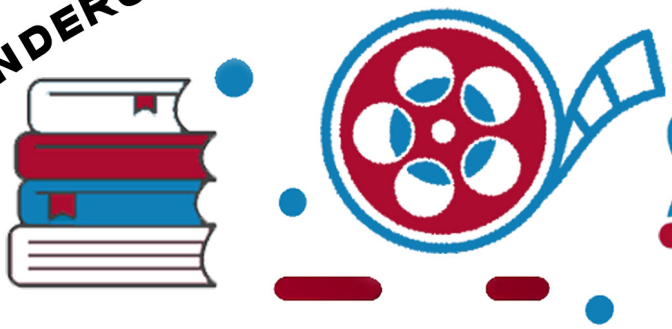
SIXTEENTH ANNUAL
UNDERGRADUATE RESEARCH SYMPOSIUM



URS

Loyola Marymount University
Office of Research
and Creative Arts

Loyola Marymount University
Office of Research and Creative Arts

URS 16 Branding

Justin Robinson, M.F.A

A Welcome from the Office of Research & Creative Arts

March 15, 2024

Dear LMU Students, Faculty, and Staff,

Welcome to the Sixteenth Annual Undergraduate Research Symposium! For over a decade, this event has been a campus-wide tradition celebrating the very best in faculty-mentored undergraduate research and creative projects at LMU.

The Symposium is a celebration not only of student research and the fantastic faculty-student partnerships that have come to define an LMU education, but also of a community working together to support and amplify student voices. We come together on our beautiful campus to celebrate Loyola Marymount's unwavering commitment to academic excellence both inside and outside of the classroom. We hope you will engage with the over 100 posters set up throughout University Hall, listen to and participate in the more than 60 oral presentations, panels, and arts showcase presentations in University Hall, and share a meal or some coffee with friends, family, and fellow presenters outside of University Hall.

We are pleased to feature the work of over 200 students from all five undergraduate colleges and schools. The diverse presentations will be intellectually stimulating for all. Among these sessions, students wrestle with complex issues including Analyzing LAUSD Demographic and Standardized Testing Patterns, varying topics related to LAPD and the communities they police, and the shaping of Mexican American culture through modern Mexican music. They explore issues of silent illnesses, how food affects people's mood, and the effects of COVID-19 on college students. Finally, student discussions range from Gen Z's political socialization, social medias effect on various topics, the varying views of Catholics and capital punishment, exploring music and physics, and social justice in action.

The Undergraduate Research Symposium provides an excellent opportunity for students, faculty, staff, parents, and members of the LMU community to actively engage with students who have been immersed in thought-provoking questions and global issues. In an increasingly complex world, it is important for students to take learning to a deeper and more integrated level. The work showcased today is evidence of this learning process.

Congratulations to this year's presenters and to all the students and faculty participating in the 2024 LMU Undergraduate Research Symposium!

Sincerely,

Kathleen Weaver

Kathleen Weaver, Ph.D.
Vice Provost for Research,
Professional Development and Online Learning

Elizabeth Wimberly-Young, M.F.A.
Director, Office of Research & Creative Arts

Carina Flores

Carina Flores, M.Ed.
Assistant Director, Office of Research & Creative Arts

Schedule of Events

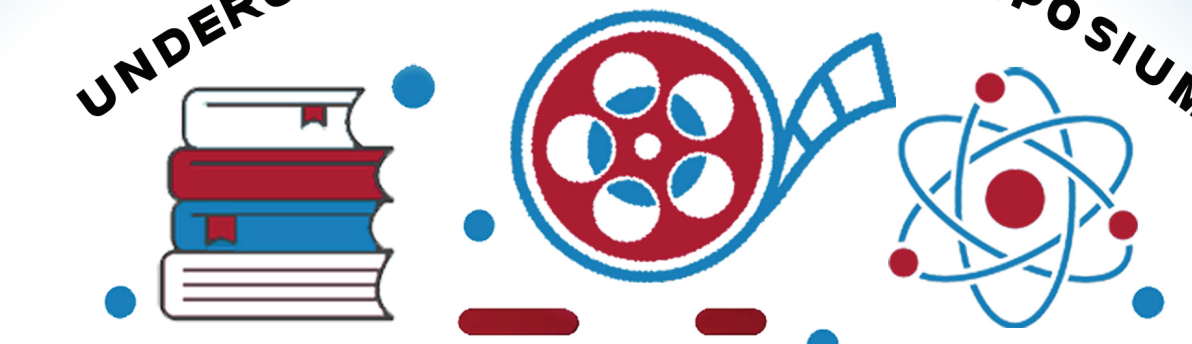
Friday, March 15, 2024

12:00pm – 4:00pm	**REGISTRATION** University Hall Suite 3000
1:00pm – 2:15pm	**ORAL SESSION I** 3rd Floor, University Hall
2:20pm – 3:35pm	**ORAL SESSION II** 1st, 2nd and 3rd Floor, University Hall
2:30pm – 4:30pm	**BIOLOGY DEPARTMENT ORAL SESSION** Ahmanson Theatre, University Hall
3:40pm – 4:55pm	**ORAL SESSION III** 3rd Floor, University Hall
4:30pm – 6:00pm	**POSTER SESSION** 1st and 3rd Floor, University Hall

Complimentary coffee, tea, and water on the third floor skywalk by suite 3000
Food available for purchase from the food truck from 12pm - 4pm

Oral & Poster Sessions

UNDERGRADUATE RESEARCH SYMPOSIUM



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Loyola Marymount University

Office of Research
and Creative Arts

ORAL SESSION I
1:00 pm – 2:15 pm
3rd Floor, University Hall

University Hall 3212: The Varying Fields of Health		
Presenters	**Title**	**Advisors**
Perla Rand	A COMPREHENSIVE STAGING SERIES OF THE TRACHEMYS SCRIPTA TURTLE	Max Ezin
Janie Thomson	Exploring energy availability, eating behaviors, and bone health in female collegiate athletes and non-athletes	Hawley Almstedt
Jocelyn Thew	'Speaking into the Wind': The Impacts of Ehlers Danlos Syndrome	Amanda Apgar
University Hall 3222: Politics in an Evolving Society		
Caroline Baker	From the Dinner Table to Digital: The Political Socialization of Gen Z	Richard Fox
Elise Treon	Home-Court Advantage: Comparing International Justice Mechanisms to Domestically-Grown Reconciliation	Feryal Cherif, Richard Fox
Alex Pacheco	"¡Mandamelo por WhatsApp!": The Influence of Social Media on Latina Immigrant Political Socialization	Chaya Crowder, Richard Fox
Violet Wright	Shifting Paradigms: The Effect of Language on Disability Policy	Chaya Crowder
University Hall 3320: The Wonderful World of Physics		
Joseph Kula	An Exploration of Music and Physics	Emily Hawkins, Jonas Mureika
Caden Swain	Analysis of Bayesian Transfer Function Fitting Method - A Potential Tool for Estimating Interferometer Uncertainty	Jonas Mureika
Daniel Alvarez	Flow Rate Analysis Through Novel eDNA Membrane Holders	Emily Hawkins
Nathan Avey	Investigating the Conformational Dynamics of the Enzyme Guanylate Kinase from Mutations at Two Locations	Zahra Alavi
William Meaney	What Physics Students Value About Physics: A Case Study	Jeff Phillips

ORAL SESSION II
2:20 pm – 3:35 pm
1st, 2nd and 3rd Floors, University Hall

University Hall 1402: Political Views in Group Settings		
Presenters	**Title**	**Advisors**
Mitchell Evans	Break from the Past or A Link in the Chain?: The Republican Party from Ronald Reagan to Donald Trump	Michael Genovese
Emily Olson	Breaking our Social Contract: How the Hells Angeles, the Paris Commune, and 'The Anarchists' Provide an Exploration of Consent and Political Obligation	John Parrish, Richard Fox
Zoe McGough	From Bible to Ballot Box: Church Attendance and Political Participation 2008-2020	Nathan Chan, Richard Fox
Ryan Byrne	What's the matter with the trade war? The Frank-Bartels dispute in an international political economy context.	Nathan Chan
University Hall 1404: Panel: Social Justice in Action: Service and Engaged Learning Experiences		
Chloe Seeger, Eseroghenerukevwe Ovbagedia, Julian Barba	ARTsmart: Inspiring Creativity In Underserved Youth	Teresa Lenihan, Judith Royer
Nicolas Gentile	Integrating Tongva Indigenous Knowledge with Modern Environmental Stewardship: Educational and Community Engagement at Ballona Discovery Park	Christopher Chapple, Judith Royer
Jennifer Woo, Nathan Kuczmarski	Project E2024	MaryAnne Huepper
Kaleb Agonia	QL+ Slantboard Project	MaryAnne Huepper
Michael Hennessy	Social Justice in Action with Quality of Life Plus	Matt Siniawski
University Hall 1405: Politics Abroad		
Gabriella Soto	The battle for democracy: Tackling disinformation in the Czech Republic	Christopher Finlay
Evan Fekete	Push and Pull Factors Affecting the Migration Decisions of Ukrainian Refugees	Kerstin Fisk
Ava Thorpe	Social Media's Effect on Women's Rights in West Africa	Christopher Finlay

ORAL SESSION II
2:20 pm – 3:35 pm
1st, 2nd and 3rd Floors, University Hall

University Hall 1866: Peacebuilding Around the World		
Olivia de Paschalis	Identity-Informed Peace: Policy Recommendations for Peacebuilding Influenced by Social Identity	Jennifer Ramos
Caroline deCordova	Women at the Forefront: An Analysis of Peace Building and Empowerment in Rwanda and South Africa	Jennifer Ramos
University Hall 2001: From Victorian Culture to Rural California		
Andrea Marie Morland-Tellez	The Effects of Colonization Among Native Hawaiians	Elizabeth Drummond
Mary O'Callaghan	From Marginalization to National Sensation: The Phenomenon of Disability in Victorian Popular Culture	Elizabeth Drummond
Jaryd Veserat	Tractors and the Spread of Technology to Rural Areas of California	Nicholas Rosenthal
UHall 3111: PANEL | Women's and Gender Studies Senior Panel: The Importance of Diverse and Intersectional Narratives: What Happens When We Have the Power to Tell Our Own Stories?		
Elise Lee	Comparing Social Responses to AIDS and COVID-19 through Oral History	Amanda Apgar
Sarah Ish	The Dating Experiences of Black Women	Amanda Apgar
Mathilde Hasson	From Summerhill to Adulthood: The Impact of Democratic Educational Pedagogies on Professional and Social Fulfillment	Amanda Apgar
Caroline Weiss	Narratives of Sexuality from Undergraduate Women at LMU	Amanda Apgar
Isabella Richards	Queer and Trans Migrations: The Impacts of Presidential Discourse	Amanda Apgar
J'aira Brown-Simmons	Social Media and Medicine: Maternal Care as Healing Intergenerational Trauma for Black Women	Amanda Apgar
University Hall 3212: Decisions, Decisions…		
Collin Griffin	Cognitive Load and Decision Making	Chela Willey
Abigail Shaw	Effects of Mindfulness on Decision Making	Chela Willey
Chester Mlcek	Entity Individuation and Independence in Heidegger's "The argument against need"	Ian Moore
Peter Robilio	The Search for Meaning: The Essence of Human Life	Daniel Speak

BIOLOGY ORAL SESSION
2:30 pm – 4:30 pm
Ahmanson Theatre, University Hall

Presenters	Title	Advisors
Clare Houston, Emma Guerrini Romano	Comparison of two populations of Mytilus galloprovincialis tolerance to varying environmental salinities through metabolic rate and hemolymph osmolarity	Maria Christina Vasquez
Catherine Channell, Odoba Okwuosa, Naomi Mesfin	Determining the genotype frequency of SNP rs4988235 that confers lactase persistence in an LMU population	Kam D. Dahlquist
Caroline Ehren	Identification of plant growth promoting rhizobacteria for Ballona Wetlands restoration	Michelle Lum
Aria Fulton	Using eDNA to detect marine invasive species along the Antarctic coast	Carla Ximena Salinas Silva, Demian Willette
Juliana Venegas	Characterization of cherub, a spontaneous Drosophila mutation affecting proximodistal patterning	Zoe Wong Vixaysongkham, Cory J. Evans
Caroline Thorpe	The yeast [2Fe-2S] mitochondrial protein Aim32 supports cytochrome c oxidase biogenesis	Shreshta Kode, Deepa V. Dabir
Jacqui Raetz-Vigon	Survival of the oldest: Examining great black-backed gull chicks' diet longitudinally and investigating the effects of hatch order	Kristen Covino
Gwyneth Garramone	Disruption of serotonin receptors 2B and 2C prevents proper formation of cardiac neural crest derivative structures	Brian Wells, Max Ezin

ORAL SESSION III
3:40 pm – 4:55 pm
3rd Floor, University Hall

University Hall 3212: Exploring the Criminal Justice System		
Presenters	**Title**	**Advisors**
Olivia de Paschalis	One Faith, Multiple Views: Catholicism and Capital Punishment	Cecilia Gonzàlez-Andrieu
Juliana Angel	The Real Cost: Analyzing How Cash Bail Creates a Wealth-Based Justice System and Violates the Due Process and Equal Protection Clauses	Evan Gerstmann
Jae Hodge	The Shield: Evaluating the Impact of Qualified Immunity on Police Behavior	Evan Gerstmann
University Hall 3222: DEIJ in Higher Ed & The Impact of Identity		
Zoe Katz	Faculty Member's 'Noticing' of DEIJA in the Classroom	Vandana Thadani
Auden Marsh-Armstrong	The Impact of Gender Stereotypes on Lay People's Narrative of Egg and Sperm Cells	Adam Fingerhut
Lacey Argus	Intersectional Identities and Learning Disability Diagnosis	Mairead Sullivan
Adelaide Battin	University Professors' Views About Diversity, Equity, Inclusion, and Justice (DEIJ) in University Courses	Vandana Thadani
University Hall 3226: Economics, Women's Health, and Gen Z		
Christina Dodd	The Dobbs Dilemma: Unraveling Women's Perspectives After the Dobbs Decision	Janie Steckenrider
Ryan Byrne	I'll Trade You for It: Examining Political Learning and Views of Trade Among Generation Z.	Adam Thal
William Dickens	Why do people make decisions that are bad for them economically? The role of Transgender issues	Adam Thal
University Hall 3230: Philosophy, Satire, and Fashion		
Aidan Foucher	The Beautiful & Divine Madness in Plato's Phaedrus	Erin Stackle
Max Page	Funny How? A Crash Course in Satire	Brad Stone
Danielle Champine	Venetian Vogue Unveiled: On the Hierarchical Fashion Trends of Renaissance Venice	Kirstin Noreen

ORAL SESSION III
3:40 pm – 4:55 pm
3rd Floor, University Hall

University Hall 3304: Politics: Past & Present		
Alejandra Smith-Gil	Alienated, Indifferent, or Uninformed? Analyzing American Expatriate Political Behavior	Gene Park
Emily Wallack	The Sociology of Auschwitz: How Bureaucracy and Rationalization Presented a Paradox of Ordinary Versus Evil	Margarete Feinstein
Audrey Wassel	Tracing the Populist Radical Right in Italy and Germany: A Historical and Political Comparison	Christopher Jackson
University Hall 3324: History of the Sea		
Isabella Inglin	Scurvy and Seafaring: A History of the Evolution of Treatments for Sea Sicknesses	Kevin McDonald
Aaron Iglesias	Waay Kot and Waay Pop: The Mutual Gains and Exploitation of Amerindian People's at the Hands of Buccaneers in the 17th and 18th Centuries	Kevin McDonald

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

ARTS | MEDIA | COMMUNICATIONS		
Presenters	Title	Advisors
Priya Dutta	Ethnic Identity Development and South Asian Stereotypes in "Never Have I Ever"	Allison Noyes
Claire Hagemeister	Selling Society's Ideals: Women's Evolution in Advertising	Robert Winsor
Josephine Spanier	"The Universe Is So Much Bigger than You Realize": Unconventional Production Design in Everything Everywhere All At Once	Christopher Murillo
HUMANITIES | SOCIAL JUSTICE		
Adina Trandafirescu	2023 Angeleno Opinions Towards Policing	Brianne Gilbert
Alexa Siglar	Agricultural Water Management in a Changing Mid-Atlantic: Stakeholder Experiences and Attitudes Towards Alternative Water Sources, Weather Variability, and Related Factors	Michele Romolini
Yoselin Ramirez Lopez	Corridos Tumbados and the Shaping of Mexican American Culture through Mexican Contemporary Music	Juan Mah y Busch, Vanessa Diaz
Elisa Prado	Cultivating Success: The Entrepreneurial Journey of the Prado Family and Mexican Success in the United States	Juan Mah y Busch
Alexa Montonen	Desbloqueando Fronteras: Obstacles in the Pathways to Legal Status	Juan Mah y Busch
Bianca Valentín	Diasporican: Tracing the Development of the Latest Identity Formation of the Puerto Rican Diaspora	Juan Mah y Busch , Vanessa Diaz
Garrett Howard-Jimenez	The Entertainment Industry Affecting Attitudes Towards LAPD	Brianne Gilbert
Maricia Marquez	Examining Relations of Angelenos with LAPD	Brianne Gilbert
Caroline Andrews	How do Angelenos prefer the City of LA to address emergency 911 calls, and how do these attitudes vary by age and race?	Brianne Gilbert
Elijah Vera	How do LA residents perceive racism regarding the LAPD across racial/ethnic groups?	Brianne Gilbert

