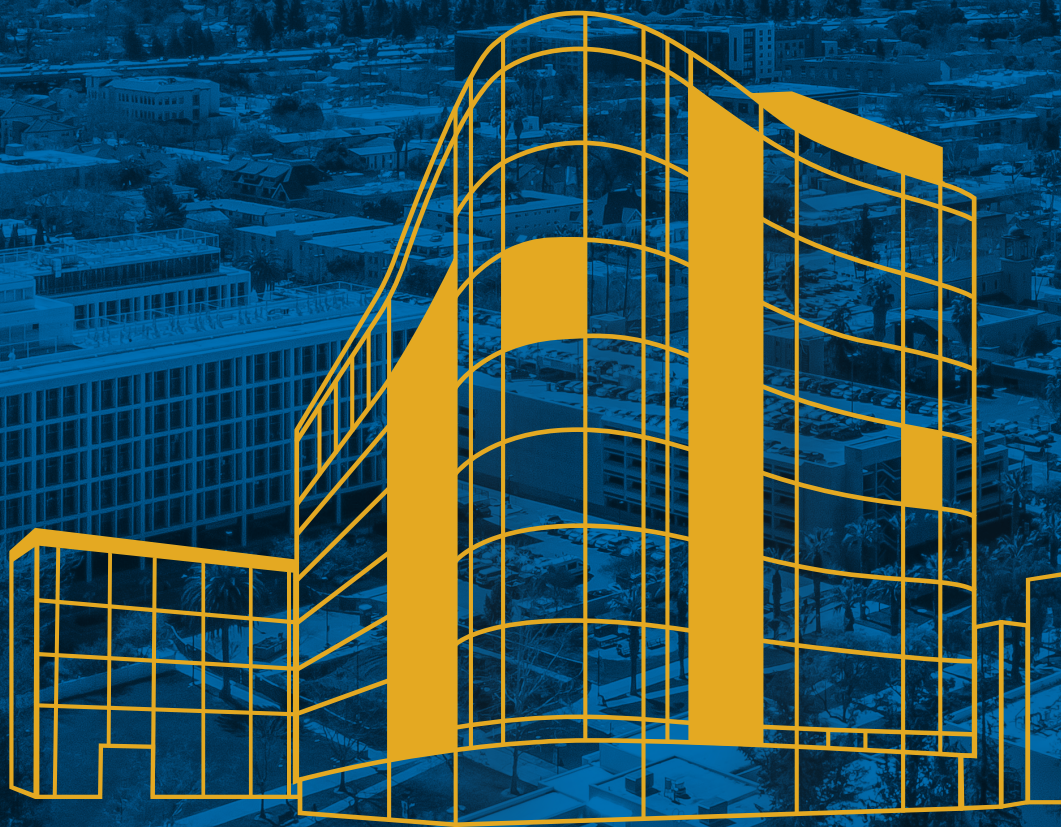
# TRANSFORMING SCIENCE

## AT SAN JOSÉ STATE UNIVERSITY



SJSU SAN JOSÉ STATE UNIVERSITY

# TRANSFORMING SCIENCE

The future of science begins at SJSU in a new cutting-edge Interdisciplinary Science Building that will transform the way faculty and students engage with each other and the world around them. With over $72 million in annual research awards and more than 36,000 students, SJSU channels creativity, curiosity, and diverse perspectives and experiences into impactful research work to address the world's pressing challenges.

"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."

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.

## THE INTERDISCIPLINARY SCIENCE BUILDING WILL FEATURE:

- Biology and chemistry teaching and research labs, collaboration spaces, faculty offices, and laboratory support areas
- A new home for the Wildfire Interdisciplinary Research Center to bring faculty, staff and students from across the university together
- Data analytics, virtual reality, intelligent systems and metaverse labs in the Innovation Loft for the College of Professional and Global Education
- 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 share their expertise

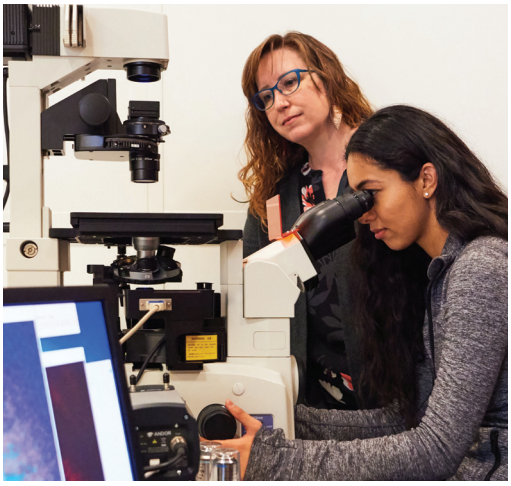
# UNDERGRADUATE AND MASTER'S STUDENT RESEARCH

Transformative undergraduate and graduate research done at SJSU advances student success in higher, doctoral or technical education and in careers in Silicon Valley and beyond. Students' unique perspectives and ideas are integral to the scientific advancements we are able to foster.

- 30% of Biological Sciences and Chemistry students are from groups underrepresented in STEM workplaces.
- 60% of Biological Sciences and Chemistry students are women.
- Over 40% of Biological Sciences and Chemistry students are the first of their families to attend college.

"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

# NAMING OPPORTUNITY

**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.

The industry–defining research that will be undertaken in this new facility is uniquely positioned to benefit from the long heritage of innovation and transformation in Silicon Valley. For companies ready to help foster future generations of local talent, SJSU is interested in discussing naming the building in recognition of generous sponsorship.

