



Fall Research Colloquium

September 17, 2026

Program Schedule

12:15 – 12:20 PM

Welcome and Introduction
Salomon Hall

12:20 – 1:10 PM

Poster Presentations
Salomon Hall

1:15 – 2:15 PM

Oral Presentations
Maher Classrooms

Posters

12:20 - 1:10 PM

Salomon Hall

Engineering, Mathematics, and Computer Science

- 1 - **Alex Montemayor**, Saturnino Garcia - Utilizing Systolic Architectures for Image Processing: A Project for Introductory-Level Undergraduate Digital Hardware Courses
- 2 - **Dilan Patel**, Michael Massaro - Evaluating Scite AI as a Bridge Between Library Resources and Student Research Workflows: A Web Usability Study
- 3 - **RJ Profeta**, Nadiieh Moghadam - Machine Learning for Human Activity Recognition (HAR)
- 4 - **Zoe Hassett**, Nadiieh Moghadam - Ultrasonic-Based Autonomous Navigation: Validating Reinforcement Learning on Low-Cost Embedded Hardware
- 5 - **Luke Uechi**, Nadiieh Moghadam - Predicting Success: Enhancing Small-Sample Student Grade Models via Data Augmentation
- 6 - **Elizabeth Simpson**, Odesma Dalrymple, Marissa Forbes - Bubble Column Evaporator
- 7 - **Anthony Famoyin**, Odesma Dalrymple, Nadiieh Moghadam - Accessible Multimeter Interface for Multi-Sensory Circuit Learning
- 8 - **Amy Perez**, Odesma Dalrymple - Wayfinding for the Blind
- 9 - **Tristan Toy**, Paulina Diaz-Montiel - Characterization of the Viscoelastic Properties of Epoxy using Microrheology
- 10 - **Logan Renteria**, Paulina Diaz-Montiel - Viscoelastic Behavior in Carbon/Epoxy Tow Based Discontinuous Composites
- 11 - **Brooklyn Marchiondo**, Maryam Keshtzari - Predicting Power Plant CO₂ Emissions Across Policy and Market Shocks: A Regime-Aware Machine Learning Framework
- 12 - **Iggy Wozniak**, Frank Jacobitz - Interaction of a heated boundary layer with a roughness element: a comparison of numerical simulations with experiments using temperature-sensitive paint
- 13 - **Katherine Figueroa Lopez**, Satyan Devadoss - Unfolding boxes in higher dimensions

Life and Physical Sciences

- 14 – Giselle Chavarria**, Carla Bonilla - Regulation of the Bacterial Cellular Envelope Stress Response Genes *csbB-yfhO* in Antibiotic Resistance
- 15 – Lauren Megahan**, Wilnelia Recart Gonzalez - Effects of Drought Stress and Pollination Treatment on Reproductive Success in *Phacelia parryi*
- 16 – Caitlin Fechtig**, Geoffrey Morse, Suzanne Walther - Modeling of the potential distribution of clover seed beetles based on host plant records in San Diego County
- 17 – David Salinas**, Sarah Gray - The Pollution You Cannot See: Discovering Microplastics in Southern California Coastal Lagoons
- 18 – Valeria Negrete**, Sarah Gray - "Microplastics in San Diego Coastal Lagoons: Sediment Extraction Methods, Concentration, and Spatial Variability"
- 19 – Sofia Ramirez**, Nathalie Reyns - The effects of anthropogenic noise on hermit crab (*Pagurus samuelis*) shell selection behaviors
- 20 – Miguel Cheng**, Nathalie Reyns - Barnacle Microbiomes
- 21 – Kayla Orellana**, Drew Talley - Created vs Natural Marshes Over Time
- 22 – Brayden Buchanan**, Drew Talley - How geomorphic features of a salt marsh affect the local distribution of resident fishes in Mission Bay, CA
- 23 – Carter Witten**, Sophie Taddeo - Drone Monitoring of Coastal Dune Erosion in Bahia San Quintin, B.C.: Analyzing Variance of Replicate Surveys
- 24 – Ian Newberg**, Joseph Provost - The Impact of Phosphorylation of Yeast Mitochondrial Malate Dehydrogenase – A Novel Metabolic Regulatory Hub
- 25 – Rebecca Albracht**, Joan Schellinger - Optimization of a greener solid-phase peptide synthesis for perylene diimide peptide pi conjugates
- 26 – Carli Ziegler**, Joan Schellinger - Green Synthesis of Vinyl Sulfones: Optimization and Method Development
- 27 – Maile Quisano**, Lauren Benz - Ball-Milling for Surface Selective Post-Synthetic Ligand Exchange in ZIF-8
- 28 – Stella Osman**, David De Haan - Smoke Aging
- 29 – Julia Ganem**, David De Haan - Accelerated reaction rate of carbonyl compounds through contact with protein surfaces
- 30 – Holiday Barrett, Franki Flores**, Timothy Clark - Accessing Vinyl gem-Germanium Boronates Through Boron-Wittig Reactions
- 31 – Daivion Terry**, Timothy Clark - Oxidative Homocoupling