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

Diana Vazquez	How Euphoria Shapes the Understanding of Domestic Violence	Juan Mah y Busch, Vanessa Diaz
Athena Mahajani	The Impact of Political Belief and Household Income on Angelenos' Attitudes Towards Taxation and Homelessness	Brianne Gilbert
Dylan Flood	Levels of Trust in the LAPD in Los Angeles	Brianne Gilbert
Bella Buccino	The Residents Of Los Angeles' Preferences For How The City Should Respond To Emergency Calls	Brianne Gilbert
Mariah Allen	Trust for City Government Across Ethnicities in Los Angeles	Brianne Gilbert
Tyler Bushey	Who should control housing policy in Los Angeles?	Brianne Gilbert
Izabel Mah y Busch	Writing Memory to Fill Absence: Willful Colonial Forgetfulness and Writers' Resistive Memory	Juan Mah y Busch
SCIENCE | ENGINEERING | MATH		
Alexander Minor	AI-Enhanced Robot Arm: a 3D-Print, Cost-Effective, Open-Source solution for intelligent Automation	Sun Xiaudong, Lei Huang
Alexandra Chang, Noopur Barve	Analysis of Interannual Migration Variation of Magnolia Warblers (Setophaga Magnolia) Using Hydrogen Isotope Ratios.	Kristen Covino
Ryan Rengstorff	Analyzing the Effect of pilA Mutant Sinorhizobium meliloti on Nodule Development and Defense Gene Expression in Melilotus alba	Nancy Fujishige
Gabriella Trujillo	Assessing explicit and implicit cognition on the prediction of adolescent nicotine use	Christopher Cappelli
Frankie Schulz	Assessment of the microbial community of invasive plant Euphorbia Terracina	Michelle Lum
Delina Amanuel, Sean Neal	Bad to the Bone: An investigation into the Effect of Environmental Pollutants on the Skull Development of Canis latrans Using Fluctuating Asymmetry	Wendy Binder
Jack Cadden, Julia Burke, Chadney Lim	Blood Flow Restriction Training Effects on Pennation Angles	Todd Shoepe
Sofia Lovesy, Kolane Gemeda	Bloodflow Restriction Resistance Training Effects on Blood Pressure	Todd Shoepe
Nicolas Salkin	Calculating Quasi-Normal Modes of Extended Uncertainty Principle Black Holes	Jonas Mureika

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

Ellie Hang	Characterizing tracheoidioblasts in Salicornia pacifica Standl.	Philippa Drennan
Lainee Irribarren, Colin Carr	Comparing the Effect of Hyposalinity of Mytilus Galloprovincialis' Clearance Rate in Ballona Creek and Marina Del Rey, CA	Maria Vasquez
Gisele Casanova	A comparison of Foliar Water Uptake and Wettability: Immature vs. Mature leaves of the chaparral species Heteromeles arbutifolia	Philippa Drennan
Osiris Guinea Zepeda	A COMPARISON OF THE EFFECTS OF TEMPERATURE AND SALINITY ON THE ANTIOXIDANT ACTIVITY OF MYTILUS GALLOPROVINCIALIS AND M. TROSSULUS	Maria Vasquez
Perla Rand	A COMPREHENSIVE STAGING SERIES OF THE TRACHEMYS SCRIPTA TURTLE	Max Ezin
Brian Macdonald	Counting the Maximal Chains of Bond Lattices	Josh Hallam
Dean Symonds, Kelsey Armstrong, Hannah C. Van Den Thillart, Rodrigo R. Bos, Abbey Shlossman, Estefania Valencia, Anton Dionisio, Natasha Khalil, Adriana Griot, David J. Moore, Dr. David J Hardy	COVID-19 Virus Effects on Cognitive and Motor Skills of College Students	David Hardy
Atithi Multani, Alexis Bowers	Cross-Sectional Diet Analysis for Musculoskeletal Performance in College Students	Todd Shoepe
Zoe Wong, Ryann Dorris	Development of a Temperature-Sensitive Lineage Tracing Mechanism in Drosophila	Cory Evans
Kennedy Melton	Do base-triples form in the HTLV-1 pro-pol frameshift site?	Kathryn Mouzakis
Gabriella Trujillo, Michael Ofori	The Effects of B2RT as an Accelerated Modality for Skeletal Muscle Strength	Todd Shoepe
Daniel Orr, Christina Paulazzo	Effects of blood flow restriction training on body composition parameters	Todd Shoepe
Victoria Batlle, Sophia Lissin	The Effects of Blood-flow Restriction Training on Bone Health at the Hip	Todd Shoepe

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

Julia Burke, Chadney Lim, Jack Cadden	Effects of Blood Flow Restriction Training on Muscle Quality	Todd Shoepe
Chadney Lim, Jack Cadden, Julia Burke	Effects of Bloodflow Restriction Resistance Training on Muscle Thickness and Quality	Todd Shoepe
Pauneez Kasmai	Epidermal characteristics and water uptake of Limonium perezii leaves at different stages of development	Philippa Drennan
Elise Lee, Kyle Wright	Establishing a Method for Quantifying Antifungal Properties of Plant Compounds	Tanya Kuzmenko
Grace Landers	Evaluating stormwater and climate-associated ecosystem services in eight urban parks in east Los Angeles	Demian Willette
Shelby Page	Evaluating the Impact of a Restored Dune Site on Seasonal Erosion	Tom Ford
Antonio Ballardo, Morgan Daniel, Zachary Gomez, Kayla Kumagai, Sophia Lissin	Exercise Acutely Modulates Mitochondrial Function in Peripheral Blood Mononuclear Cells	Robert Musci
Mia Mary	Exploring the Influence of flhDC Mutations on Sugar Uptake and Motility in Paraburkholderia uname	Michelle Lum
Taylor DeRouen, Ryan Seifi	Foliar water uptake and fog harvesting pathways in Limonium perezii	Philippa Drennan
Jana Soucar	Food and Mood: The Correlation Between Vitamin B12 and Folate Intake and Depression	Hawley Almstedt
Giselle Alrachid, Lillian Skinner	Formal One-Pot Synthesis of Psychrophilin E	Stephen Heller
Kevin Phung	Generating Sinorhizobium meliloti strain which overexpresses type IV pili	Nancy Fujishige
Haley Huntington, Christine Phelps, Tina Boluordi, Anika Khurana, Lana Kayali, Maelani Nguyen, Caitie Olshausen, Anisha Patel	Greater Brain Activation in ACLR Patients During Force Reproduction Task Compared to Health Controls	Yong An
Jenna Ellinghuysen	Individual Autonomic and Cardiovascular Responses to the Cold Pressor Test	Caio Sousa

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

Nimrat Sran, Tia Nguyen, Reese McNally, Elizabeth Camberos, Alexa De Anda	Interaction of RGG-motif peptides with MYC promoter G-quadruplex	Jeremy McCallum
Adrian Wasylewski, Makena Robison	Interdisciplinary Approaches to Studying Climate Change: The Development of a Web-Based Closed-Loop Temperature-Control System for an Aquatic Tank	Barbara Marino, Andrew Forney
Cassandra Erickson	Intertidal Temperature Variation and Mussel Physiology	Maria Vasquez
Samantha del Pozo	Investigating the Impact of Substituent Position on the Excited State Proton Transfer Reaction in Isoquinoline	Ryan Hunt
Gabriella Drumm	An Investigation into the Effect of Water Factors on HAB Species in Santa Monica Bay	Rachel Adams, Amber Covino-Bratcher
Danielle Leong	Investigation into the Impact of Heavy Metals on Beach Evening Primrose and its Associated Microbes	Michelle Lum
Frances Dygean, Sofia Carranza, Tyler Gonsowski	It's in the Poo: Testosterone Mediates Aggression in Larus marinus	Kristen Covino
Audrey Covington, Mwanday Yamegni, Marisa Gomez	Measuring the Impact of an RNA Stem-Loop on the HTLV-1 gag-pro Frameshift Efficiency	Kathryn Mouzakis
Josh Petteruti	Microplastics in Bottled Water: The Influence of UV Radiation	Rachel Adams
Taleen Madikians	Older chicks get better food: An analysis of isotope ratios in Great Black-backed Gulls	Kristen Covino
Alyssa Rodriguez	Osmotic performance of the mussel Mytilus galloprovincialis across increasing salinities	Maria Vasquez
Nikki Chun	Parameter sensitivity analysis of GRNmap, a dynamical systems model of gene regulatory networks	Kam Dahlquist, Ben Fitzpatrick
Clara Delnik	PERCEPTION OF DISCRIMINATION AND CARDIOVASCULAR REACTIVITY TO STRESS	Caio Sousa
Sophia Lissin, Victoria Batlle	Physiological Bone Adaptations to Blood Flow Restriction Training	Todd Shoepe

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

Kayla Kumagai, Madison Fulgham, Alexis Bowers, Emily Curry	The physiological determinants of endurance exercise performance in men and women collegiate runners	Robert Musci
Forrest Vogel	Pink Methylobacterium and its Potential Use in Agriculture	Nancy Fujishige
Josiah Dallmer, Paola Lopez de Cardenas	Pit Wear and Tear: Unearthing Taphonomic Trends at Rancho La Brea Tar Pits	Wendy Binder
Ngoc Kim Ngan Tran, Cecilia Zaragoza, A'Kaia Phelps	Propagating Protein-Protein Interaction Network Support into GRNsight 7.0, a Web Application for Visualizing Gene Regulatory Network Models	John David Dionisio, Kam Dahlquist
Lauren Fabre, Stephanie Flores	Proximity of stormwater green infrastructure on urban park user behavior in east Los Angeles	Demian Willette
Alexis Wong	Quantifying animal biodiversity within a nascent micro- forest in Southern California	Demian Willette
Charles Karim	Relationship of Temperature Variability and Methane Flux at the La Brea Tar Pits	Lambert Doezema
Ryan Schmiesing	Selective Acylation of Indole in the Presence of Hexanol and Phenol Using 1-(Trimethylsilyl)imidazole as a Protecting Group	Steve Heller
Sophia Shoham	Serotonin (5-HT) receptor 5-HT1A/B and 5-HT2A/B expression during gastrulation and neurulation in chick	Max Ezin
Mandoline Nguyen	Serotonin Receptor Disruption Affects Cardiac Neural Crest Cell Migration: A Morphometric Analysis of Valve Development	Max Ezin
Nicholas Aiello, Neel Patel, Nico Alvarez	Spray Integration in the Cooling of High Heat Flux Electronics	Mahsa Ebrahim
Madrid Ghanavat	Synthesis, Characterization, and Surface Functionalization of Gold Nanorods	Ryan Hunt
Andrew Nei	Understanding the Role of Tae2	Sarah Mitchell
Atrina Bonihe, Isabelle Bermudez	Use of Biopolymers and Bacterial Isolates to Improve Primrose Growth Under Drought Stress	Michelle Lum
Ashley Lee	Using eDNA to detect marine invasive species along the Antarctic coast	Demian Willette

POSTER SESSION
4:30 pm – 6:00 pm
1st and 3rd Floors, University Hall

SOCIAL SCIENCE		
Angelina Matar	Analyzing LAUSD Demographic and Standardized Testing Patterns	Alexandra Sturm
Sara Eberle	Autistic Women and Their Experiences with Adverse Sensory Foods	Alexandra Sturm
Kelsey Armstrong	Change in Sleep Pattern is Associated with More Accurate Identification of Negative Emotions Among Ekman's Universal Emotions	David Hardy
Sara Eberle, Maximillian Urias, Neeley Dayan	Cognitive Decline in Rural versus Urban Communities: A Mini Meta-Analysis	Nora Murphy
Zoe McMullen	Experience with LAPD by Race and Gender	Brianne Gilbert
Emily Wallack	Invisible Illness: The Silent Epidemic For Women	Anna Muraco
Natalie Skaggs, Lavanya Kannan	Lean on Me: Variables Associated with Social Support Satisfaction	Nora Murphy
Lavanya Kannan	Literature Review on Elementary School Children's Peer Relations	Negin Ghavami
Maximillian Urias	Neurodiverstiy Affirming Parenting	Alexandra Sturm
Eylenne Diaz	Party Lines and Racial Ties: Unraveling the Influence of Racial Identity on Policy Preferences among Latinos	Claudia Sandoval
Shani Marzuca	Police Reform and How Citizen Review Boards May Alleviate The Problem of Police Misconduct	Sylvia Zamora
Estefania Valencia Lozoya, Hannah Van den Thillart, Abbey Shlossman, Kelsey Armstrong, Adriana Griot, Dean Symonds, Isabella Chhina, Natasha Khalil, Anton Dionisio, Federico Bos	Primary Language Dominance Affects Performance in Neuropsychological Assessment	David Hardy

Abstracts

2023 Angeleno Opinions Towards Policing
Adina Trandafirescu

Since 2020, the LAPD has caused a variety of controversies throughout Los Angeles County. To amend possible Angeleno criticisms of the LAPD, one possible alternative that has become popular is to implement community policing. To assess public opinion for this possible alternative, I examine data from the 2023 Angeleno Poll conducted by the Center for the Study of Los Angeles at Loyola Marymount University. The mixed-mode survey obtains data from phone calls, online, and face-to-face interviews (n=2,008) on a variety of prevalent issues. Data is analyzed through a lens of sex, race/ ethnicity, and income. Results find that men have more favorable attitudes toward the police than women do; 60.7% of men had favorable attitudes whereas 53.44% of women did. Additionally, Black respondents are the least trusting (45.31%) of the LAPD while Latinx respondents are the most trusting (68.15%). Lastly, there is a general trend that respondents with higher household incomes are more trusting of the police than those with lower household incomes. These results suggest that some communities would be in support of alternative policing measures, while other groups are still favorable to traditional policing. Essentially, these findings showcase differing viewpoints and perspectives regarding the LAPD and the possibility of community policing upon Angelenos through different racial/ ethnic groups, sexes, and household incomes.

Agricultural Water Management in a Changing Mid-Atlantic: Stakeholder Experiences and Attitudes Towards Alternative Water Sources, Weather Variability, and Related Factors
Alexa Siglar

The mid-Atlantic has experienced significant but commonly overlooked impacts on water quality and quantity due to climate change, population increases, and land use modifications. Future climate change is predicted to cause even greater decreases in water availability for crop production and aquifer recharge. This talk presents findings from interviews with 17 mid-Atlantic stakeholders—including farmers, extension agents, state agency personnel and academics—to examine perceptions toward nontraditional water sources and water conservation practices. Semi-structured interviews completed in 2023 were designed to better understand stakeholders' perceptions and experiences with: 1) water use and management in agriculture, including both freshwater and reusable resources; 2) past, existing and future weather variability; and 3) related factors impacting water use and management. We found interviewee experiences with water use and management varied substantially, especially related to the geographic location of the farm and type of the farming operations. Interviewee interest in nontraditional water sources also related to farm location and product type, but included other factors such as land ownership, lack of access, and water quality and quantity concerns. We will describe emergent themes and key findings, how they inform our overall research project, and implications for water management in the region. This project also explores the use of nontraditional water sources and water conservation practices that help increase water availability and decrease water demand for irrigation with the goal of helping make the mid-Atlantic region water sustainable under current and future climate scenarios.

AI-Enhanced Robot Arm: a 3D-Print, Cost-Effective, Open-Source solution for intelligent Automation
Alexander Minor

Advancements in robotic automation have significantly progressed in recent years, leading to a paradigm shift in contemporary manufacturing practices through the introduction of industrial robots. This technological evolution has predominantly been accessible to large-scale corporations possessing the requisite financial capabilities to invest in sophisticated robotic systems, which often entail substantial expenditures, sometimes exceeding tens of thousands of dollars. The objective of this initiative is to develop, assess, and refine a largely 3D-printed, open-source robotic arm, with the intention of establishing a versatile and modular framework tailored for elementary automation tasks. By capitalizing on the cost-efficiency of 3D-printed components and consumer-grade electronics, the expenditure associated with manufacturing one such robotic arm can be reduced to approximately $500. This strategic price point renders the technology attainable for small-scale enterprises and entrepreneurial startups. To mitigate the inherent limitations associated with the mechanical strength of 3D-printed materials, this project incorporates 3D scanning technologies, employing conventional imaging devices to ascertain the precise positioning and dimensions of objects, thereby

compensating for potential misalignments. Furthermore, the integration of machine learning techniques facilitates the identification of objects being scanned, enabling comparison with a pre-established database of recognized items, and subsequent execution of user-defined automation tasks. The overarching goal of this venture is to forge an easily integrable, cost-effective, and expandable product which leverages artificial intelligence to foster a solution that is both resilient to errors and adaptable to its applications.

