California State University SAN MARCOS

College of SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS

2026 SUMMER SCHOLARS POSTER SHOWCASE

UNDERGRADUATE + GRADUATE RESEARCH



FRIDAY, AUGUST 7, 2026

9:30AM - 12:15PM | CSUSMUSUBALLROOM

Summer Scholars

WELCOME

MESSAGE FROM DEAN JACKIE TRISCHMAN



Welcome to the CSTEM Summer Scholars Program, where our undergraduate researchers, supported by graduate student mentors and faculty, spend the summer advancing discovery through hands-on research experiences. Their curiosity, diligence, and commitment to tackling meaningful challenges exemplify the transformative power of experiential learning and prepare them to become the next generation of innovators, scholars, and leaders.

I extend my sincere gratitude to the companies, foundations, donors, and grant sponsors whose generous support makes these opportunities possible. Your investment in our students and faculty is helping shape the future of science, technology, engineering, and mathematics, one research experience at a time.

Jackie Trischman
Dean, College of Science, Technology, Engineering, & Mathematic

EVENT INFORMATION

- **DATE** Friday, August 7, 2026
- **TIME** 9:30 AM - 12:15 PM
- **LOCATION** CSUSM University Student Union Ballroom
- **FOCUS** Undergraduate and graduate research

CONNECT WITH SUMMER SCHOLARS

LinkedIn & Instagram

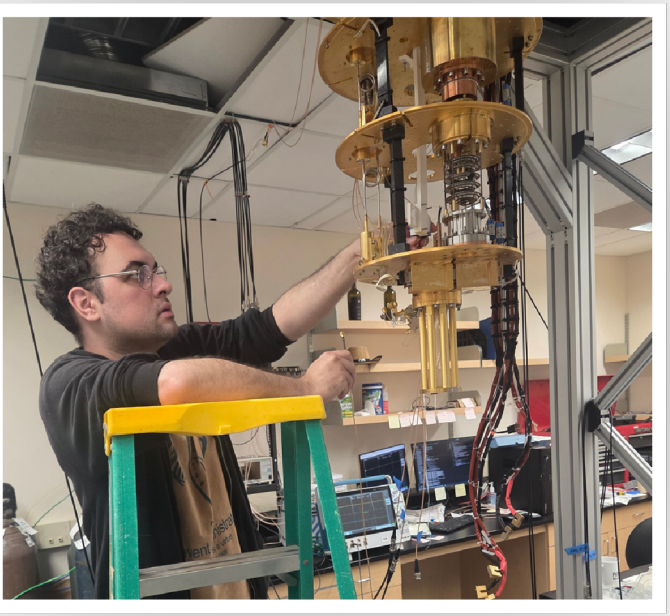
Follow student research, events, and program news.

WELCOME TO THE SHOWCASE

Explore student research across science, technology, engineering, and mathematics. Poster listings are grouped by discipline. Student names appear in First Name Last Name order and are alphabetized by the first listed student's last name within each section.

EVENT AT A GLANCE

9:30 AM	Doors open and poster viewing begins
12:00 PM	Welcome remarks
12:15 PM	President's address
12:30 PM	Awards ceremony
1:30 PM	Event concludes



BIOLOGICAL SCIENCES / BIOCHEMISTRY

Student researcher(s) | Poster title | Faculty advisor

Hunter Alan
Molecular characterization of the Ranavirus ambystoma1 21L methyltransferase protein
Faculty Advisor: James Jancovich

Sophia Badillo
Relatedness Analysis of Isolated Fin Whale Population using Genetic Markers
Faculty Advisor: Sergio Nigenda-Morales

Julian Banuelos Torres
Testing the Ultima Genomics Whole-genome Sequencing Bioinformatics Pipeline in an Endangered Species
Faculty Advisor: Diego Sustaita

Annie Bizzigotti, Elias Lopez, Angelica Suarez
Temperature and Hydration State on Corticosterone aTemperature and Hydration Shape Endocrine and Innate Immune Responses to Acute Stress in Children's Pythons (Antaresia Childreni)
Faculty Advisor: George Brusch

Harnoor Boparai
Mechanical Stimulation of 3D Cancer-Associated Fibroblast Spheroids for Breast Tumor Modeling
Faculty Advisor: Carlos Luna Lopez

Nessa Jamalian
Understanding the Neurocardiac Pathway's Role in Cardiac Arrhythmogenesis
Faculty Advisor: James Kezos

Sarah Brady, Yaneli Bazan
Investigating Cancer-Associated MSH3 Mutations Using Yeast
Faculty Advisor: Jane Kim

Brosnan Chernobieff-Brook
Real-time Cellular Automata for Simulating Antibiotic-Driven Adaptation in Microbial Ecosystems
Faculty Advisor: Elinne Becket