- 32 - Judith Garcia Leon, Samantha Cotter, Timothy Clark** - Germanium in Drug Discovery: Selective C-H Borylation Guided by Substituents
- 33 - Jordan Wolff, Eleanor Gillette** - Competitive Ion Insertion in Manganese Oxide: Potassium & Magnesium
- 34 - Maria Moore, Athena Davis, Christopher Daley** - Foray into the synthesis and characterization of polynorbornene
- 35 - Madeline Flores, Anthony Bell** - Amino Acid Activation and Total tRNA Charging by Aminoacyl-tRNA Synthetases
- 36 - Julie Garabet, Anthony Bell** - Investigating HMGB1 Interactions with Immunostimulatory and Inhibitory CpG DNA
- 37 - Mia Colmenares, Jessica Bell** - Biochemical characterization of brain eating amoeba mitochondrial malate dehydrogenase
- 38 - Shannon Murphy, Jessica Bell, Ellis Bell** - Exploring Orthosteric and Cryptosteric Sites on Plasmodium Falciparum Malate Dehydrogenase
- 39 - Amanda Jolie Cabagbag, Michael Heberlein (Catalent Pharma Solutions)** - Disintegration Investigation on High Polymer-Loaded SDDs in Tablets
- 40 - Esme Illing, Ryan McGorty** - Quantifying Anomalous Transport in Dynamic Optical Trapping Systems
- 41 - Owen Park, Ryan McGorty** - Nematode Rheology: How viscosity and bioactivity within material can influence fingering instabilities
- 42 - Rocco Gayoso, Rae Robertson-Anderson** - Time-dependent microscale viscoelasticity of aged epoxy during the curing process
- 43 - Adrianna Galvan, Rae Robertson-Anderson** - Cyanobacteria cells serve as microrheological probes and material modifiers of networks of dynamic actin filaments
- 44 - Geraldin Ramirez Velazquez, Rae Robertson-Anderson** - Dueling enzymatic modulation of entanglements and microscale viscoelasticity of concentrated DNA solutions
- 45 - Brant Smatko, Maren Mossman** - Engineering increased atomic flux for rapid magneto-optical trap loading
- 46 - Rachel Karupiah, Elizabeth Mills** - Beta/Theta Ratio as an EEG Marker of Cognitive Demand During a Color-Only Stroop Task in Young Adults
- 47 - Benjamin Cavallari, Ted Dezen** - Dissipation Physics and Absorption Features in Black Hole X-ray Binaries

- 48 – Lucan Rhatigan**, Raquel Martinez – From Simulation to Sky: Preparing SCALES to Observe Accretion from Stars to Planets
- 49 – Aidan Gallagher**, Raquel Martinez – Predicting SCALES Sensitivity to Planetary Accretion Tracers
- 50 – Pravindi Gurusinghe**, Raquel Martinez – Multi-Wavelength SED Fitting of a Reddened Low-Mass Candidate Using BT-Settl Models
- 51 – Sofia Plascencia**, Jennifer Wenzel – A central role for endocannabinoid signaling in operant shock avoidance behaviors
- 52 – Alecsandra Inocentes, Emma Mozalova**, Jena Hales – Examining the effects of mild traumatic brain injury on anxiety-like behavior, locomotion, and neuroinflammation in female and male rats
- 53 – Abigail Reyes**, Jena Hales – Developing a Female Rat Brain Atlas to Improve Research Accuracy in Rodent Models
- 54 – Vera Maaskant, Samantha Luna**, Jena Hales – Examining the effects of mild traumatic brain injury on spatial and nonspatial memory and neuroinflammation in female and male rats
- 55 – Avani Catana**, Jacqueline Bonds – Birth Trauma Effects on Neural Stem Cells and Behavior
- 56 – Sachi Chauhan**, Jacqueline Bonds – Induced Pluripotent Stem Cell Culture and Neural Differentiation