Alienated, Indifferent, or Uninformed? Analyzing American Expatriate Political Behavior
Alejandra Smith-Gil

Only 7.8% of American expatriates over the age of eighteen vote while they are overseas. Limited information is available about how they vote and why they tend to not. Current expatriate research explains the obstacles expatriates face while attempting to vote, but fails to explore their voting preferences (preferred party, candidate preference, et cetera). As a result, this research aims to explore how the experiences of American expats influence their political behavior and mobilization. Considering this is a demographic that consistently lacks in political participation, it is unfailingly being overlooked by politicians, campaign strategists, and political scientists who ignore millions of potential voters. There are millions of potential voters who could likely alter the outcomes of American elections. This research uses a mixed-methods approach to determine how the political beliefs and mobilization of expatriate Americans compares to the Americans living in the United States. The findings determined that expatriates' experiences influence both their political behavior and mobilization, and if they were to vote, they would be able to influence American elections.

Analysis of Bayesian Transfer Function Fitting Method - A Potential Tool for Estimating Interferometer Uncertainty
Caden Swain

The Response Function of the LIGO Interferometer is central to reconstructing the strain produced by incoming gravitational waves. As a function of the interferometer's response to external stimuli, the Response Function is both analytically modeled and experimentally measured using excitations from the photon calibrator system at discrete frequencies. The uncertainty in each data point is propagated to the residual between the model and measurements, with both the uncertainty and residual being interpolated over a broadband frequency range. This project explores an alternative method to estimating the uncertainty and systematic error present in the Response function model through the utilization of Bayesian Statistics as opposed to data interpolation. We fit a distribution of transfer functions directly to the residual of the Response Function, bypassing the inherent error in data interpolation. Using data gathered from an electronic whitening chassis at discrete frequency points as a substitute for Response Function data and varying the Signal-to-Noise Ratio as a proxy for varying the uncertainty in the measurements, we analyze the results of this method and compare its precision and accuracy as compared to the standard transfer-function-fitting method.

Analysis of Interannual Migration Variation of Magnolia Warblers (Setophaga Magnolia) Using Hydrogen Isotope Ratios.
Alexandra Chang, Noopur Barve

Migratory patterns of songbirds have long been the subject of much fascination and research. We seek to gain insights into these migration patterns, particularly focusing on the interannual variation in the

timing of these seasonal movements. To do so, we analyze stable-hydrogen isotope ratios found in feathers sampled from migrating birds. Hydrogen isotopes are incorporated during feather growth on the breeding grounds due to surrounding geographic features and atmospheric processes and thus feathers sampled from migrants provide information about breeding destination. In this study, we examine the spring migration timing of Magnolia Warblers (Setophaga Magnolia) in 2019, at a migratory stopover site (rest stop) in Maine. Magnolia Warblers are a common migrant, thus allowing us to investigate migratory patterns across years. We hypothesize that southern breeding individuals migrate earlier than northern breeders. We are analyzing isotopes from 210 feather samples. To date, half of the samples have been cleaned, encapsulated in silver capsules, and sent to the Cornell Isotope Laboratory for isotope ratio determination. We will present our within-year preliminary findings of Magnolia Warblers migratory patterns. This pilot study will serve to direct the best sub-sampling strategy for additional sampling from across almost 10 years of archived samples. This research will therefore further provide information regarding the impacts of climate change on the timing of migration of Magnolia Warblers.

Analyzing LAUSD Demographic and Standardized Testing Patterns
Angelina Matar

Declining enrollment in LAUSD schools is an emerging issue, particularly in Westchester. However, enrollment declines are not consistent across schools. The present study aimed to evaluate enrollment and standardized testing data for elementary public day schools located in Westchester (Cowan Avenue Elementary, Kentwood Elementary, Loyola Village Elementary, Open Magnet Charter, Westport Heights Elementary, Paseo del Rey Elementary, WISH Community, and Playa Vista Elementary) between 1998 and 2022. . A majority of the schools followed the decline in enrollment post-2001, with 2001 being the highest overall enrollment for LAUSD. WISH Community has been consistently growing since its opening in 2011 and is the sole elementary school that has not seen a drop in enrollment. On average, schools with more consistent enrollment are higher performers in standardized testing, with Kentwood Elementary, Open Magnet Charter, WISH Community, and Playa Vista Elementary being the strongest contenders. When analyzing demographic data, schools with a higher proportion of Black/African American student enrollments typically experienced heavier declines in enrollment. Also, schools that have consistently thrived over the past couple of years seem to be charter, magnet, or independent schools. Understanding the trends in enrollment is necessary to determine the resources needed for these elementary schools to provide the best possible educational experience. Westchester schools should promote school-level independence and ownership and engage with the surrounding community to establish a support network.

Analyzing the Effect of pilA Mutant Sinorhizobium meliloti on Nodule Development and Defense Gene Expression in Melilotus alba
Ryan Rengstorff

This study explores the impact of pilA mutant Sinorhizobium meliloti on nodule development and defense gene expression in Melilotus alba. Rhizobia are soil bacteria capable of fixing atmospheric nitrogen in symbiosis with leguminous plants. This study investigates the pilA gene in the rhizobium S. meliloti. The pilA gene is responsible for bacterial attachment to host root hairs, but its role in the rhizobium-legume symbiosis remains unknown. Previous findings from Fujishige lab suggest that mutations in the pilA gene affect nodule size and color, indicating a lack of symbiosis and expression of plant defense genes. This project hopes to expand on sustainable agriculture by optimizing the

rhizobium-legume symbiosis as a natural alternative to chemical fertilizers. This study involves inoculating M. alba with pilA wild-type and mutant strains to assess plant growth, nodule formation, and defense responses over several months. The study will monitor plant root and shoot length, nodule morphology and colonization, and defense gene expression via RT-PCR, gel electrophoresis, and histological analysis of tissue samples. Preliminary results indicate no statistically significant differences in shoot and root length between plants inoculated with wild-type and mutant strains of S. meliloti. However, observations suggest that the colonization of nodules by mutant strains is both qualitatively and quantitatively less than colonization by wild-type strains. These results suggest that while the pilA mutation does not affect the plant's initial growth, it may prevent the rhizobia from effectively colonizing nodules.

ARTsmart: Inspiring Creativity in Underserved Youth
Chloe Seeger, Eseroghenerukevwe Ovbagedia, Julian Barba

"California's Arts Education suffers from underfunded programs and insufficient facilities, often overshadowed by other curriculum demands. The lack of early art education hinders a critical component of childhood development, research shows this disproportionately affects low-income children. LMU ARTsmart is a unique program that addresses this issue by incorporating service learning into Arts Education. ARTsmart is the service-learning program housed within the Department of Art and Art History at Loyola Marymount University (LMU). Approximately 50 LMU students volunteer to provide arts activities to students in a local underserved public school every semester. By pairing K-8 students with LMU students as artist mentors, the program benefits early education and higher education by allowing college students to apply their artistic abilities while gaining teaching experience. ARTsmart's partnership school, Westside Global Awareness Magnet in the Los Angeles Unified School District has students from diverse backgrounds. Its population is 58% Hispanic, 26% Black and 10% White. ARTsmart's artist mentors gain leadership experience within this multicultural educational environment. As artist mentors, LMU students collaborate to develop a curriculum that fosters creativity, self-expression, and critical thinking using various arts media. This program also includes an arts-focused field trip to LMU's campus and the ARTsmart Art Day at the Beach. ARTsmart recognizes that "lack of resources" is not just about money, but also human connection and interaction. The opportunity to foster these transformative connections has been an honor for us as artist mentors within ARTsmart."

Assessing explicit and implicit cognition on the prediction of adolescent nicotine use
Gabriella Trujillo

"Adolescent cigarette and e-cigarette use has remained an area of great public health concern, with past 30 day and past year use remaining near historic highs. PURPOSE: The present study investigated the effect explicit and implicit cigarette cognitions have over the initiation and maintenance of both cigarette and e-cigarette use among a population of alternative high school students. METHODS: 586 alternative cigarette naive high school students (female: 50.8%; male: 49.2%; mean age 17.4 years) were analyzed over three years using a multilevel logistic regression. Explicit cognition was measured using a survey and implicit cognition measured using an implicit association task (IAT). RESULTS: At baseline, students who had higher positive explicit cognitions were predicted to have stronger odds of cigarette use (OR=1.72, 95% CI; 1.11-2.68) at follow-up. Those with higher negative explicit cognitions at baseline were predicted to have higher odds of e-cigarette use (OR= 1.4, 1.61-1.91) at follow-up. Those whose positive explicit cigarette cognitions increased over time (OR= 3.45, 95% CI; 2.10-5.68) had higher probability of cigarette use. Those with higher negative explicit cigarette cognition increased overtime (OR= 1.93, 95% CI; 1.03-3.61) had higher probability of cigarette use. CONCLUSION: Negative explicit

cognitions were shown to increase the odds of nicotine use similar to positive explicit cognitions. Prevention methods using negative explicit cognitions may not reduce the use of nicotine products, but instead may reinforce experimentation. Thus, prevention programs that rely solely on increasing negative cigarette cognitions may not be effective at altering behavior. Word Count: 243"

Assessment of the microbial community of invasive plant Euphorbia Terracina
Frankie Schulz

Invasive weeds are problematic in agriculture and in ecologically sensitive areas. A common method of dealing with weeds is the use of chemical herbicides, but this can be problematic especially when dealing with ecologically sensitive areas because chemical herbicides can lead to the selection of herbicide resistant weeds, soil erosion, and environmental pollution. Deleterious rhizobacteria, bacteria that associate with plant roots and act to inhibit plant growth, are being studied for its potential to be potential bioherbicides, providing a possible alternative to conventional weed management methods. Euphorbia terracina is a non-native weed that is highly pervasive in the Ballona Wetlands of Los Angeles, California. The main goal of this study is to try and identify possible deleterious rhizobacteria that can inhibit the growth or germination of E. terracina. In order to do this, rhizobacteria were isolated, biochemical properties associated with plant associated bacteria were assessed, and bacterial isolates chosen for further testing. So far, this study has identified 11 unique rhizobacterial isolates from E. terracina, some of which display possible plant growth promoting properties such as providing salt tolerance as well as being able to solubilize phosphate. An in vitro weed inhibition assay will be performed as well as a growth room assay in which the effects of the chosen rhizobacteria on the germination and growth rates of native versus non-native plants will be assessed. However, even if deleterious rhizobacteria are not found, this study will give insight into the distribution of rhizobacteria found on invasives versus natives.

Autistic Women and Their Experiences with Adverse Sensory Foods
Sara Eberle

Many autistic individuals have diverse experiences with sensory stimuli, with reactivity varying from hypersensitivity to hyposensitivity (MacLennon et al., 2022). Difficulties with food and eating due to sensory sensitivity appear to be common for autistic women (Kinnaird et al., 2019). The present study aimed to characterize how autistic women cope with adverse sensory experiences with food and eating. A secondary analysis of mixed-methods data was conducted, including interviews of 45 autistic women. Participants were asked about their diagnostic history, sensory sensitivities, and sensory experiences with food and eating. Interview data were coded inductively using NVivo by a research assistant, an autistic collaborator, and the principal investigator. The study revealed that the participants often had adverse sensory experiences with specific food tastes, smells, and textures. Participants coped by restricting foods from their diet. Food rituals were often used, such as handling, cooking, or diluting specific foods to reduce negative sensory stimuli. For some participants, past exposure to adverse sensory foods caused anxiety around eating. Anxiety was managed by proactively seeking control over food preparation, meals, and the surrounding environment. This often resulted in rigidity around eating the same foods and avoiding new foods. Adverse sensory reactions to foods appeared to have a significant impact on autistic women. The coping strategies used influenced diet and food management, as well as each participant's relationship with eating and food. These findings will help improve awareness about adverse sensory experiences with foods and inform medical and psychosocial interventions for autistic women involving food and nutrition.

Bad to the Bone: An investigation into the Effect of Environmental Pollutants on the Skull Development of Canis latrans Using Fluctuating Asymmetry

Delina Amanuel, Sean Neal

The development of vertebrates has been shown to be negatively affected by environmental stressors, causing deviation from bilateral symmetry. This can be demonstrated in vertebrates by a measure known as fluctuating asymmetry (FA). As a marker of developmental stability and health, FA can indicate a lack of change (low asymmetry) or an increase in response to genetic or environmental stress (higher symmetry). Using a variety of skull landmarks—identifiable and repeatable points on the skull—the degree of FA within and between individuals in skull shape can be evaluated. Higher levels of FA may be observed at higher trophic levels due to a greater bioaccumulation of pollutants. In previous research, Principal Component Analysis showed higher levels of FA in omnivorous O. torridus skulls near Owen's Lake, CA (an EPA-nonattainment site with dangerous levels of heavy metals) compared to the more herbivorous N. lepida and P. maniculatus rodents found outside of Owen's Lake. To better examine the effects of developmental stressors on higher trophic levels, skulls of more carnivorous species, Canis latrans (Coyote), were measured from inside and outside Kern County, CA (an area with elevated emissions of carbon monoxide, particulate matter, and other toxic pollutants). Due to C. latrans occupation at a higher trophic level, it's hypothesized that there will be a higher degree of FA in C. latrans within Kern County, with an absence or lower degree of FA in those outside of Kern, and also higher FA in coyotes than the rodents in our prior study.

The battle for democracy: Tackling disinformation in the Czech Republic

Gabriella Soto

As cyberspace becomes more saturated with disinformation, often originating on websites and amplified on social media, its harm to the public sphere and, as a result, democracy is considerable. While disinformation campaigns originated under Stalin, their proliferation on the Internet during Brexit and the 2016 United States presidential election earned them a surge of attention. The Czech Republic, given its legacy as a satellite state of the former Soviet Union and its current membership in the European Union, maintains a unique alertness to this activity. In my research, I introduce the topic of disinformation and democracy in the Czech Republic through a strategic environmental scan of the public sphere in its normative interpretation. I consider critical theorists' viewpoints, analyze cyberspace's denotation as the forum closest to the ideal speech situation, and examine its perversion by disinformation actors who corrupt its potential for subversive use rather than deliberative and consensus-building debate. Introducing case studies in the Czech Republic, I reveal misconduct in the public sphere as having real-life implications for its stability as a democracy, with societal polarization and political unrest increasing. Finally, I conducted a policy analysis examining proposed and implemented regulatory action at a nation-state and European Union level. The evaluative standards for the policy include improving digital literacy, implementing content labeling, and removing disinformation from cyberspace. I determined that while Czech citizens' general rejection of regulations that appear as speech limiting has a justified existence given their history, on mass, these values are prominent because of their desire to maintain a democracy they lacked for much of their recent history. The most effective way to safeguard their democracy from the threat of disinformation campaigns that attack even the longest-standing democracies is through current and idealized policy adoptions that can improve their democracy's durability by correcting the circumstances at play in cyberspace that currently hinder the actualization of its function as the public sphere.

The Beautiful & Divine Madness in Plato's Phaedrus
Aidan Foucher

"What is the relevant literary and metaphysical connection between the first and second halves of Plato's Phaedrus? In working to answer this question I looked closely at the primary text itself in addition to the relevant secondary literature. The focus of my research centered around the literary center of Plato's Phaedrus. Midway through Plato's Phaedrus, Socrates and Phaedrus shift from producing rhetorical speeches on love to sharing a philosophical discussion on the art of rhetoric. I propose that this literary bifurcation is fundamentally tied up in the erotic bifurcation that Socrates gives between 'human madness', and 'divine madness.' To be specific, I propose that the literary shift itself, from the first half, which is governed by Phaedrus's blindly human madness, to the second half, in which Socrates's divine madness transforms Phaedrus's desire, is made possible both by Phaedrus's blindly human madness as a necessary prompting condition, and by Socrates's recognition and willingness to show that Phaedrus's desire, or divine madness, properly aims at knowing the truth about reality. Phaedrus's blindly human madness seems to have the power to prompt beautiful speeches, but is nonetheless insufficient for sustaining philosophical inquiries, insofar as Phaedrus is ignorant of the two distinct ends of his desire – firstly, to hear beautiful speeches, and secondly, to engage in conversation aimed at knowing truth. By giving Phaedrus's desire beautiful speeches to latch onto, Socrates more compellingly actualizes Phaedrus's desire to truly know reality, moving him beyond his desire to merely hear beautiful speeches."