Valerie Cota-Carillo, Litza Garcia
Characterizing the Plasticity of Epidermal Vγ5+ Cells During Psoriasis
Faculty Advisor: Julie Jameson

Itzel Del Rio, Terumi Fujisawa-Phillips
The Mysterious Metabolite: How is Ectoine Getting into Plants, and What is its Function?
Faculty Advisor: Matt Escobar

Vincent Gonzalez, Spencer Wiggin
Characterization of a Novel Self-Priming Reverse Transcription Mechanism Following Ranavirus Infection
Faculty Advisor: Elinne Becket

Daniella Jabro
Genetic Diversity and Difference Between Chaparral Shrubs on North- and South- Facing Slopes
Faculty Advisor: Sergio Nigenda-Morales

Syrita Maria Joe, Melissa Garcia Cervantes, Weiam Elmahdi
Inside the "Bee Swarm": Integrating AI Cell Quantification with Immunophenotyping in Alopecia Areata Progression
Faculty Advisor: Julie Jameson

Ethan Lam, Jordan Karadang, Celine Harris, Ricardo Castaneda
The Effects of Daily Caffeine Exposure on Obese Drosophila Lifespan
Faculty Advisor: James Kezos

BIOLOGICAL SCIENCES / BIOCHEMISTRY

Student researcher(s) | Poster title | Faculty advisor

Kaia Lam
Development of Neuronal Models for the Study of Aging and Neurodegeneration
Faculty Advisor: Ravi Agarwal

Zornitsa Lefterova
Cytoplasmic DNA and electrophysiological modification caused by LINE-1 in Alzheimer's disease induced neurons
Faculty Advisor: Madilyn Areskog

Oscar Loyola Torres, Yeraldin Martinez
Effects of Osmotic Stress on Cellular Migration Dynamics of Tumorigenic Breast Cancer Cells
Faculty Advisor: Carlos Luna Lopez

Joia Miller
MODELING KLEEFSTRA SYNDROME USING HUMAN PLURIPOTENT STEM CELLS (HiPSCS) DERIVED CORTICAL ORGANOIDS
Faculty Advisor: Bianca Mothe

Noah Murphy
High-Na+ diet increases NALCN abundance in the Malpighian tubules of larval Trichoplusia ni
Faculty Advisor: Dennis Kolosov

Victoria Naficy
Voltage-gated Calcium Channel CaV1 Alters Excretory Output in the Malpighian Tubules of Drosophila Melanogaster
Faculty Advisor: Dennis Kolosov

Manya Sanchez
We're All Family, Whale, In A Way: Phylogenetic Analysis of Fin Whale (Balaenoptera physalus) Mitochondrial Genomes Across the Globe
Faculty Advisor: Sergio Nigenda-Morales

Tahiya Nashik
A Mouse Model of OROV Vertical Transmission and Mapping of T Cell Epitopes
Faculty Advisor: Bianca Mothe

Kailey Pickering
Microbiome Composition Analyses of Obese Drosophila Populations Experiencing Heightened Early Age Mortality and Cardiac Dysfunction
Faculty Advisor: James Kezos

Alexis Rios, Melissa Chico Brito
Soil Fungal Diversity Changes Between Monocrop Maize Beds and Polycrop Milpa Beds "TBD"
Faculty Advisor: Erika Diaz Almeyda

Hannah Rosario
CRISPR-mediated knockout of human APP in hematopoietic stem cells rescues Alzheimer's phenotype in 5xFAD mice
Faculty Advisor: Bianca Mothe

Kristopher Rose
From Identity to Interaction: A Reproducible Seurat–CellChat Pipeline for αβ and γδ T Cell Communication in Alopecia Areata
Faculty Advisor: Julie Jameson

Natalia Salazar
Isolation and Characterization of Yeast and Bacteria from a San Diego Sourdough
Faculty Advisor: Pedro Morgado

Sirawanee Saraphoka
Investigating Antibiotic-Induced Changes in the Malpighian Tubule Microbiome of Trichoplusia ni
Faculty Advisor: Elinne Becket

BIOLOGICAL SCIENCES / BIOCHEMISTRY

Student researcher(s) | Poster title | Faculty advisor

Charlize Jenkins
Effects of Initial Tumor Size and Adipocyte Exposure on Breast Cancer Growth in Multi-Cellular Spheroids
Faculty Advisor: Carlos Luna Lopez

Natalie Canto
Investigating Ly6a as a regulator of skin-resident immune responses in alopecia areata.
Faculty Advisor: Julie Jameson

Jacob Smith, Odalys Najera, Kayvon Watkins, True Allard
Evaluating the Use of Aquaponics for Propagation of Coastal Sage Scrub Plants in Southern California
Faculty Advisor: Christine Simokat

Milayka Torres
Coral Grafting as a potential tool to improve thermal tolerance in montipora digitata
Faculty Advisor: Erika Diaz Almeyda