Naming the ISB entirely directly contributes to rigorous student and faculty research endeavors. Opportunities to name laboratories and facilities can also greatly advance research by helping the university acquire the latest technology and scientific tools.

## Teaching – Laboratories and Classrooms

**$50,000 to $1,000,000**

- **$500,000** - Aspirational College of Professional and Global Education (CPGE) laboratory space which may house data analytics and a virtual reality lab space
- Most teaching labs are in Chemistry, Microbiology, Chemistry, Biological Sciences

## Collaboration – 6 Flexible Study Spaces

**$500,000**

- **$1M** - SpartUp Accelerator student entrepreneur incubator space
- $1M - College of Professional and Global Education Innovation Loft

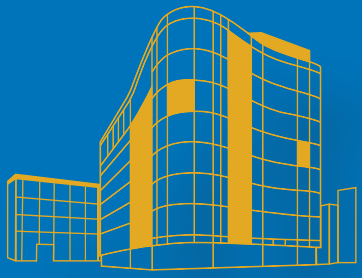
## Research – Discovery & Experiential Research Labs

**$25,000 to $500,000**

- $10M - Wildfire Interdisciplinary Research Center faculty spaces; including High Performance Computing Center rooms

## Unique Facilities

- $5M - Lobby
- $250,000 - Seminar room
- $100,000 - Small conference room
- $50,000 - Student locker area



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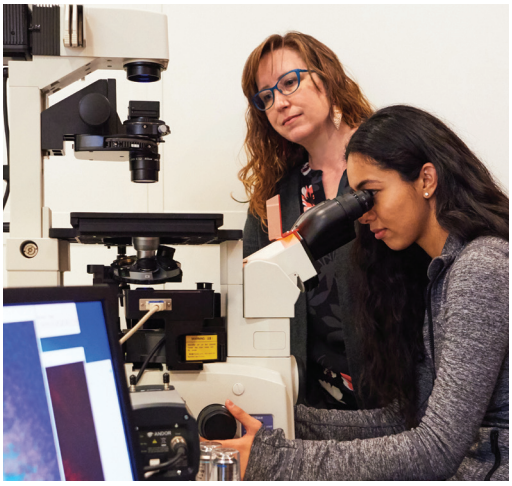

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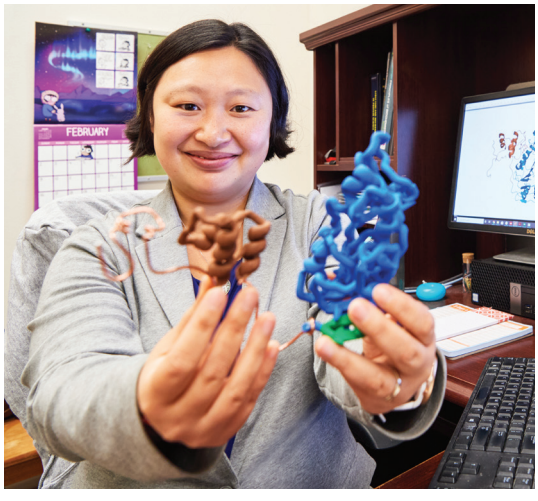
# Ningkun Wang

**THE SECRET LIFE OF ENZYMES**
DEPARTMENT OF CHEMISTRY



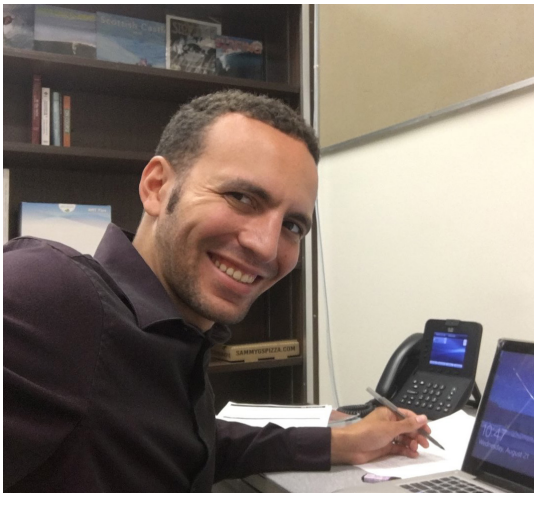

Proteins may hold the key to unlocking treatments for age-related diseases. So it's a good thing Ningkun Wang finds them so intriguing. "Proteins are not rigid — they move, breathe and fluctuate. I'm fascinated by their ever-changing properties and the importance of those properties in regulating protein 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 understanding 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 for them is environmentally destructive. Skovran's group has shown that methylotrophic bacteria are capable of acquiring these precious elements from electronic waste and mining ores. Then, they genetically engineer 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 investigates 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 active wildfires, where they gather critical weather data that they make available to the scientific community and CAL FIRE. This work aims 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 FUTURE OF SCIENCE AT SJSU

Your generosity guarantees the growth and reach of research opportunities for students and faculty, supports students' hands-on experience in a cutting-edge laboratory and ensures that we remain an integral part of the global scientific research community.

Your patronage will build programs that mentor the next generation of scientists in Silicon Valley and be the catalyst students need to answer life's great questions and discover groundbreaking solutions for all of humanity.

**TO SUPPORT A NEW ERA OF SCIENCE AT SJSU:**

**Contact Manju Ramachandran at (415) 999-7859 or manju.ramachandran@sjsu.edu.**