Blood Flow Restriction Training Effects on Pennation Angles
Jack Cadden, Julia Burke, Chadney Lim

Blood Flow Restriction Training Effects on Pennation Angles Pennation angle (PA) represents the angle between muscle fibers and the force-generating axis of the muscle. Blood flow resistance (BFR) training involves the occlusion of venous blood flow in working muscles to promote muscular growth signaling with reduced training intensity. Purpose: The purpose is to examine if hypertrophy through BFR may result in PA alterations to accommodate muscle fiber volume alterations. Methods: Males (N=11, 20.35±1.59 yrs, 177.97±9.22 cm, 83.66±20.69 kg), and females (N=12, 23.20±9.53 yrs, 164.60±6.42 cm, 63.2±10.65 kg) participated in resistance training with BFR for 3 times/week, for 8 weeks at 50% occlusion pressure, at 20% of one-repetition maximum in four compound exercises performed for 4 sets of 30, 15, 15, and 15 reps. A Tearson ultrasound was used to quantify PA for Biceps Brachii (BB), Rectus Femoris (RF), and Biceps Femoris (BF). Results: Comparing percent change (PC) in PA, for males, there was similar PC in B2RT and control for BB (8.56±12.27 vs. 9.03±14.19%, $p>0.05$), RF (8.64±16.53 vs. -0.310±19.11%, $p>0.05$), but significantly higher PC for B2RT then control for BF (55.85±15.43 vs. 4.10±17.82%, $p=0.029$). In females, there was similar PC in B2RT and control for BB (11.61±13.98 vs. 16.49±11.77%, $p>0.05$), BF (55.24±17.59 vs. 46.74±14.80%, $p>0.05$), but PC trended higher in PA in B2RT than the control for RF (37.86±18.84 vs. 11.50±15.85%, $p=0.272$). Conclusion: This short-term protocol demonstrated altered muscle architecture in select lower-extremity muscles for males and potential trends in females which justifies additional studies to discern muscle specific adaptations.

Bloodflow Restriction Resistance Training Effects on Blood Pressure
Sofia Lovesy, Kolane Gemeda

Introduction: Bloodflow restriction training (B2RT) is linked to musculoskeletal health improvements and vascular adaptations including blood pressure (BP). B2RT involves restricting arterial blood flow and

diminished venous drainage restricted in working muscles which affects metabolic waste removal and vascular plasticity. Purpose: The purpose of this study was to investigate if B2RT alters BP. Methods: Recreationally fit college-aged participants (n=42, 20±1.7 years, 25±4 BMI, upper SBP 117/±11mmHg, DBP 72±7mmHg; lower SBP 126±15mmHg, DBP 75±7mmHg) were recruited through campus announcements and word of mouth. Participants in the B2RT group completed 7-weeks of training with squats, Romanian deadlifts, bench rows, and bench presses with restriction at 50% of occlusion pressure and 20% of one-repetition maximum, 3 times a week, 4 sets of 30, 15, 15, and 15 reps. Results: No significant differences were seen in upper or lower blood pressures, but male B2RT group showed significant reduction in lower occlusion pressure than a control group (-9.12%±2.88% vs. 9.99%±3.37%, $p<0.001$) with females showing trends that were not significant (-6.19%±3.02% vs. 0.27%±3.18%, $p=0.149$). Conclusion: This difference might be explained through segmental body composition changes in the males who participated in the training. Significant proportional changes in tissue make-up of the extremity including increased lean and decreased fat could alter the occlusion mechanics. This aids in the conclusion that blood flow restriction reduces lower extremity occlusion pressure which could be associated with decreased risk of cardiovascular disease.

Break from the Past or A Link in the Chain?: The Republican Party from Ronald Reagan to Donald Trump

Mitchell Evans

The election of Donald Trump appeared to be a total rejection of Republican orthodoxy. That someone who targeted the previous idols of Republican beliefs about free trade, protectionism, immigration, and welfare could have so completely won over the Republican voter base was notable. However, that Republican base had changed substantially since the election of Ronald Reagan in 1980. Where white college graduates have traditionally voted more Republican, and those without a college degree were more Democratic in this era, this dynamic had switched by 2016. In this thesis, I ask two questions: how has the Republican Party changed its ideological and policy stances from Ronald Reagan to Donald Trump? Furthermore, to what extent have changes in the electorate driven this change? This paper will be a longitudinal study of the changing trends of the Republican Party through its platforms and help expand on the scholarship of how changes in the electorate impact policy stances. Is there a future for the cult of personality of the Republican Party post-Donald Trump?

Breaking our Social Contract: How the Hells Angeles, the Paris Commune, and 'The Anarchists' Provide an Exploration of Consent and Political Obligation

Emily Olson

My research critically explores the nuances of political and philosophical anarchism. Anarchism is a strain of political theory that promises freedom, equality, and autonomy to its constituents. But, despite these attractions, anarchy is unstable as a political practice. Much of anarchy's practical and conceptual instability comes from the fact that humans are born into non-consensual social contracts which strongly limit an individual's ability to revoke their political obligations and live independent from society. To explain my assertions, I will use three case studies to demonstrate the processes used and consequences faced by anarchic groups who attempted to break their social contract: American outlaw group The Hells Angels; a commune of anarchist revolutionaries during the Franco-Prussian War; and a fellowship of anarcho-capitalists in Acapulco, Mexico. The findings of these case studies attempt to explain that that even in the face of anarchy's promises, the monumental responsibilities of coordinating defence and public goods for separatist societies make it nearly impossible to fully renounce obligation or consent to

a pre-existing State; and even if one were able to do so, it is near impossible to fulfill these responsibilities without mimicking the methods used by states themselves. The conclusions of my research add to the discourse of political theory surrounding statism, the social contract, and anarchy and challenge readers to consider their place and complacence in society.

Calculating Quasi-Normal Modes of Extended Uncertainty Principle Black Holes
Nicolas Salkin

This project is numerically computing quasinormal ringdown modes of extended uncertainty principle (EUP) Scwarzchild black holes. The ringdown modes are caused by vibrations on the event horizon of two coalescing black holes such as those observed by the Laser Interferometer Gravitational Wave Observatory (LIGO) . The EUP modifies general relativity at distances above a new length scale L*~1012 meters or higher. The scale is particularly relevant for supermassive black holes, whose horizons are of this size. The EUP alters several observable features of the quasinormal modes, including the imaginary and real components of the modes across different angular and normal modes, the overtone ratios of the modes, and the ratio between the real and imaginary components. The calculated quasinormal modes are then compared to the theoretical implications of general relativity, and the data collected from LIGO.

Change in Sleep Pattern is Associated with More Accurate Identification of Negative Emotions Among Ekman's Universal Emotions
Kelsey Armstrong

Change in Sleep Pattern is Associated with More Accurate Identification of Negative Emotions Among Ekman's Universal Emotions Kelsey D. Armstrong, Hannah C. Van Den Thillart, Rodrigo R. Bos, Abbey Shlossman, Estefania Valencia, Isabella Chhina, Dean Symonds, Anton Dionisio, Natasha Khalil, Adriana Griot, David J. Moore, & David J. Hardy Research has shown that sleep deprivation impacts the processing of faces, including the perception of facial emotions. Perception of emotions having negative valence, including anger and fear, is different from those of positive valence when examined in sleep deprived groups. On a variation of this theme, we examined the association between change in sleep pattern and the identification of facial emotional expressions in a sample of 37 college students. Change in sleep pattern was assessed via Item 16 of the Beck Depression Inventory-2. Identification of facial emotional expressions was assessed with the Facial Expression Recognition Test (FERT). Participants were shown 54 computerized image comparisons, each with a model showing one of Paul Ekman's six universal emotions (fear, anger, disgust, sadness, happiness, or surprise) and a model showing a neutral face. The FERT outcome scores analyzed were the participants' percent accuracy in identifying emotions. We expected that changes in sleep would be associated with facial emotion processing, especially emotions with a negative valence. Through a bivariate correlation analysis, we found that greater change in sleep pattern was associated with better facial emotion identification of the negative emotions fear ($p = .013$) and anger ($p = .046$). This finding is of interest considering college students are notoriously sleep-deprived. Future analyses will be conducted to examine any other potential associations between these changes in sleep, facial emotion identification, and other cognitive abilities.

Characterization of cherub, a spontaneous Drosophila mutation affecting proximodistal patterning
Juliana Venegas

We identified a spontaneous mutation in Drosophila that we call cherub because it causes markedly smaller wings and legs compared to wild-type flies. We find that cherub behaves recessively and maps to approximately 48.5 cM on Chromosome 3. Morphometric analysis confirmed the observed size reductions in wings and legs, but also revealed that particular regions along the proximodistal (PD) axis were more severely affected than other regions. We subsequently discovered that rotund mutants fail to complement cherub, and that a duplication of wild-type rotund rescues the cherub phenotype. Given these data, and that rotund maps very close to cherub (48 cM), we infer that cherub is a new allele of the rotund gene. Analysis of a rotund transcriptional reporter gene (rn2-2-lacZ) revealed that rotund is upregulated in rotund mutant genetic backgrounds, suggestive of negative autoregulation. This was confirmed by the overexpression of Rotund protein, which represses expression of the rn2-2-lacZ reporter gene. Consistent with this, publicly available ChIP-seq data demonstrates Rotund binding directly to the rotund gene locus in vivo, and further suggests that negative autoregulation is direct. Rotund is a zinc-finger transcription factor known to regulate PD patterning in a variety of tissues, and does so in combination with other regulatory transcription factors. We hypothesize that Rotund negative autoregulation provides a mechanism to "fine tune" expression levels for proper patterning.

Characterizing tracheoidioblasts in Salicornia pacifica Standl.
Ellie Hang

Salicornia pacifica Standl., a halophyte native to the pacific coast of California and Baja California, has a jointed, succulent shoot in which sessile, decurrent, leaf pairs enclose the stem. In the outer photosynthetic tissue of these leaves are "cell-like" structures that are identifiable by their spiral wall thickenings and large, prominent size. These structures, termed tracheoidioblasts, are suggested to occur in other succulent genera of the Chenopodiaceae (Arthrocnemum, Salicornia, Sarcoconia) while spicular cells (long, slightly branched with thick lignified walls; sclerids) occur in the same position in other species of these genera. Spicular cells may provide mechanical support, however, the structure and function of tracheoidioblasts have not been fully characterized. From hand-sectioned material sourced from the Ballona Creek Channel, tracheoidioblasts were observed to extend from the inner edge of the photosynthetic tissue to the epidermis. Similar results were seen in thin sections prepared by resin embedding, especially confirming that tracheoidioblasts immediately subtend the epidermis. The possible connection of the leaf veins with the tracheoidioblasts has yet to be determined by serial sectioning. Vital staining using 5% (w/v) neutral red in 0.06M potassium phosphate buffer (pH 8) suggests the presence of a plasma membrane in tracheoidioblasts, thus these are living cells and not vascular tissue. Initial studies using S. pacifica sourced from the Tree of Life Nursery found only spicular cells in the photosynthetic tissue. The occurrence of tracheoidioblasts versus spicular cells in S. pacifica lines will allow experimentation into whether differences are genetic or related to environmental factors.

Cognitive Decline in Rural versus Urban Communities: A Mini Meta-Analysis
Sara Eberle, Maximillian Urias, Neeley Dayan

Rural areas have a rapidly growing aging population due to low birth rates and the departure of young adults (Tuttle et al., 2020). This evolving landscape requires research in policy and healthcare approaches to better serve aging adults in rural and urban communities. Past studies in environmental gerontology have investigated the association between the socio-physical environment and aging

processes. One of the most important factors for aging well is cognitive health (World Health Organization, 2007). Epidemiological studies have shown geographical variations in dementia and cognitive impairment, with older urban residents showing better cognitive performance than those in rural areas (Russ et al., 2012). A systematic synthesis of cognitive decline in rural and urban areas is needed to better characterize aging trends. Therefore, this mini meta-analysis consists of five related studies to further explore trends in cognitive decline in rural and urban populations. The following research question was investigated: How does geographic location affect the rate of cognitive decline in rural versus urban populations? Cognitive decline was operationalized by the measured performance on the Mini-Mental State Examination (MMSE). Urban and rural communities were measured by the country's public health data and classification of rural and urban areas. A statistically significant effect was found for geographic location and cognitive decline. The data analysis reflected that rural populations experienced greater rates of cognitive decline compared to urban populations. Investigating differences in cognitive decline based on location, socioeconomic status, and individual characteristics is necessary to understand aging and social differences.

Cognitive Load and Decision Making
Collin Griffin

The idea of cognitive load is crucial to understanding how people can work under pressure and their ability to multitask. Recently, cognitive load has been compared to working memory RAM in a computer, such that too many simultaneous processes can overload the attentional system. In this study we wanted to analyze how effective people are able to complete a task while under high amounts of cognitive load. The participants in this study are each going to be put under an intense amount of cognitive load that we as the researcher will be monitoring. The high cognitive load task, would be participants are asked to generate an elaborate lie under pressure. Specifically, this group of participants will be told to improvise on a video they have never seen. They will then be compared to a group who will endure low cognitive load in which they will be actually watching the video and strictly told to just recall, under the same pressure. Those that are told to lie about what they saw in the video should show visual signs of greater cognitive load as seen by their eye and body movements. During the time that the participants will be asked to come up with the lie, they will be asked to perform a cognitive reflection measure. The cognitive reflection task measures the usage of quick, intuitive decision making compared to more methodical, but slower thinking. We predict that those who are in the high cognitive load condition will rely more on intuitive thinking, which will cause worse performance on the cognitive load task than those who are not. The comparison between the high cognitive load (lying) and low cognitive load (truth) groups in cognitive reflection can give insight on how decision-making is affected while attempting to maintain a lie.

Comparing the Effect of Hyposalinity of Mytilus Galloprovincialis' Clearance Rate in Ballona Creek and Marina Del Rey, CA
Lainee Irribarren

Mussels (Mytilus) occur along the Pacific coast where they filter water, provide habitat and food, and contribute to coastal health and biodiversity. Mytilus galloprovincialis is an invasive species that has colonized the brackish seawater in Ballona Creek (BC) and Marina Del Rey (MDR), CA. Climate change is predicted to increase precipitation that will decrease seawater salinity, which may influence mussel survival. Our project focused on comparing the effect of hyposalinity on the clearance rate (CR) of M. galloprovincialis from BC and MDR. We hypothesized that exposure to hyposalinity (<25ppt) will result in

a significantly lower clearance rate compared to the control salinity (34ppt) for both mussel sites. M. galloprovincialis were collected from BC and MDR and acclimated to control conditions (17°C, 34ppt) with food in recirculating seawater tanks. Following acclimation, mussels (N = 12) were exposed to different levels of hypo- or hypersalinity (40, 35, 30, 25, 20, 15, 10, 5ppt) for one week without food and then CR measured. For the 30 and 25ppt treatment, mussels from both locations had CR decrease significant compared to the control. We predict that mussels rom BC will exhibit higher CR at severe hyposalinity (<15 ppt) compared to the CR from MDR mussels. Understanding how Mytilus species respond to different salinities aids in our understanding of climate change induced environmental changes on a broader ecosystem scale.

Comparing Social Responses to AIDS and COVID-19 through Oral History
Elise Lee

In the past 40 years, the United States has been faced with two major public health crises: the AIDS epidemic and the COVID-19 pandemic. During both AIDS and COVID, despite severely lackluster governmental responses, we saw overwhelming amounts of community organizing and collective action on the part of the public. Why do public health crises, such as the HIV/AIDS epidemic and the COVID-19 pandemic push people towards collective social action? I will be drawing on ideas from feminist care ethics, especially ideas of interdependence. ACT UP was given life through the community they created for themselves but a hallmark of COVID-19 was isolation. I will explore how interdependence and community plays out in the context of COVID-19 since we were all alone for so long. Additionally, drawing on ideas about the social contract and Foucault's ideas about governmentality, what is it about COVID and AIDS in particular, that made people feel so powerless and made our bodies available for governing in ways that they previously had not been? Lastly, I will explore queerness as a political position. Queerness is not about sexuality but rather, relationships to power and the state. Especially regarding COVID, some people just wanted things to go back to "normal" as quick as possible while others saw it as an opportunity to change the social order, and how do these perspectives affect the way people respond to major crises?