Isabella Noivo
Determinants of bite force in the endangered salt marsh harvest mouse
Faculty Advisor: Diego Sustaita

Joleen Wobby
Helicokinin Isoforms Have Non-overlapping Effects on Fluid Secretion Rate, Ion Transport, and Paracellular Permeability in Malpighian Tubules of Trichoplusia ni
Faculty Advisor: Dennis Kolosov

Oscar Torres
Metastatic Implications: Investigation of Protrusion Formation in Triple-Negative Breast Cancer
Faculty Advisor: Carlos Luna Lopez

Alexandar Sypowicz
Temporal analysis of planktonic communities and environmental conditions off the northen san diego county coast
Faculty Advisor: Darcy Taniguchi

Jhasmine Valencia
Colonization of Bryozoan Membranipora membranacea Significantly Increases Photostress of Canopy-building Macrocystis pyrifera at High Temperatures
Faculty Advisor: Erika Diaz Almeyda

Ally Voss
Examining Spring and Summer Diatom Community Composition with Enviornmental Parameters at Oceanside Pier
Faculty Advisor: Darcy Taniguchi

Jared Woolridge
Examining the Effects of Nitrogen and Soil Depth on Microbial Biomass and Soil Respiration
Faculty Advisor: George Vourlitis

Thin Yadanar
Functional conservation of genes contributing to gamete dimorphism in fungi and animals
Faculty Advisor: Sujal Phadke

Charlotte Maderazo
Ice Melt and Plume Dynamics in a Stratified Tank

CHEMISTRY & BIOCHEMISTRY

Student researcher(s) | Poster title | Faculty advisor

Daniela Aron, Joshua Alvarez, Paola Corona
Rethinking Science Labs with Virtual and Mixed Reality: A Human-Computer Interaction and Instructional Design Approach to Laboratory Practice
Faculty Advisor: Kambiz Hamadani

Marcos Arrioja
Total Synthesis of Corniculatolide B and Isocorniculatolide B via Manganese Oxide Macrolactonization
Faculty Advisor: Jesus Cordova

Stefan Brkovic
Development of a Diiron Mixed-Valence Complex
Faculty Advisor: Kang Du

Angela Chen, Caitlyn Ramirez
Expression Purification and Characterization of Putative Carbohydrate Active Enzyme ME-8
Faculty Advisor: Sajith Jayasinghe

Lan Nguyen
Characterization of Putative Carbohydrate Active Enzymes CID 110 and 7710
Faculty Advisor: Sajith Jayasinghe

Shanley Mae Ariola
Synthesis of Intermediates and Natural Products of the Desferrioxamine E Siderophore Synthesis Pathway.
Faculty Advisor: Jesus Cordova

Luis Pretalia Hernandez, Jorrel Aquino
Expression and Purification of Putative Carbohydrate Active Enzymes CJD 106, and 133
Faculty Advisor: Sajith Jayasinghe

Taylin Jimenez
Development of a S-Containing Precursor for Biomimetic Dinuclear Complexes
Faculty Advisor: Kang Du

Eduardo Martinez
Development of Biomimetic Mn_2 Complexes
Faculty Advisor: Kang Du

Brendan Murphy
Synthesizing Rigid Linkers for Porous Magnets with Mixed-Valence Fe2 Nodes
Faculty Advisor: Kang Du

Thomas Nardi Toharia
Investigating the potential of generating ipscs from lung cancer cells
Faculty Advisor: Bianca Mothe

Luis Pretalia Hernandez, Jorrell Aquino
Expression and Purification of Putative Carbohydrate Active Enzymes CJD 106 & 133
Faculty Advisor: Sajith Jayasinghe

Oscar Arnold, Eva Erb, Stella Lieberman, Jason Joyce, Mia Patrovic
Developing a Protocol for A Complementation Assay to Determine the Residues Important for CsgF Function In-Vivo
Faculty Advisor: Sajith Jayasinghe

Computer Science & Engineering

Student researcher(s) | Poster title | Faculty advisor

Manal Asad
RepoFlow: A Cross-Platform Data Collection Tool for Research on Open Source Development

Faculty Advisor: Yang Yue

Nikita Sharma
A Two-Stage Deep Learning Pipeline for Real-Time Field Monitoring of Insects

Faculty Advisor: Justin Morris

Melissa Pina
Insights About the Prompt Marketplace

Faculty Advisor: Jing Hou

Joseph Zamlski
Mitigating Bias in Cardiovascular Disease Prediction

Faculty Advisor: Sreedevi Gutta

Luke Schavel
Ideorate: An Assessment Framework of OSS Ideologies

Faculty Advisor: Yang Yue

Electrical & Computer Engineering

Student researcher(s) | Poster title | Faculty advisor

Paulo Gabriel Antonio
An Automated Pipeline for Motor Imagery EEG Analysis

Faculty Advisor: Soudeh Khoubrouy

Xuong Tai Phuong
Interoperability and Experimental Analysis of the AI Computing Data Centers for Understanding Chip-to-Grid Electronics Interfaces in Real-Time