Social Sciences, Humanities & Creative Works

- 57 – Hailie Orona, Lauren Tuohy, Marcela Perez-Maytorena**, Yessica Green Rosas – Exploring Bilingual PCIT Therapists' Experiences Coaching English- and Spanish-speaking Families
- 58 – Kyleigh McAloon**, Rebekah Wanic – What makes implicit bias training effective? An examination of training program interventions and K-12 educator experiences
- 59 – Isabella Arnaiz**, Rebekah Wanic – The Impact of Catholic Practices on Mental Health for Young Adults
- 60 – Clementine Hooper**, Karen Ortiz-Becerra – Temperature Shocks and Health System Demand in Ghana

61 – Sofia Gaeta Garcia, Regina Gong – “No te metas, eso es de hombres”: How Gendered Barriers Shape Women’s Income and Success in Rural Mexico’s Livestock Sector

62 – Maria Llaguno, Adriana Cuellar – The Role of Space in Shaping Human Wellbeing

63 – Gabriela Fitzgerald, Joshua Tonies – Failures of Memory

64 – Callie Schreiber, Matthew Rich – Paint, Surface, and Psychology

Oral Presentations

1:15 – 2:15 PM

Salomon Hall

Cailene Ito, Daniel Forster – The Impact of Generative Artificial Intelligence Usage on Cognitive Persistence in Undergraduate Students

Luka Kazanjian, **Sophia Taylor**, **Zachary Dorros**, Jena Hales – Examining the Role of the Hippocampus in an Operant Time Duration Discrimination Task in Rats

Katie Howard, Paulina Diaz-Montiel – Characterization of the Viscoelastic Properties of Expired Epoxy Resin Using Particle Tracking Microrheology

Mia Gleason, Andrew Tirrell – Perspectives on New England Fisheries Management

Richard Ngo, Bennet Goeckner – Interval Graphs and Underclosed Hypergraphs

Sandra Santos, Marcel Sanchez Prieto – The Everyday Monument: Architectural and Spatial Transformations of Rome’s Nasoni, 1874–Present

Maher 226

Nathan Granillo, Maren Mossman – Observation of Binary Turbulence in a Bose-Einstein condensate

Daisy Morales-Zaragoza, Ariela Canzian – Through Her Lens: The Card-Based Storytelling

Aubrey Williams, Suzanne Walther – Photovoltaic Suitability Analysis for San Diego County

Noah Santa Maria, Paulina Diaz-Montiel – Micromechanics finite element simulations of the stress relaxation of carbon/epoxy composites

Vanessa Estrada Garza, Yessica Green Rosas – Corazón de Nopal, Alma de Monarca: The Invisible Workforce

Desea Bond, Robert Boria (San Francisco State University) – Ecological Niche Modeling: Saimiri oerstedii

Maher 224*

Kaleigh Thornton, Wilnelia Recart Gonzalez - Effects of Heat Treatments on Seed Germination Across Plant Species Using Agar Plates

Sara Teferi, Jennifer Olsen - Impact of AI on Collaborative Learning Processes During Coding Activities

Joseph Murray, Darby Vickers - From Theory to Practice: Locating Moral Exemplars in Aristotelian Virtue Ethics

Mark Gamaghelyan, Maren Mossman, Sean Mossman - Soliton gas in an immiscible quantum fluid

Sophia Rico, **JB Barrientos**, **Armando Munoz**, Daniel Lopez-Perez - A Modular House for 1000 Units, and the Next 100 Years

***Presentations in this classroom will begin at 1:20 pm.**

Maher 222

Marquel Gardner, Juliana Maxim, Jennifer Tillman - How U.S. Legal Stagnation Can Be Solved by Decolonization

Elle Karanian, **Cole Shepard**, Jennifer Prairie - Factors Affecting Marine Snow Sinking

Agniya Seliuzhytskaya, Marcel Sanchez Prieto - Waterfront Ecologies: Coastal Resilience and Urbanization in Cali-Baja Region

Parker Osborne, Maren Mossman - A custom low-cost radio-frequency generator for driving acousto-optical modulation

Arnav Chaturvedi, Md Nafee Al Islam, Paulina Diaz-Montiel, Vahraz Honary - Composite Defect Classification through U-Net Convolutional Neural Network Architecture