A comparison of Foliar Water Uptake and Wettability: Immature vs. Mature leaves of the chaparral species Heteromeles arbutifolia
Gisele Casanova

Foliar water uptake is the absorption of water through the leaf lamina. Common pathways of uptake have been cited as cuticular diffusion, absorption through stomatal pores, trichomes, and hydathodes, where wettable leaf surfaces may increase water contact with the lamina and potentially uptake. Prior studies have focused on fog-influenced forests and mediterranean climate types, whereas new studies have shown interest in arid climates. However, little study has been conducted concerning the impact of leaf development on its wettability and relationship with water uptake. The purpose of this study was to identify the influence of immature versus mature leaves on wettability and foliar water uptake as potential survival advantages for Heteromeles arbutifolia, a drought tolerant species of the California Chaparral. Wettability was measured on both adaxial and abaxial surfaces for immature (less than half expanded) and mature leaves. Foliar water uptake was assessed across treatments that tested petiole uptake (with and without a wax barrier), laminar fog uptake, and complete laminar submergence. The greatest uptake occurred in immature leaves that were completely submerged and in mature leaves via the petiole. This result may reflect the well developed vascular system of mature leaves in comparison to immature leaves. Immature leaves were less wettable compared to mature leaves. Previous research

linked greater wettability with increased water uptake, however, our findings did not reflect those trends. Our study concluded that leaf age influences foliar water uptake and that wettability may not contribute to such differences.

A COMPARISON OF THE EFFECTS OF TEMPERATURE AND SALINITY ON THE ANTIOXIDANT ACTIVITY OF MYTILUS GALLOPROVINCIALIS AND M. TROSSULUS

Osiris Guinea Zepeda

Mytilus trossulus is a blue mussel species that is native to California but has contracted its species range due to environmental stressors and competition with the heat tolerant M. galloprovincialis. Studies have shown that hyposalinity and heat stress separately increase the activity of cellular antioxidants in Mytilus mussels. However, we do not know how antioxidant responses shift under combined stressors in M. trossulus and M. galloprovincialis. The purpose of our study was to quantify the enzymatic levels of antioxidants (superoxide dismutase, SOD; catalase, CAT) and oxidative damage (lipid peroxidation; LPO) in M. trossulus and M. galloprovincialis when exposed to multiple stressors. Mussels were exposed to combinations of hyposalinity (20, 25, and 34 ppt) and heat stress (17, 20, and 25°C) and then dissected so the gill tissue was isolated for antioxidant analysis. We found that there was an increase in SOD activity in mussels exposed to the mild temperature stress (20°C) combined with hyposaline conditions for both species. M. trossulus under 25°C, 20 ppt showed the highest CAT activity. In addition, LPO in M. trossulus was the greatest under control conditions. M. trossulus increased both CAT and SOD at the most extreme condition (25°C and 20 ppt) while M. galloprovincialis did not, which suggests that it may use other methods to withstand multiple stressors biochemically. Thus, our study suggests that M. trossulus relies more on antioxidants to combat oxidative stress during multiple stressor exposure than M. galloprovincialis.

Comparison of two populations of Mytilus galloprovincialis tolerance to varying environmental salinities through metabolic rate and hemolymph osmolarity

Clare Houston, Emma Guerrini Romano

Mytilus galloprovincialis is an invasive mussel species present in Los Angeles, CA with a limited physiological tolerance to hyposalinity. It exists at two sites with varying salinity exposures; Ballona Creek (BC) has a large fluctuating salinity due to greater freshwater input in comparison to the more stable salinity at Marina del Rey (MDR). The aim of our study was to investigate the physiological tolerance of M. galloprovincialis at these sites by quantifying changes in the metabolic rate and hemolymph osmolarity, and we hypothesized that BC mussels would have a greater tolerance to hyposalinity conditions. Mussels were collected from MDR and BC and acclimated to control conditions (17°C, 35 ppt) for two weeks prior to experimentation. Mussels (N=300 per site, N=12 per treatment) were exposed to salinity treatments (5, 10, 15, 20, 25, 30, 35, 40 ppt) for one week. Metabolic rate (MR, mg O2·min.-1·g wet weight−1) was measured by closed-system respirometry and hemolymph was extracted from the posterior abductor muscle and osmolarity (mOsm) measured using an osmometer. MR increased under hyper- or mild salinity (30, 20 ppt) and decreased under moderate hyposalinity (10, 5 ppt), though there were no differences between MDR and BC populations. Hemolymph osmolarity showed sustained osmoconformation from 40 to 15 ppt for both populations. This data suggests that M. galloprovincialis has a larger physiological tolerance to hyposalinity than previously known. As climate change stressors persist, M. galloprovincialis may be able to tolerate salinity fluctuations better than previously expected.

A COMPREHENSIVE STAGING SERIES OF THE TRACHEMYS SCRIPTA TURTLE

Perla Rand

"Introduction: As the field of developmental biology expands, exploring the embryonic development of non-model vertebrates, such as freshwater turtles, is essential. Researchers have begun exploring the development of Trachemys scripta, the red-eared pond slider turtle, through next-generation transcriptome assembly of embryos, and investigation into T. scripta trunk neural crest migration. Embryogenesis is generally similar across freshwater turtle species, thus we propose T. scripta as a representative. As the most invasive turtle species, T. scripta is highly accessible. Creating a full developmental series from early embryogenesis to hatching is essential for using T. scripta as a model turtle.
Methods: We monitored the embryonic development of T. scripta from 0 to ~60 days post-oviposition (DPO). Across the 2021-2023 nesting seasons, about 456 eggs were collected from California State University, Northridge. Eggs were incubated at 28°C, a temperature that yields male turtles. Approximately 300 embryos were collected and staged according to Yntema's (1968) canonical freshwater turtle staging series. Moreover, anatomical structures were detailed using Werneburg's (2009) Standard Event System.
Results: We generated a comprehensive staging series of T. scripta embryonic development. Brightfield images and detailed descriptions of embryos are presented at each stage, from gastrulation to hatching. In the younger stages, DAPI staining revealed crisper details of the blastopore and chordamesodermal canal. In older stages, key structures, such as the carapace, eyes, and heart, were tracked to describe development over time. Future Directions: Incubating turtle eggs at female-yielding temperatures would be insightful, highlighting the differences between male and female T. scripta embryo development."

Corridos Tumbados and the Shaping of Mexican American Culture through Mexican Contemporary Music

Yoselin Ramirez Lopez

In 2023, there was a 42.1% surge in the consumption of Mexican Regional music in the United States. A significant contributor to this surge is the emergence of a new genre called "Corridos Tumbados," which seamlessly blends the sentimental essence of traditional Mexican music with influences from hip hop and reggaeton. Individual artists like Peso Pluma and Natanael Cano, as well as groups such as Fuerza Regida and Grupo Frontera, have played pivotal roles in popularizing Corridos Tumbados in the U.S. This study is driven by the imperative to explore the dynamic interplay between Mexican Contemporary music and the evolving identity of Mexican Americans, particularly as the genre gains popularity among Mexican American youth. The active involvement of Mexican American artists in shaping this new musical genre adds another layer of significance to this research, prompting an investigation into the profound impact of this cultural movement. This paper seeks to address critical questions such as: How is Mexican Contemporary music created by Mexican American artists shaping the identity of Mexican Americans? Employing a methodology that combines lyrical and visual analysis with secondary examination of interviews and articles, the research will focus on Grupo Frontera and Fuerza Regida—two Mexican Contemporary Music groups composed of Mexican Americans. By unraveling the symbiotic relationship between Mexican Contemporary music and Mexican American identity, this paper not only deepens our understanding of cultural expressions within the music but also illuminates the active role of music as an agent in the ongoing process of identity formation and cultural maintenance.

Counting the Maximal Chains of Bond Lattices
Brian Macdonald

"A graph is a mathematical object made up of vertices connected by edges. It can model the relationships within a set of people, objects, or places. A bond is a specific subset of vertices and edges taken from a graph. Together, all the bonds of a graph form a partially ordered set that can be visualized as a lattice. Every bond lattice has a certain number of maximal chains, paths from the bottom to the top of the lattice, and our research focused on how to count them. By finding better ways to count these objects for different graphs, we sought to answer an unsolved problem in combinatorics: do there exist two non-isomorphic bond lattices with the same number of maximal chains? We approached this problem in two different ways. First, we used SageMath code to build and analyze different bond lattices. Then, we derived and proved formulas for the number of maximal chains in the bond lattices associated with specific families of graphs. Our research made progress toward understanding bond lattices and answering the open question. With our code, we showed that for graphs on up to 8 vertices, there are no non-isomorphic bond lattices with the same number of maximal chains, striking at the heart of the main problem. Additionally, our formulas explicitly calculate the number of maximal chains in the bond lattices of the graph family formed by connecting complete graphs along a single smaller complete graph."

COVID-19 Virus Effects on Cognitive and Motor Skills of College Students
Dean Symonds, Kelsey Armstrong, Hannah C. Van Den Thillart, Rodrigo R. Bos, Abbey Shlossman, Estefania Valencia, Anton Dionisio, Natasha Khalil, Adriana Griot, David J. Moore, Dr. David J Hardy

Of those with COVID-19, between 35-85% have had neurological conditions associated with their vrial infection (Rowe et al., 2022). Such neurological manifestations include encephalopathy, meningitis, or encephalitis. Patients who tested positive for COVID-19 were at a higher risk of cognitive deficit up to 2 years after infection in comparison to patients infected with other respiratory diseases. This cognitive deficit is a symptom of a condition known as brain fog (Taquet, et al., 2022). The present study aims to determine if college students who have tested positive for COVID-19 and who reported to have brain fog as a symptom are likely to score differently than those who have not tested positive for COVID-19 on tests that are associated with cognitive and motor abilities. The tests administered in this study are the Trail Making Test, response inhibition test, and the Grooved Pegboard Test. The tests showed that there was no significant link between the COVID-19 symptom of brain fog and performance on the Trail Making Test on either part A or B ($p = .339$ and .143 respectively). Although, there was a common pattern in the means of the tests scores showing the group with COVID-19 positive group with brain fog took longer on the tests. There were also no significant results for the Response Inhibition Test part A, B, or C ($p = .586$, .993, and .251 respectively). Part C of the test also showed a similar pattern that the COVID-19 positive group who experienced brain fog also took the longest. There was, however, a significant difference in scores on the grooved pegboard test for the non-dominant hand trial ($p = .043$), this test tests for motor abilities. A potential explanation regarding the lack of significance in the cognitive tests is the large amount of variability in the small samples sizes of the groups, and that the young age group examined in the study is not the age group that mostly has neurological symptoms from COVID-19.

Cross-Sectional Diet Analysis for Musculoskeletal Performance in College Students
Atithi Multani, Alexis Bowers

Dietary nutrients are a valuable component of musculoskeletal health and performance. Purpose: This study aims to describe quality of dietary intake and relationships of nutrients on muscle strength performance through nutritional diet logs in college students. Methods: The 41 participants (21 females and 20 males, aged 20.19±1.74 years, BMI: 24.57±4.11) recorded a single-day nutrient diet record which was analyzed with NutriCalc. Maximal voluntary contractions were acquired for ten isokinetic, isotonic, and handgrip strength variables and analyzed via bivariate correlation on SPSS. Results: In men, daily fiber (grams/kg/bw) showed significance for elbow extension (r=0.413, p=0.035), knee flexion peak (r=0.388, p=0.046), and knee extension (r=0.484, p=0.015) while females showed not-significant negative correlation trends for fiber. While no alcohol intake was reported by female participants, alcohol consumption (grams/kg/bw) in males showed significant negative correlations for five strength measurements (r= -0.378 to -0.526). Caffeine was significantly and positively related to five strength variables for females (r=0.400 to 0.652) and one for males (r=0.444). In both groups, positive correlations were seen for multiple strength variables even after adjustment for body weight. With the exception of protein and carbohydrates,only a few participants met the RDAs/AIs of nutrients. Conclusion: Diet quality appears poor in these participants, whereas fiber, calcium, alcohol and caffeine show consistent relations to strength, possibly due to their association in diet quality and lifestyle behaviors.

Cultivating Success: The Entrepreneurial Journey of the Prado Family and Mexican Success in the United States
Elisa Prado

The focus of this research centers on the Prado family, consisting of three brothers–Javier, Antonio Sr., and José Luis Prado–as one group, and two siblings–Antonio Jr. and Julissa Prado–as another, children of Antonio Prado Sr. The Prado family's experience mirrors the broader challenges faced by Latino entrepreneurs. The ongoing research aims to unveil further disparities experienced by Mexican entrepreneurs in the U.S. Identifying these disparities can prompt direct interventions, which can potentially lead to a beneficial resolution and a more intricate understanding of strategies to address them. The Prado family case study becomes a model for navigating the complexities demonstrated by the existing research. The unique aspect of the Prado family case study is that it is not solely an individual entrepreneurship but the collective impact of multiple family members involved in successful business ventures. Examining a family dynamic in entrepreneurship provides insights into the role of familial support, shared cultural values, and collaborative efforts that contribute to the success of their businesses. This allows the surpassing of individual stories, going into the complexities of intergenerational wealth mobility within the context of Mexican entrepreneurship in the U.S. The current research will also enhance understanding of the tools and significance behind success, helping explain why Latinos exhibit higher entrepreneurial activity compared to other racial or ethnic groups in the U.S. This active research will also contribute to a deeper comprehension on the factors influencing not only the sustainability but also the success of Mexican-owned businesses in the U.S. The research will provide a new case study, focusing on exploring the entrepreneurial journey of the Prado family, a successful model of entrepreneurship in order to supply additional understanding of the Mexican entrepreneurial landscape in the U.S. This case study seeks to provide valuable insights to the discourse surrounding Mexicans navigating the entrepreneurial field in the U.S. and promoting intergenerational wealth mobility. It is positioned to serve as a valuable resource for academics, policymakers, and those aspiring business owners hoping to comprehend and navigate the complex challenges faced by Mexican

entrepreneurs. This research aspires to contribute to the greater discussion on how Mexicans navigate the entrepreneurial field in the U.S. and explores intergenerational wealth mobility of Mexicans and Mexican-Americans.

The Dating Experiences of Black Women
Sarah Ish

My presentation centers around Black women's dating and hookup experiences at Loyola Marymount University (LMU). I distributed a survey with 44 questions; five demographic questions and eight factors that include questions revolving around being romantically and/or sexually rejected based on their race/ethnicity. After three weeks of collecting data, my research has revealed patterns involving negative attitudes towards dating apps, admissions of hopelessness in finding an intimate partner, being fetishized by white people, and feelings of betrayal when/if a person of color expressed rejection based on their race/ethnicity. The implementation of feminist theory and feminist scholars such as Audre Lorde, Patricia Hill Collins, and bell hooks within this project will reveal the intersectional oppression at play, racial stereotypes of Black women, and the misogyny they face within their own community. Using these frameworks, I explore how these factors affect the Black women here at LMU and what role sexual orientation plays within said factors.

Desbloqueando Fronteras: Obstacles in the Pathways to Legal Status
Alexa Montonen

As the crisis faced at the U.S.-Mexico border evolves, the challenges faced by migrants in securing legal status further marginalize already vulnerable populations. Several policymakers propose solutions aimed at limiting the entrance of migrants into the United States. However, theories regarding the immigration application process point to the underlying issue preventing true reform: an ineffective system. Legal status is a defining factor in establishing oneself, as it grants rights and protections. By conducting a policy analysis of the Immigration and Nationality Act, I bring attention to the obstacles preventing migrants from obtaining immigration status. In addition to needing a direct family tie or sponsorship from an employer, administrative discretion is the most significant barrier to a system imperative to the moral commitments of our country. Administrative discretion describes the process in which officers are granted the power to use their sense of discretion to accept or reject immigration applications. This is where the soft and vague language encoded in the Immigration and Nationality Act reveals how legal status is used as a tool for exclusion. Preconceived notions of racial formations in America become policy, which is evident in this analysis of the current framework for the immigration system. Ultimately, I demonstrate how presumptions of race, and not law, guide understanding of who is deserving and undeserving of inclusion in the United States. This provides a nuanced perspective that transcends bureaucratic procedures to embrace the human stories behind the legal struggles.

Determining the genotype frequency of SNP rs4988235 that confers lactase persistence in an LMU population.
Naomi Mesfin, Odoba Okwuosa, Catherine Channell

The enzyme lactase hydrolyzes the milk sugar, lactose, into glucose and galactose. Approximately 65% of humans worldwide do not express lactase after weaning, called lactase nonpersistence (LNP). An LNP individual consuming dairy products can experience mild to severe gastrointestinal symptoms. Single nucleotide polymorphisms (SNPs) in the enhancer region of the LCT gene confer lactase persistence (LP),

the ability to digest lactose into adulthood. The best-studied SNP is the C/T variant (SNP ID rs4988235) at position -13,910 bp upstream of LCT, where the T allele confers LP. Frequency data for this SNP is incomplete for the heterogenous U.S. population. Our work seeks to fill this gap. DNA is extracted from hair follicles and PCR-RFLP analysis is used to determine the genotype at rs4988235. 47 samples of 56 collected from individuals at Loyola Marymount University have been successfully genotyped. From these data we predicted that 22 individuals (47%) are LP and 25 individuals (53%) are LNP. These results were compared to demographic data as well as self-reported dairy consumption and symptoms. 68% of successfully genotyped participants reported as LP, even without the T allele. We found the T allele was less common amongst Asian, Hispanic/Latino, and Black or African American populations, although the sample size is currently small. Continued sample collection and analysis will provide a more reliable estimate of the frequency of LP and LNP in a heterogeneous population. This may suggest revisions to U.S. dietary guidelines regarding dairy to reflect the needs of a diverse population.

