Elizabeth Skovran and her students are advancing engineering efforts in **biomining** and **biorecycling** to recover rare earth metals from **electronic waste**.

Rare earth elements are required for electronic devices and green energy technologies, but mining is environmentally destructive. Skovran's group has shown that methylotrophic bacteria are capable of acquiring these precious elements from electronic waste and mining ores. They are genetically engineering these bacteria to increase the amount of rare earth metals that can be biorecycled from waste streams.

Skovran describes her student research mentees as "a dedicated, enthusiastic, vibrant group of students who enjoy solving metabolic and molecular puzzles." Her students develop critical and creative-thinking skills to unravel bacterial biology and help the environment.

Craig Clements

FIRE WEATHER AND BEHAVIOR

DEPARTMENT OF METEOROLOGY
AND CLIMATE SCIENCE



Craig Clements studies fire weather, investigating how extreme wildfires can create their own weather. He works with students and other faculty members in the **Wildfire Interdisciplinary Research Center** to take meteorological and fire behavior measurements during wildfires in California and throughout the western United States.

Clements and his students are always ready to deploy to wildfires, where they gather critical weather data that they make available to the scientific community and CAL FIRE. This work aims to help us to better plan for and fight the extreme fires of the future.

"We provide unique training in fire weather and wildfire science that attracts world-class students to our program," Clements explains. "These experiences prepare students for positions across both the private and public sectors."

TRANSFORMATIVE INNOVATIVE COLLABORATIVE

BE PART OF THE TRANSFORMATION

In order to bring to life this collaborative, transformative vision for science, San José State University relies on partnerships with community partners and individuals alike.

As a public institution, SJSU depends, in large measure, on funding through the state of California. An initial investment of \$181 million from the California State University and SJSU capital reserves is supporting construction of the building.

But to ensure that research opportunities are available for students and faculty, and that we remain a thriving part of a global research community, we are searching for support. With your generosity, you can help ensure an undergraduate or master's student gets hands-on experience in a cutting-edge laboratory. You can help build research programs that support the mentorship of the next generation of diverse researchers in Silicon Valley. And you can help us answer questions and discover solutions that can change our world.

**IF YOU WOULD LIKE TO BE PART OF A NEW ERA OF
SCIENCE AT SJSU, CONTACT SABRA DIRIDON AT
408-924-1510 OR SABRA.DIRIDON@SJSU.EDU.**