Faculty Advisor: Hamed Nademi

Silvia Gardy, Socrates Sanchez, Samuel Herrera
Prosthetic Hand Prototype

Faculty Advisor: Soudeh Khoubrouy

Jacob Thren
PCB Prototype Design of the Quad-rotor Unmanned Aerial Vehicle: Experimental Validation of the Drone Propulsion System

Faculty Advisor: Hamed Nademi

Ryan Hawkins, Ryan Ward
Prototype Design and Experimental Validation of the Power Take-off Topology used in Wave Energy: Module-level and its Control System

Faculty Advisor: Hamed Nademi

Mathematics

Student researcher(s) | Poster title | Faculty advisor

Abigail Dan
Approximating Long-run Workloads in a Single-server Queue

Faculty Advisor: Amber Puha

Armando Pena, Adrienne Robertson
Attacking ECDSA with Fourier Analysis

Faculty Advisor: Shahed Sharif

Physics / Psychological Science

Student researcher(s) | Poster title | Faculty advisor

Max Hyman
Our Road to Exchange Only Spin Qubit Readout

Faculty Advisor: Justin Perron

Adrian Schnepp
Cryogenic Signal Amplification in Quantum Devices

Faculty Advisor(s): Justin Perron

Aidan Rodriguez
Counting Particles: Simulating Barrier Electron Pumps

Faculty Advisor: Justin Perron

Jake Stewart
Social Deficits and Parasocial Relationships

Faculty Advisor: Kimberly Vanderbilt

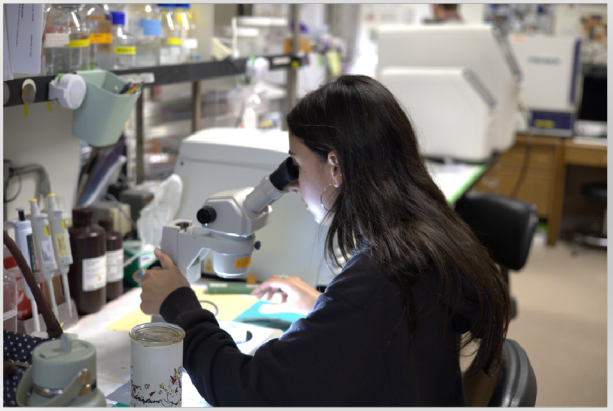
Ulysses Rodriguez
Investigation of sample processing and Vanadium-doping effects on HOfeO3 magnetic transitions

Faculty Advisor: Stephen Tsui





SUMMER SCHOLARS IN ACTION





ABOUT THE PROGRAM

Summer Scholars supports undergraduate and graduate researchers as they develop questions, conduct original work, collaborate with faculty mentors, and communicate their discoveries. This page can feature a concise program overview, key outcomes, and selected event photographs.



BY THE NUMBERS

70 POSTERS

90+ STUDENTS

UNDERGRADUATE + GRADUATE

WITH GRATITUDE

We recognize the faculty advisors, staff, volunteers, campus partners, funders, families, and friends whose support makes Summer Scholars possible.

FACULTY ADVISORS

Amber Puha
Carlos Luna Lopez
Christina Simokat
Darcy Taniguchi
Dennis Kolosov
Diego Sustaita
Elinne Becket
Erika Diaz Almeyda
George Brusch
George Vourlitis
Hamed Nademi
James Jancovich
James Kezos
Jane Kim
Jesus Cordova
Jing Hou
Julie Jameson
Justin Morris
Justin Perron
Kang Du
Kimberly Vanderbilt
Matt Escobar
Nahid Majd
Pedro Morgado
Sajith Jayasinghe
Sergio Nigenda Morales
Shahed Sharif
Soudeh Khoubrouy
Sreedevi Gutta
Stephen Tsui
Sujal Phadke
Yang Yue

PROGRAM TEAM + VOLUNTEERS

Angelica Ramos
Caitlin Rondoe
George Lane
Jessica Faulkner
Laurie Schmelzer
Nikki Adams
Sneh Mistry

STUDENT RESEARCHERS

Thank you for sharing your scholarship, creativity, and discoveries.

SPECIAL THANKS

CSUSM Foundation
Dean Jackie Trischman
Mike Helé
Megan Muret
MiraCosta College
Palomar College



THANK YOU TO OUR SUPPORTERS

Your support advances student research, mentorship, and discovery.

MANY THANKS TO OUR PARTNERS THIS SUMMER:

SDGE | IONIS | MONARCH QUANTUM | UCSD BIOMEDICAL SCIENCES GRADUATE PROGRAM

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