Development of a Temperature-Sensitive Lineage Tracing Mechanism in Drosophila
Zoe Wong, Ryann Dorris

Lineage tracing is a tool used in developmental biology in which markers are used to track the fate of cells over the course of development. We are working to develop a temperature-sensitive version of the existing lineage tracing tool L-TRACE, which is used in the analysis and characterization of driver lines that utilize the LexA/LexA-op expression system. In this system, the LexA gene is placed under the control of a native enhancer. When the enhancer is active in a cell during the course of development, LexA binds to the LexA operator that controls transcription of the reporter protein. This system utilizes two reporters: red fluorescent protein (RPF), expressed when LexA is present within cells, and green fluorescent protein (GPF), expressed in perpetuity in cells that have expressed LexA at any point during development. The RFP marker used in standard L-trace is called tdTomato, and has been found to have a low level of background expression even when LexA is not present. Because of this, we are also developing lines that use a different RPF, 2mxRPF. Temperature sensitivity is incorporated through the addition of gal80ts, an inhibitor of LexA that prevents it from binding to the activation site. Using an inhibitor that can be controlled via temperature allows the expression of LexA to be controlled and its expression isolated to a particular developmental time frame.

Diasporican: Tracing the Development of the Latest Identity Formation of the Puerto Rican Diaspora
Bianca Valentín

The Puerto Rican community has had a longstanding presence within the United States that has shaped the country's understanding of Latine populations as a whole. Once concentrated largely in the New York area, the Puerto Rican diaspora has expanded to multiple different states as the population has grown. According to the Pew Research Center's most recent estimates from 2021, there are nearly 6 million Puerto Ricans living in the continental United States. As the Puerto Rican diaspora has increased, in numbers and geographically, the identity of "Nuyorican," an identity meant to signal a Puerto Rican from New York, no longer applies to all Puerto Ricans in the diaspora. Instead, as my research aims to show, a new identity formation has emerged: "Diasporican." In my research, I aim to utilize social media and peer-reviewed scholarly articles to construct a definition for this new identity that has increased in usage over the past few years. My research explores the following questions: 1. How is the Puerto Rican diaspora articulating their identity?, 2. How is this articulation of identity being used by Puerto Ricans? Who is utilizing this term?, and 3. What can this tell us about the relationship between Puerto Ricans

living in the diaspora to the United States and to Puerto Rico? From my research so far, one can conclude that Puerto Ricans created the term "Diasporican" in order to distinguish from the regional-specific term of Puerto Rican and emphasize the colonial structures affecting the Puerto Rican community to this day.

Disruption of serotonin receptors 2B and 2C prevents proper formation of cardiac neural crest derivative structures

Gwyneth Garramone

Serotonin is a monoamine neurotransmitter that influences vertebrate embryonic development from fertilization and continues to be relevant throughout later maturation and signaling. Serotonin receptors are categorized into seven classes and further subtypes. Interestingly, there is very little information about the localization of these receptors at the gastrula and early neurula stages in the embryo. Importantly, serotonin receptor disruption impairs neural crest (NC) cell migration. NC cells are multipotent and migratory, differentiating into a multitude of cell types throughout development. Understanding the normal distribution and effects of the disruption of the serotonin receptors in early-stage embryos will provide insight into the function of serotonin in development and NC migration. To determine the role of serotonin series 1 and 2 receptors in neural crest migration, first we established gene expression patterns for these receptors. Importantly, the early migratory neural crest expresses these genes. Additionally, to determine the effects of disrupting the activity of the serotonin 2B and 2C receptors on NC migration, we treated chicken embryos with 20μM solution of 1-methylpsilocin (1-MP), a synthetic agonist that selectively binds serotonin 2B/2C receptors. Treatment was carried out prior to NC migration, at 28 hours of incubation, in ovo, and the embryos were collected at embryonic days 2, 6, and 10 (E2, E6, E10). Our results show that 5-HT2B/2C regulate NC migration, which resulted in accelerated crest migration at E2, fibrosis in the NC derived aorticopulmonary septum at E6, and malformations of NC derived semilunar valves and membranous interventricular septum at E10.

Do base-triples form in the HTLV-1 pro-pol frameshift site?

Kennedy Melton and Dr. Kathryn Mouzakis

"Human T-cell lymphotropic virus type 1 (HTLV-1) is a retrovirus that infects T-cells, or white blood cells in the immune system. The ~8,500 nucleotide HTLV-1 RNA genome encodes a small number of viral proteins, whose synthesis is critical to the virus' ability to spread. Two sites within the genome have a dual function: they encode a viral protein, and they regulate viral protein synthesis by altering how the RNA is read by a host ribosome. These sites include an RNA structure. Each RNA structure folds into a complex, 3D shape that regulates the frameshift site's function. For the HTLV-1 pro-pol frameshift site, the RNA secondary (local base-pairing) structure is known, but its tertiary structure (long-range interactions) is unknown. To fully understand the RNA structure's function, we need to determine what tertiary interactions it has. Base-triples are a type of tertiary interaction often found in complex RNA structure that can be important to their function. The research question proposed is "Do base-triples form in the HTLV-1 pro-pol frameshift site?" The first step in answering this question is to understand what approach we can use in lab to conclusively identify these interactions. To evaluate possible methods, a literature review was conducted. Circular Dichroism and Nuclear Magnetic Resonance (NMR) spectroscopy were further researched and compared as two prospective approaches. This poster will highlight the benefits and drawbacks of both circular dichroism and NMR and suggest the best method to carry out this research."

The Dobbs Dilemma: Unraveling Women's Perspectives After the Dobbs Decision
Christina Dodd

This research examines the ramifications of the Dobbs v. Jackson Women's Health Organization decision on women. This study explores the ways in which the Dobbs decision may have influenced women's political opinions and their life choices. This Supreme Court ruling in June of 2022—that overturned Roe v. Wade (1973)—allows states to decide their individual abortion policies. The Dobbs decision has elicited attention and research on many aspects of the case's impact in America; this research aims to fill the gaps that previous studies have left unanswered. Through a survey of 551 women, this research aims to discern the extent to which women self-report the Dobbs decision's influence on their lives and if they have seen a shift in their opinions, lives, and future choices. Examining demographics, geographic location, political affiliation, and individual shifts in attitudes, this research seeks to understand the aftermath of the overturning of nearly 50 years of precedent for abortion laws and the likely effects it will have on women in the United States.

The Effects of B2RT as an Accelerated Modality for Skeletal Muscle Strength
Gabriella Trujillo, Michael Ofori

Blood flow restriction resistance training (B2RT) shows promise at promoting hypertrophy and strength development beyond resistance training alone. Occlusion training restricts venous return, altering waste removal, and inducing a baseline whereby lower intensity yields similar stimulus and muscle outcomes. PURPOSE: The aim of this study was to elucidate the effects of B2RT on muscular strength in healthy college-age individuals. METHODS: 42 participants (20.1±1.7 years, BMI: 24.7±4.0 kg/m2) underwent a 7-week B2RT program with 3 times per week sessions of isotonic movement at 50% occlusion pressure for 4 sets (30:15:15:15 reps) at load based on 20% of 1-repetition maximum. RESULTS: Estimated one repetition max (E1RM), handgrip strength, and isokinetic dynamometry were recorded at the beginning and end of the investigation. Compared to control (n=18), participants in the B2RT group (n=24) demonstrated significantly greater strength increases for RDL (7.73% vs. 28.33%, p=0.009) and squat (10.04% vs. 25.12%, p=0.022). Females in the B2RT group demonstrated greater increases in bench row (3.25% vs. 14.39%, p=0.026) and RDL (9.98% vs. 35.65%, p=0.015). Significant strength differences in handgrip and isokinetic dynamometry were not observed. CONCLUSION: B2RT may have favorable effects on isotonic strength gains in comparison to normal resistance training alone. However, investigations of longer duration, more selective recruitment, and increased training stringency is warranted to define more comprehensive findings on B2RT's effect on isokinetic dynamometry and muscular strength.

Effects of blood flow restriction training on body composition parameters
Daniel Orr, Christina Paulazzo

Blood flow occlusion with restriction training (BFR) promotes muscle hypertrophy and strength while exercising at lower intensities than traditional training. BFR involves cuffs that restrict venous blood flow while permitting arterial flow to stimulate signaling pathways associated with metabolic stress and muscle fatigue. PURPOSE: The aim was to determine the effects of BFR on total fat mass (TFM), percent body fat (%BF), and total lean mass (TLM). METHODS: 42 college-aged participants (20.6±1.9 years, 23.4± 3.3 kg/m2) were separated into a control (n=18) or BFR group (n=24). Whole-body dual-energy x-ray absorptiometry (DXA) was performed before and after the BFR group performed four compound exercises at 20% of their one repetition maximum with pressure cuffs inflated to 50% of their max

occlusion pressure for 4 sets with 30, 15, 15, and 15 reps, 3 days a week for 8 weeks. RESULTS: BFR resulted in significant differences from the control, with changes in TFM (-1.0%±2.5 vs. 13.9±2.9, $p<0.01$), changes in %BF (-2.88%±2.2 vs. 11.69±2.9%, $p<0.001$), and changes in TLM (2.8%±1.0 vs. -2.3±1.1%, $p<0.001$). BFR vs. control group by sex interaction differences were retained whereby BFR vs. control females significantly different TFM (0.2 kg vs. +2.6 kg), %BF (-0.4% vs. +2.9%), and increased TLM (1.1 kg vs. -0.7 kg). Likewise, BFR males significantly decreased TFM (-0.8 kg vs. +2.5 kg), %BF (-1.1% vs. +3.3%), and TLM (1.9 kg vs. -1.8 kg). CONCLUSION: BFR improved TLM, decreased TFM, and %BF. BFR could have positive effects on muscular performance and prevention of chronic disease.

The Effects of Blood-flow Restriction Training on Bone Health at the Hip
Victoria Batlle, Sophia Lissin

Bloodflow restriction training (BFR) partially restricts arterial inflow and completely restricts venous outflow to the working muscle to promote chemical signals of fatigue and is hypothesized to realize musculoskeletal adaptation with lighter training loads and volume. PURPOSE: The purpose was to determine short-term training effects of BFR on bone health in college-aged students. METHODS: 19 males (20.2±1.5 years, 25.5±4.7 kg/m2) and 21 females (20.2±1.8years, 24.3±3.4 kg/m2) were placed into control group (CON) or BFR groups based on stratified randomization. Hip scans from dual-energy x-ray absorptiometry (DXA) were performed before and after 7 weeks of BFR training at 50% occlusion pressure and 20% of one-repetition maximum for four compound exercises over 4 sets with 30, 15, 15, and 15 reps. RESULTS: No significant between-group differences were observed. However, when pooled by sex group, narrow neck cross-sectional modulus of inertia (CSMI) trended favorably (0.03±2.8% BFR vs. -3.18±2.6% CON, $p=0.37$) even though bone-mineral content (BMC) trended oppositely for males (3.33±2.8% BFR vs. -1.70±3.0% CON, $p=.15$) and females (-5.14±2.8% BFR vs. -1.64±2.6% CON, $p=0.31$ in females) while BMD trended downward in males (-1.12±1.2% BFR vs. 0.78±1.3% CON, $p=0.20$). CONCLUSION: This short-term BFR pilot-study intervention was ineffective at demonstrating beneficial skeletal adaptations. Trends for differential BMC and BMD by sex leading to favorable shifts in hip architecture for both sexes were not ruled out. These preliminary findings suggest a longer intervention with higher statistical power is warranted to determine the effect by which BFR training may improve markers of bone health.

Effects of Blood Flow Restriction Training on Muscle Quality
Julia Burke, Chadney Lim, Jack Cadden

Blood flow restricted resistance training (B2RT) has been shown to enhance effectiveness of low-intensity resistance training. While B2RT is increasingly popular, its specific effects on muscle quality have yet to be specified. PURPOSE: The purpose of this intervention was to investigate the effects of B2RT on muscle quality (MQ) of biceps brachii, triceps brachii, biceps femoris, and rectus femoris. METHODS: 30 undergraduates (11M, 19F) were broken into control (CON, n=15, 21.1±2.1 years, 23.9±3.5 kg/m2) and B2RT (n=15, 19.9±1.4 years, 26.3±5.1 kg/m2) groups. Control maintained normal activity while B2RT participated in an 8-week B2RT training regimen consisting of 3 sessions/week, with 4 sets of 30, 15, 15, and 15 reps at 50% occlusion pressure and 20% of one-repetition maximum for squats, Romanian deadlifts, bench rows, and bench presses. Maximal isometric strength was assessed for each muscle group with a HUMAC Norm and cross-sectional thickness was captured on a Terason ultrasound. Muscle quality (strength/thickness) for each muscle was calculated and analyzed with SPSS. RESULTS: No significant findings were observed for most variables with the exception of significant percent increase in triceps brachii thickness in male B2RT vs. CON (45.62±12.15%, vs. 12.02±13.45%, $p=0.046$) and percent

increase in triceps brachii MQ in female B2RT vs. male B2RT (58.92±22.48%, vs. -28.33±26.79, p=0.034). CONCLUSION: This short short-term B2RT protocol does not seem to systematically alter MQ although further research could focus on altered training variables to yield more conclusive evidence.

Effects of Bloodflow Restriction Resistance Training on Muscle Thickness and Quality
Chadney Lim, Jack Cadden, Julia Burke

Introduction: By decreasing venous drainage, blood flow restriction in combination with resistance exercise (BFR), stimulates similar signals of fatigue and adaptation at much lower intensity than standard training. The purpose was to study the effects of BFR on muscle thickness and muscle quality (MQ: strength/unit muscle) following an 8-week intervention. Methods: 13 male and 17 female college students were recruited and placed in control (CON; n=13) or BFR (n=17) groups who completed training 3x/week, at 50% of occlusion pressure, using 20% of one-repetition maximum, for four compound exercises at 30, 15, 15, and 15 reps. Images captured with Terason ultrasound for biceps brachii (BB), rectus femoris (RF), and biceps femoris (BF) were analyzed with ImageJ to obtain muscle thickness. Maximal isotonic strength for elbow flexion, knee extension, and knee flexion via a HUMAC Norm was used to calculate MQ. Results: No differences were seen in muscle thicknesses of BB (CON: male -10.983±11.078, BFR: -1.062±12.910; CON: female 11.155±10.415; B2RT: female 10.145±9.796), RF (CON: male -13.407±11.334, BFR: -2.98±13.209; CON: female -9.038 ± 10.657; B2RT: female -9.842 ± 10.022), and BF (CON: male -2.356±13.509, BFR: –6.136±15.744 CON: female 10.276±12.701; B2RT: 18.067±11.946) and no differences were observed in MQ percent change over time at any site. Conclusion: The BFR training protocol in this population was ineffective at promoting discernible changes in muscular thickness or MQ. Further efforts to examine higher intensities or higher occlusion pressures in a more homogenous population are warranted to fully elucidate BFR effects on muscle morphology and performance.

The Effects of Colonization Among Native Hawaiians
Andrea Marie Morland-Tellez

The Native Hawaiian population is a marginalized group that has endured cultural trauma due, in part, to their history of colonization by Europe in 1778. This colonization has contributed to the Native Hawaiian's loss of cultural identity, land, native language, and their way of life. As a result, many Native Hawaiians are left questioning their cultural identity. This project sought to understand better the impact of colonization on the Native Hawaiian people, specifically on their experience of homelessness, substance use, and overall disempowerment over time. A systematic review of multiple literary and anecdotal sources included peer-reviewed articles and anecdotes from multiple news venues. A systematic review of the literature and media revealed a profound connection between the European colonization of Native Hawaiians and the growth of homelessness. In addition, Native Hawaiians were shown to have a higher occurrence of being at risk for substance abuse and a greater experience of disempowerment from longstanding subjugation following the colonization. These findings, although not surprising, illustrate the harmful impact of colonization on the Native Hawaiian population. These findings are particularly timely considering the recent Maui fires and the resurgence of the important discussion around the Native Hawaiian's access to their land and the need for cultural restoration. While many policies and foundations are dedicated to mitigating the historical trauma experienced by Hawaiians, more research, education, and advocacy are still desperately needed. The Native Hawaiian population and their culture are dissipating rapidly, and this must be addressed before it is too late.