Sidney Catto, Rachel Blaser - Exploring Spatial Learning in Hummingbirds

Maher 207

Arlene Garcia Guzman, Adriana Cuellar – Indigenous Ontologies & Relational Architecture

Samantha Hughes, Suzanne Walther – Beaver Dam Analog (BDA) placement for habitat restoration and hazard prevention in Southern California

Emilio Lizarraga, Paulina Diaz-Montiel – Creep of Carbon/Epoxy Composites with Ply Waviness Defects

Kaylina Stroud, Kobi Finestone – What, Exactly, is Wrong With Surveillance Pricing

Yesin Qasem, Md Nafee Al Islam – Detect, Retrieve, Diagnose: An LLM Approach for Diagnosing Flight Anomalies

Simon Kinzler, Maren Mossman – Magnetic Field Stabilization for Ultracold Atom Experiments

Maher 205

Hailey Power, Michael Kelly – Toleration as an Aristotelian Moral Virtue

Aaron Goff, Chad Kishimoto – Neutrino oscillation in superheated environments

Katherine Wronski, David Syring – Cultivating Ecological Belonging: The Shimmering Friction Walk as a Transdisciplinary Pedagogy

Alexandra Mateescu, Jessica Bell, Elisabeth Bess (UC Irvine) – The Role of Our Gut Microbiome in Parkinson's Disease

Gabriella Pine, **Samantha Perales**, Jennifer Prairie – Stereoscopic imaging of marine snow aggregates to measure aggregate shape and copepod behavior



Acknowledgements

Many thanks to all our student presenters and faculty mentors across all disciplines for sharing your work at this year's fall showcase! Special thanks to our faculty moderators chairing the oral sessions.

Thank you to USD Copy for printing programs, University Operations for the space reservation and setup, and the staff at the Office of Undergraduate Research--Andrea Machado, Viviana Vidrio, and Allison Vazquez Hernandez--for their hard work in organizing this year's event.

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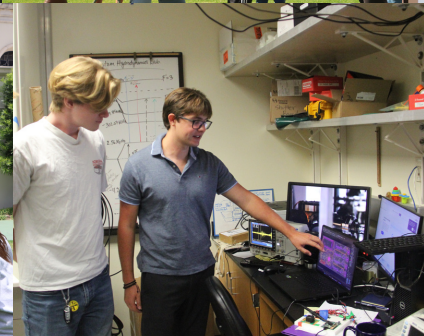
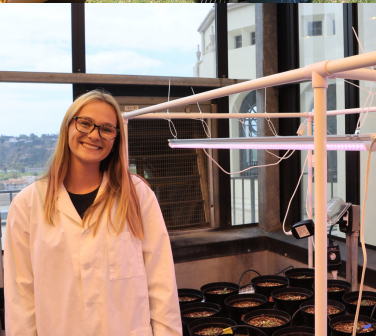
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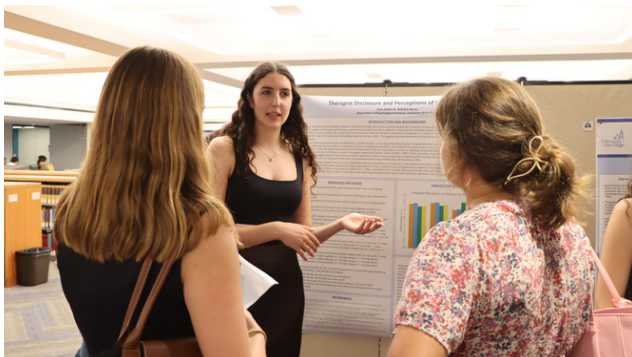
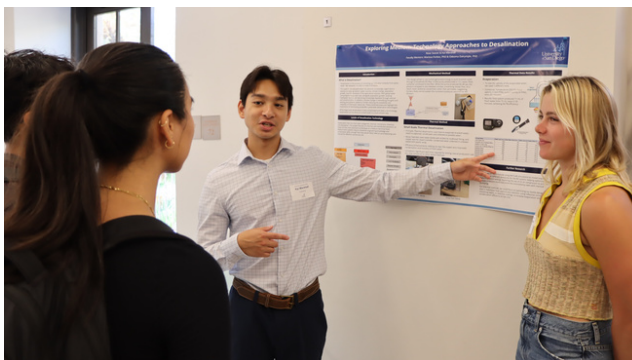
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