Effects of Mindfulness on Decision Making
Abigail Shaw

The Cognitive Reflection Test (CRT) is a task designed to assess an individual's decision-making strategy and ability to override an intuitive and spontaneous "gut" response in favor of a more analytical and reasoned response after engaging in further reflection. Scores on the cognitive reflection test have been correlated with measures related to cognitive biases and other problem-solving tasks. Mindfulness can be defined as focusing on what is happening in your mind, body, and environment now in a non-judgmental and accepting way. In this study, we wish to investigate how cognitively a short mindfulness session influences reflection and problem-solving. We measured cognitive reflection using a newly developed cognitive reflection test. We hypothesized that those who engage in a mindfulness exercise consequently will be more reflective and opt for a more analytical decision-making strategy than those who do not. Forty participants were obtained through the Psychology Participant Pool and were randomized into two conditions, those who listened to a ten-minute mindfulness audio and those who listened to a ten-minute nature documentary (control). Following the audio, the participants completed the previously used and new CRT measures. After this completion, the participant relistened to their audio, but only half of the amount of time (five minutes) to ensure the effect of the manipulation. Once this was completed, the participant completed five insight questions and a demographic questionnaire. The data was collected, graded, and analyzed. We found that mindfulness impacted insight problems and had a small effect on the CRTs.

The Entertainment Industry Affecting Attitudes Towards LAPD
Garrett Howard-Jimenez

The portrayal of police in popular culture has shaped various narratives of them in the public, both positively and negatively. This study analyzes the question, when considering your attitudes towards the LAPD, how much have the following film, TV, and music shaped your attitudes? Residents' attitudes will be analyzed overall, by age, and by race/ethnicity. This project examines the 2020 Police and Community Relations Survey, a survey conducted through telephone sessions, online surveys, and face-to-face surveys, from the Center for the Study of Los Angeles located at Loyola Marymount University. Opinions from 1,753 adults living in the city of Los Angeles were collected with a margin of error of ±2.5% for the entire sample. Results show that 19% of Angelenos feel that their attitudes towards the LAPD have been shaped a lot by entertainment sources, while 28% state that their attitudes have not at all been affected. For race/ethnicity, Black respondents' attitudes are affected "a lot" the most at 35%, while Asian, White, and Latina/o respondents' attitudes are at 19%, 16%, and 20% respectively. For age, individuals 18-29 are affected "some" of the time the most at 33%, while individuals 30-44, 45-65, and 65+ are affected at 24%, 16%, and 18% respectively. The findings show that the younger demographic is more susceptible to the media's influence pertaining to the LAPD. The entertainment industry possesses significant influence, emphasizing the importance of its awareness and responsibility regarding its portrayal of prominent figures in society.

Entity Individuation and Independence in Heidegger's "The argument against need"
Chester Mlcek

Within the unpublished collection of Heidegger's writings, The Legacy of the Being-Question, is a complete essay and its corresponding notes, published together under the title "The argument against need (for the being-in-itself of entities)." Presumably a drafted but abandoned addition to the collected

works' introduction, "The argument against need" and its discussion of the independence of entities-in-themselves reveals the importance of the topic within the broader corpus and the need for further elaborations. I argue that Heidegger's discussion of entity independence in this document provides a viewpoint counter to his earlier claim that questions of entity individuation are unproblematic for his philosophy. In investigating the incongruency of an Aristotelian-influenced and a Kantian-influenced interpretation of individuation with Heidegger's later view, I come to two main characterizations of Heidegger's view: (1) To the question 'how are entities independent from one another?' Heidegger answers that entities are already independent from one another, 'before' the human and without being, and (2) to the question 'what importance does individuation have on being?' Heidegger answers that being does not cause entity individuation, but that entity individuation is not unimportant to being—as entities are needed by being, entity individuation becomes crucial for being as appearing.

Epidermal characteristics and water uptake of Limonium perezii leaves at different stages of development

Pauneez Kasmai

The perennial subshrub Limonium perezii, native to the Canary Islands, occurs in water-restricted coastal cliff habitats. Foliar water uptake (FWU) across the leaf lamina may supplement the water content of the leaves which have long, proximally winged petioles that overlap in basal rosettes. FWU was shown to be greater in immature than mature leaves. Differences in leaf characteristics that possibly influence FWU and water storage were determined for mature and immature leaves of L. perezii. Leaf parameters characterized included density of stomata, salt glands, and non-glandular trichomes; leaf wettability; water retention of the leaf surface; petiole and lamina water content; and rates of FWU. Leaves are amphistomatic with salt gland formation occurring early in leaf development followed by the development of stomata, most of which do not mature until the later stages of leaf expansion. All leaves are wettable with immature leaves being superhydrophilic. Water droplet retention on the leaf surface decreases as droplet size increases. This is especially pronounced for immature leaves which also have lower water retention. The petioles of the immature leaves have a significantly higher water content than the laminae and petioles of more mature leaves, appearing semi-succulent. Foliar water uptake occurred more rapidly in immature than mature leaves. These differences in morphology and surface characteristics are discussed in terms of water harvesting and foliar water uptake that supports especially the growth of the immature leaves.

Establishing a Method for Quantifying Antifungal Properties of Plant Compounds

Elise Lee, Kyle Wright

As early as 2500 BC, humans have been using herbal remedies and medicinal plants to alleviate ailments (Hasan, 2015). Opium, derived from the poppy seed, has been used in human civilizations for millennia and is a powerful painkiller (Schiff, 2002). The anticancer drug, Paclitaxel (also known as Taxol), is derived from the Pacific Yew Tree (Taxus brevifolia) (Hasan, 2015). Plants have always been important to medicine and there is still much more to be discovered. Since 2017, LMU students enrolled in BIOL 111 (general biology laboratory course) have been testing the medicinal properties of plants. This project aimed to be an extension of the research done in BIOL 111, as well as establishing a new method for testing antifungal properties.

Ethnic Identity Development and South Asian Stereotypes in "Never Have I Ever"
Priya Dutta

Intersectional media serves as poignant representations of marginalized communities, and as few positive models exist, researchers must explore the efficacy and impacts of celebrated works on consumers' perspectives. "Ethnic identity is less a process of 'being' and more a process of 'becoming…' The factors that form an ethnic identity allow its members to establish their distinguishing features from other groups, creating a sense of solidarity, belonging, and connection within their own definable cultural group through customs and celebrations, like festivals and religious gatherings, as well as through particular cultural artifacts, like a style of dress" (Stuart Hall, 1996). I will expand upon previous research by dissecting a specific piece of media focused on the complexity of ethnic identity. I will conduct a thematic content analysis of selected episodes of Netflix's Never Have I Ever to determine a) how the representation of Indian American women in the show promotes or rejects South Asian stereotypes and b) how it depicts the ethnic socialization and identity development of a second-generation Indian American teen. I plan to code variables such as the model minority myth, docility, occupation, characters' experience of discrimination, ascribed versus achieved identity, and the stages of identity development. I expect that my findings will note the conducive representations of the show and indicate gaps for future media to address. As a South Asian researcher, there may be unintentional results concerning the show's success in influencing my ethnic identity.

Evaluating stormwater and climate-associated ecosystem services in eight urban parks in east Los Angeles
Grace Landers

Parks are routinely recognized for their recreational benefits, yet the magnitude and value of other ecosystem services parks provide are often overlooked. In this study, we quantify the ecosystem services, the free benefits imparted by nature to humans, provided by eight urban parks in east Los Angeles, specifically as they pertain to stormwater and climate. The species of each tree, its location within the park, tree condition, and the diameter at breast height were recorded for all trees over three m in height at each park. These data were analyzed in the tree-benefit estimation tool, i-Tree Eco, to quantify carbon sequestration, rainfall-runoff avoided, and other parameters. Output is quantified both ecologically (e.g., lbs of CO_2 stored) and economically (monetary value). Results will then be projected back onto a park map and examined in relation to proximity to each stormwater grey infrastructure (gutters, drains, etc.) and stormwater green infrastructure (bioretention basins, bioswales, etc.). Analysis is ongoing, with findings anticipated to improve understanding of urban parks and their ecological and economic importance. The significance of this research lies in advocating for enhanced design and evaluation of urban parks, particularly in underserved communities, and contributing to the sustainable development goals of Los Angeles.

Evaluating the Impact of a Restored Dune Site on Seasonal Erosion
Shelby Page

Coastal dune ecosystems are a nature-based solution that can decrease beach erosion while protecting the coastline from sea level rise and increasingly severe storms expected as a result of climate change. Restoring coastal dunes is not the typical response to these threats; constructing seawalls and hard infrastructure is common, but it can lead to increased beach erosion and the destruction of coastal ecosystems. This study aims to evaluate the impact of seasonal erosion on a restored dune site

compared to a mechanically groomed control site. Monthly surveys of the Santa Monica Pilot Site, established in 2016, and an equally sized control site were conducted between October 2023 and March 2024. A Trimble Total Station was used to collect over 50 million points (x,y,z) of both sites each month. From October to November, using a sample of five points close to the shoreline, the restoration site saw an average elevation change of -0.622 feet while the control site saw an average elevation change of -0.527 feet. A t-test resulted in a p value of < 0.366 for the change in elevation of the five points from October to November; there was an insignificant difference between change at the control and restoration site over the time period. The results of this study have the potential to contribute to the broader understanding of how coastal dune systems function as well as their potential to secure the coastline with the increasing threat of sea level rise.

Examining Relations of Angelenos with LAPD
Maricia Marquez

Examining relations with city police officers is an important aspect of determining the extent to which the Los Angeles Police Department (LAPD) provides public service that is well received by residents, especially since the department's quality was put into question at the onset of police violence investigations in 2020. Data was acquired from the 2020, 2022, and 2023 Police and Community Relations Survey data brief conducted by the Center for the Study of Los Angeles at Loyola Marymount University. The study investigated the question asking residents how they would describe their experiences with LAPD based on what degree of satisfaction residents felt. Surveys consisted of 20-minute telephone sessions, online, and face-to-face with (n= 1,753 (2020), 1,755 (2022) and 1,751(2023)) adults living in the city of Los Angeles. The findings demonstrate that most people believe that their experiences with LAPD officers have been mostly positive. However, since 2020, Angelenos perception of their mostly positive experiences with LAPD officers have decreased over time from 46.5% in 2020 to 37.8% in 2023. The 8.7% decrease, compounded with a 5.8% decrease (46.5% to 40.7%) from 2020 to 2021 indicates there has been a shift in the attitudes of Angelenos towards LAPD wherein residents are becoming less satisfied with the quality of policing in Los Angeles. LAPD should reexamine the conduct of their officers to better fulfill their duty to residents and keep attitudes towards the department consistent in a way that reflects the institution as reliable to public safety.

Exercise Acutely Modulates Mitochondrial Function in Peripheral Blood Mononuclear Cells
Antonio Ballardo, Morgan Daniel, Zachary Gomez, Kayla Kumagai, Sophia Lissin

Exercise Acutely Modulates Mitochondrial Function in Peripheral Blood Mononuclear Cells Antonio Ballardo, Morgan Daniel, Zachary Gomez, Kayla Kumagai, Sophia Lissin, Robert Musci Department of Health and Human Sciences Acute exercise increases immune function by mobilizing immune cells, such as peripheral blood mononuclear cells (PBMCs). However, the mechanisms by which exercise acutely modulates PBMCs to lead toward beneficial adaptations remain unclear. Mitochondria serve an integral function to PBMCs and may account for changes in immune cell function. The purpose of this pilot was to test the hypothesis that acute exercise acutely modulates PBMC mitochondrial function. Methods: Four participants (one male, three females) had blood drawn prior to a bout of exercise that included a cardiopulmonary exercise test followed by 30 minutes of cycling at 50% of maximum aerobic workload. Immediately following the exercise, blood was drawn again. PBMCs were isolated, counted, and placed in a high-resolution respirometer to assess mitochondrial respiratory capacity. Paired t-tests were conducted to compare respiratory states pre- and post-exercise. Results: There were no statistically significant changes in respiration. LEAK respiration increased 63.86 ± 63.4% (p=0.13) post-exercise.

Coupled respiration supported by Complex I only increased by 19.02 ± 37.5% (p=0.37) whereas respiration supported by Complexes I and II increased by 29.57 ± 42.57% (p=0.42). However, exercise had no effect in electron transport system capacity (5.80 ± 0.26%; p=0.54) or Complex II supported electron transport capacity (1.78 ± 17%; p=0.74). Discussion: These data indicate that exercise likely acutely modulates mitochondrial respiratory capacity of PBMCs in both males and females. However, the variability of this magnitude is quite high. Future efforts are necessary to account for variability and address this question in various populations.

Experience with LAPD by Race and Gender
Zoe McMullen

The objective of this study was to observe how Angelenos' experience with the LAPD differs across race/ethnicity and gender. Data used to examine this research question are taken from the 2023 Police and Community Relations Survey by The Center for the Study of Los Angeles. This survey included 1,751 adult Angelenos and was conducted in person, online, and over the phone. The data showed that out of the genders (man, woman, and non-binary), men reported the highest number of mostly negative experiences with LAPD (16.99%). Women reported the highest number of mostly positive experiences with LAPD (38.02%). Out of all the races/ethnicities (Asian/Black/White/Latine), Asians reported the highest number of mostly negative experiences with the police (18.7%), and White people reported the highest number of mostly positive interactions with the police (45.17%). The results do not represent observed interactions with the police, negative, positive, or otherwise, with specific demographics. Rather, these results display how different groups perceive their experiences with the LAPD. Furthermore, it shows how experiences with the police differ when gender works alongside race and ethnicity.

An Exploration of Music and Physics
Joseph Kula

Art and Science have long been known to be two things that are separate, yet at its very core music is a complex combination of specific sound waves that create what we know as a song. This presentation will break down music into its different components of physics, including frequency, amplitude, resonance and more, by briefly discussing the findings of recent literature that has been carried out on this subject. This presentation will also briefly discuss an exploration of different musical genres, the common sounds these genres make, and why they feel and sound different by further breaking down the certain physics components these genres contain. Lastly, this presentation will briefly explore parts of a song or musical genre that are attached to certain emotions and whether there is a mathematical reasoning behind it, as well as how artificial intelligence (AI) programs and algorithms can use these parts to classify certain songs.

Exploring energy availability, eating behaviors, and bone health in female collegiate athletes and non-athletes
Janie Thomson

Current research indicates that female collegiate athletes, particularly runners, may be at greater risk for disordered eating. Intuitive eating can promote healthy eating behavior and adequate calorie intake. Caloric intake is a central variable in calculating energy availability. Previous work has shown that energy availability is the underlying cause of low bone mass in active individuals. Poor bone health can

contribute to injury, which for athletes, often prevents optimal performance. PURPOSE: This study aims to provide insights about calorie intake, intuitive eating, and bone health in both female college athlete and non-athlete populations. METHODS: Female college athletes [A] (n=13, 19.9±1.3yrs) and non-athletes [NA] (n=12, 19.5±1.4yrs) recorded their diet and exercise for 3 days. Diet information was analyzed using Food Processor software. Bone health and body composition were measured using a dual-energy x-ray absorptiometry (DEXA). Participants completed the Intuitive Eating Scale. RESULTS: Athletes ate significantly more calories than non-athletes (A: 2542±447kcals vs. NA: 1853±338kcals, $p<0.001$). Overall intuitive eating scores did not differ between athletes and non-athletes, but differences were found in the subscales of body-food choice congruence (A: 4.28±0.58 vs. NA: 3.39±1.24, $p=0.04$) and unconditional permission to eat (A: 3.35±0.85 vs. NA: 3.93±0.46, $p=0.06$). Intuitive eating scores were not correlated to calorie intake ($r=-0.24$, $p=0.29$), bone health ($r=0.07$, $p=0.77$), or percent body fat ($r=0.11$, $p=0.63$). CONCLUSION: The next steps in research will explore energy availability with these measures. These results suggest that concern for body weight and body composition should not be a barrier to practicing intuitive eating for athletes.

Exploring the Influence of flhDC Mutations on Sugar Uptake and Motility in Paraburkholderia uname

Mia Mary

The flhDC complex acts as a pivotal regulator in controlling the expression of genes associated with flagellar biosynthesis. Paraburkholderia uname, is a bacterial species commonly found in soil and plant rhizospheres, and plays a crucial role in facilitating nutrient uptake in plants. Previous studies reveal that deletions in the flhDC loci result in a severe inhibition of motility. In this study, mutations of P. uname at the flhDC loci were found to have varying simple-sugar uptake and swarming patterns to the wild type. P. uname efficiently assimilates mannose, whereas the mutants exhibited reduced mannose assimilation. Whilst contrastingly, the mutants demonstrated significantly enhanced assimilation of mannitol, P. uname showed minimal assimilation of this simple sugar. Motility assays further demonstrated differences in swarming behaviour among the strains, based on which simple-sugar was made available to them. flhDC Mutants displayed greater swarming when exposed to mannitol, while the wild type exhibited increased swarming in the presence of mannose. Interestingly, variations in swarming behaviour were also observed between the mutant strains, suggesting potential allelic differences. Furthermore, the mutants exhibited enhanced swarming compared to the wild type when grown on glucose-containing agar, as well as on agar lacking simple sugars, indicating broader metabolic adaptations. However, further investigation into the genetic basis of these phenotypic differences is warranted to elucidate underlying mechanisms and ecological implications.

Faculty Member's 'Noticing' of DEIJA in the Classroom

Zoe Katz

The current study examines: (1) what university faculty members notice about diversity, equity, inclusion, justice, and accessibility (DEIJA) in the classroom, and (2) how noticing of DEIJA events differs between faculty members with more/less expertise in teaching for DEIJA. Teacher "noticing" research suggests that what a teacher notices in the classroom informs and impacts their teaching actions. For example, a teacher who notices that students are struggling can adapt their teaching strategies to meet students' needs (Jacobs et al., 2010). Little research exists on teacher noticing of DEIJA in the classroom; what research exists suggests that some teachers notice opportunities for equitable teaching practice more than others (van Es & Hand, 2017; Hand, 2012). To my knowledge, this research has been mostly

conducted in K-12 classrooms. My study analyzes university faculty members "noticing" of DEIJA and compares noticing of faculty with more and less expertise in DEIJA. Faculty members completed measures of knowledge of DEIJA in the classroom and involvement in DEIJA-related professional experiences. They then watched an excerpt of a videotaped college-level lesson and typed comments when they "noticed" events concerning DEIJA. I will code the quantity and type of faculty members' responses and compare how those comments differ for faculty members with different expertise in teaching for DEIJA. This research can improve understanding of how university faulty understand DEIJA in the classroom to support professional development programs on DEIJA.

Flow Rate Analysis Through Novel eDNA Membrane Holders
Daniel Alvarez

Environmental DNA (eDNA) is a new method of DNA collection used to correctly identify organisms via the passive sampling of their environments to associate specific species with the local regions in which they live. At LMU, a novel eDNA collection method has been recently developed. This project aims to test new eDNA membrane holders in experimental settings to better understand collection rates and how present membrane holder designs may or may not impede incoming flows. Specifically, our project aims to test flow velocities through eDNA membrane holders under oceanic conditions to compare with in-field testing. By varying initial conditions, we simulate a range of initial oceanic flow rates for both experimental and numerical trials. To obtain experimental data, we use the particle image velocimetry (PIV) method to quantify fluid velocities entering and exiting the membrane holder. To compare experimental results to an analogous numerical model, we use ANSYS (fluent) to model the experimental flow conditions and calculate entrance and exit velocities. Initial results show good agreement between numerical and experimental results, and that flow is relatively unaffected by the holder, i.e. sufficient flow passes around and through the holder. In addition, trials test multiple shaped membrane holders to improve design ideas.

Foliar water uptake and fog harvesting pathways in Limonium perezii
Taylor DeRouen, Ryan Seifi

Limonium perezii (Staph) Hubb., a flowering subshrub native to the Canary Islands, is commonly found in the southern coastal region of California. Limonium perezii leaves develop in a rosette pattern, with non-sessile laminae attached to the stem by proximally winged petioles — a morphological pattern aligning with the growth form of many species heavily reliant on fog harvesting (FH) and foliar water uptake (FWU) as water sources. FH and FWU were quantified for leaves of different developmental stages. FH was measured by the accumulation of condensate in a pre-weighed test tube. Fog, simulated with an ultrasonic humidifier, was collected at a significantly greater volume in mature leaves, compared to immature ($P < 0.05$). However, immature leaves have a higher FH efficiency than mature ($P < 0.05$). A comparison between fog and liquid water uptake by the lamina was measured. Immature leaves take up significant amounts of water, consistent with their hydrophilic characteristics ($P < 0.05$). Mature leaves also absorb water via the epidermis of the lamina ($P < 0.05$). Salt glands and stomata, through qualitative use of silver nitrate precipitate, were identified as potential pathways of FWU in both mature and immature leaves. Immature leaves displayed potential uptake through stomatal primordia as well. The salt gland in particular is a newly shown route for water uptake, suggesting a bidirectional function. This FWU pathway may be further confirmed through use of fluorescence tracing.

Food and Mood: The Correlation Between Vitamin B12 and Folate Intake and Depression
Jana Soucar

Vitamin B12 is an essential nutrient that metabolizes homocysteine, which is a potentially neurotoxic molecule when in excess. Folate is a B vitamin that is essential to the production of norepinephrine, serotonin, and dopamine in the brain. Studies show that a deficiency in vitamin B12, as well as folate, may be associated with mental health conditions. Additionally, the prevalence of depression is higher in college students than in other demographic populations. PURPOSE: The purpose of this study was to investigate a correlation between vitamin B12 and folate intake with signs and symptoms of depression in college students. METHODS: This study was conducted by first providing participants with the Beck Depression Inventory (BDI) to measure signs and symptoms of depression. Next, each participant documented their dietary intake in a 3-day diet record. The 3-day diet records were analyzed using Food Processor to determine nutritional values. For this study, the vitamin B12 and folate data sets were evaluated for relationships with the BDI data. RESULTS: This study showed no correlation between vitamin B12 intake and the BDI ($r = -0.114$, $p = 0.257$, $n = 101$). There was also no correlation between vitamin B12 and the Beck somatic subscale ($r = -0.100$, $p = 0.452$, $n = 59$), nor with the Beck affective subscale ($r = -0.085$, $p = 0.399$, $n = 101$). Correlations between folate intake and BDI showed no relationship ($r = -0.078$, $p = 0.439$, $n = 101$). There was a lack of association between folate intake and the Beck somatic subscale ($r = 0.014$, $p = 0.914$, $n = 101$) and the Beck affective subscale ($r = -0.095$, $p = 0.344$, $n = 101$). CONCLUSION: Though no correlations were found, participants had incredibly varied folate and vitamin B12 intakes, yielding high standard deviations, which may have prevented the detection of relationships. The results of this study still suggest that many college students are not consuming the recommended daily values for vitamin B12 and folate.

Formal One-Pot Synthesis of Psychrophilin E
Giselle Alrachid, Lillian Skinner

Psychrophilin E is a cyclotripeptide that is naturally found in two species of marine fungi belonging to the genus Aspergillus. Consisting of anthranilic acid, tryptophan, and proline residues linked through an unusual tryptophan indole amide bond, Psychrophilin E has been shown to portray anti-proliferative activity towards the HCT116 colon cancer cell line. To date, the only synthesis of Psychrophilin E requires 6 steps, 5 pots, and produces the target in 28% yield. Using chemoselective acylimidazole-based amidations, we have developed a one-pot formal synthesis of Psychrophilin E that proves more efficient than previous syntheses and is amenable to rapid diversification.
Here, we will discuss the current status of our formal one-pot synthesis of Psychrophilin E, as well as some mechanistic aspects of the new reactions used in the synthesis.

From Bible to Ballot Box: Church Attendance and Political Participation 2008-2020
Zoe McGough

Religiosity and political participation is a significantly under-studied topic in political science. Although there is a plethora of research on how religion facilitates civic skills and the accumulation of political knowledge, political scientists have failed to fully explore Christianity and political participation over time in the twenty-first century. This study will examine how 21st century political participation is affected by religion among racial groups. Scholars in political science and African American studies have examined the impact of the Black Church on American politics in terms of group consciousness and racial identity. Other scholarship shows that church involvement is more apt to produce Republican and conservative

identification among whites, fundamentalists, and females. While the United States has become less religious since the 1950s, religion continues to be a strong mobilizer for White Evangelicals voting for the Republican party. In a survey from the 1980s, church attendance was found to have a stronger influence on voting in presidential elections, but church attendance is weakly related to other forms of political participation. This study uses Cooperative Election Study (CES) survey data from 2008, 2012, 2016, and 2020 to examine how church attendance affects political participation for African Americans, Whites, Asian-Americans, and Latino(a)s from 2008-2020.

From Marginalization to National Sensation: The Phenomenon of Disability in Victorian Popular Culture
Mary O'Callaghan

Between the years 1837 and 1901, the Victorian era played host to drastic societal transformation for Great Britain. A time during which questions of 'normalcy' arose, disabled people were placed under a spotlight and consequently positioned at the center of popular culture. Put on display in traveling human exhibitions and featured in sensational novels, popular culture represented disabled people with morbid humor, part of the Victorians' infamous obsession with all things seemingly 'abnormal.' My research focuses on understanding the origins of this popular culture phenomenon. I examine primary sources from the era, such as popular literature, magazines, posters, pamphlets, cartoons, and interviews, focusing on any writing, imagery, or comments that characterized disabled people as being 'abnormal' and occupying the margins of society while also featuring them as a source of entertainment. Additionally, I analyze sources that focused on the perspectives of the disabled individuals themselves in order to incorporate their own personal experiences. I argue that the popular culture phenomenon revolving around disabled people stemmed from the ability-based distinctions that arose from the Industrial Revolution, the rise of workhouses, and the surge of public interest in topics surrounding medicine. Disabled people were ridiculed and forced into marginality while simultaneously being given little choice but to utilize the public fascination over their bodies in order to support themselves financially and avoid workhouses. This research is important in ongoing efforts to confront popular memories, bringing to light their historical reality and forcing us to reflect on how we continue to perpetuate them.

From the Dinner Table to Digital: The Political Socialization of Gen Z
Caroline Baker

This study aims to reevaluate the traditional aspects of political socialization and examine the development of political identities during early adulthood in the United States. Comparing the efficacy of more conventionally accepted forms of socialization, specifically focusing on parental involvement, interaction with peers, and the influence of primary and secondary education, with more modern forms of socialization, namely the emergence of social media, the study will determine whether the traditional agents of political socialization are as dominant as previously thought to be amongst younger generations. Using survey data from 500 18–24-year-olds, the study asks participants how influential the above-mentioned agents are on their political identity and their likelihood to participate in political activities. It will predict that social media as a form of political socialization will have a positive correlation with the formation of political identities. Furthermore, it asks questions about their social media usage, the type of content consumed on social media, and perceived impact of the different socialization agents. The survey controls for gender, race, socioeconomic status, birth order, and the type of ideology transmitted and partisan lean of parents or guardians.

From Summerhill to Adulthood: The Impact of Democratic Educational Pedagogies on Professional and Social Fulfillment

Mathilde Hasson

This ethnographic study investigates the long-term effects of attending Summerhill School, a UK institution known for its democratic and non-authoritarian pedagogy. It interrogates the personal narratives of Summerhill alumni to understand their perception of authority, their sense of well-being and inclusion, and the socio-educational dynamics they experience when transitioning to conventional educational systems and societal structures.

The research probes into the graduates' sense of fulfillment and the degree of preparedness for life beyond Summerhill's egalitarian confines. It examines the conceptual contrasts in educational notions like "failure," "inclusion," and "fulfillment" as experienced by Summerhillians. By exploring the subjective meanings of these notions, the study seeks to reveal the broader implications of democratic education on professional pathways, social relationships, and the capacity for civic engagement.

This inquiry aims to elucidate the transformative potential of democratic education while critically assessing its challenges and implications for students in a world where conventional educational paradigms prevail. The research contributes to the discourse on alternative education by spotlighting the nuanced understanding and lived experiences of those educated within radical pedagogical frameworks.

Funny How? A Crash Course in Satire

Max Page

Satire has played an invisible yet crucial role in shaping today's world. Historically, satire has impacted large revolutions in politics, religion, and everyday cultural life. Its most poignant and widespread role is propaganda. With the rise of an interconnected world and the speed at which information is exchanged, how do the subtleties of satire impact people on a practical basis? Every day, the world demands to be read, and how can we educate interpreters of the world and utilize satire to understand and change the world for the better? In my summer project, I intend to explore the idea of satire at its fundamental level. Pointing out where satire infiltrated historical changes, discovering satirical examples in modern society, and hypothesizing how satire could be used to change the world. This means I will do three things: 1. Research the history of satire and explore examples (including reading books and understanding satirical classics). 2. Explore satire myself by writing a feature-length satirical screenplay. 3. Formulate ideas about satire’s future and how it might impact the world. By the end of this project, I will have two things: a feature-length satirical screenplay and a presentation about satire’s past, present, and future.

Generating Sinorhizobium meliloti strain which overexpresses type IV pili

Kevin Phung

In Rhizobium-legume symbiotic relationships, the plant host houses Gram-negative Rhizobium bacteria in root nodules and feeds them carbohydrates; in exchange, the rhizobia convert atmospheric nitrogen into biologically available forms of nitrogen for the legume plants to use. In commercial agriculture, this symbiotic relationship minimizes the cost of care for the legumes, by reducing the amount of synthetic nitrogen fertilizers. In order to have a successful infection and symbiosis, there needs to be a strong bacterial attachment to the legume’s roots, specifically in nodulation. The bacteria Sinorhizobium meliloti has pili that assist in attachment, mobility, and cell interaction. To investigate the role of Type IV pili in attachment and symbiosis, we are generating a Sinorhizobium meliloti strain that overexpresses the pilA1 gene, which encodes the major subunit of the Type IV pili. To do this, we used PCR to create a

version of the pilA1 gene that is regulated by the constitutively active Ptac promoter. The PCR product was cloned into the pGEM-T easy vector, and transformed into E. coli to amplify the recombinant plasmid. The amplified Ptac-pilA was subcloned into the pMP7604 plasmid, which can be stably maintained in S. meliloti. In the future, the plasmid carrying the Ptac-pilA contruct will be transferred from E.coli to S.meliloti by triparental mating. The resulting Sinorhizobium strain will be tested for attachment and symbiotic phenotypes.

Greater Brain Activation in ACLR Patients During Force Reproduction Task Compared to Health Controls

Haley R. Huntington, Anisha A. Patel, Christine E. Phelps, Caitlyn E. Olshausen, Anika Khurana, Tina Boluordi, Tim Lehmann, Daniel Buchel, Lana J. Kayali, Abi Rae Stine, Brian J. Clem, Ryan D. Kim, Yong Woo An

The heightened quadriceps activation observed in patients who have undergone anterior cruciate ligament reconstruction (ACLR) in response to unexpected Transcranial Magnetic Stimulation (TMS) compared to healthy individuals (CONT) suggests a potential neuroadaptation, particularly within the corticospinal pathway. However, the extent of neuroadaptation within the primary motor cortex during knee strength tasks remains unclear. PURPOSE: To investigate brain activation patterns in response to TMS pulses during isometric knee extension between the ACLR and CONT. METHODS: Electrocortical activation of 6 ACLR (20.17±1.60yrs, 70.68±12.04kg, 169.65±7.48cm) and 5 CONT (21.00±1.73yrs, 65.77±13.61kg, 166.62±11.99cm) subjects were recorded using a 64 channel electroencephalograph (EEG) system during an isometric force reproduction task. Sixty TMS pulses (minimum of 120% active motor threshold) were randomly delivered to the primary motor cortex, while maintaining 10% of maximal voluntary isometric contraction (MVIC). Artifact free EEG data were used to calculate event-related potential power (ERP, μV) at N100 (80~200ms) and P200 (160~300ms) intervals. Motor evoked torque (MET, %), reflecting peak torque normalized to 100% TMS intensity, was computed. ERP and MET comparisons were made using independent t-tests. RESULTS: ERP P200 ($t[1,9] = 1.847$, $p = 0.049$) revealed less peak power in the ACLR (5.30±2.34 μV) than the CONT (12.80±9.72 μV). However, MET ($t[1,9] = 3.018$, $p = 0.003$) showed that TMS increased more involuntary quadriceps torque in the ACLR (177.97±85.92%) than the CONT (87.88±42.13%). CONCLUSION: The heightened torque post-TMS in ACLR, compared to CONT, suggests altered corticospinal tract activation, while lower ERP signifies potential cerebral cortex adaptations, particularly at the primary motor cortex. Future research should explore the link between reduced cerebral cortex activity and increased corticospinal tract activation.

Home-Court Advantage: Comparing International Justice Mechanisms to Domestically-Grown Reconciliation

Elise Treon

Scholars have studied wars and their causes for centuries, but what happens when the tanks roll out and the guns stop firing? The concept of reconciliation is a relatively new field of study in international relations, and the scholarship of specific transitional justice mechanisms remains underdeveloped. I comparatively analyze the differences between external and internal peacebuilding strategies – specifically the effectiveness of international tribunals in establishing long term deep reconciliation. In defining internal and external transitional justice mechanisms, I differentiate between a reconciliation process that prioritizes rebuilding citizens' lives over one that prioritizes the desires of the international community. It has been almost 30 years since the Bosnian War and the Rwandan Genocide, which marked the first use of international criminal tribunals as a transitional justice mechanism. However,

Rwanda prioritized local level, community based trials more than Bosnia did. Scholars are divided on the effectiveness of international tribunals. By analyzing their use in these cases, I demonstrate that internal, domestic level trials are more reconciliatory than internationally conducted criminal tribunals, thus developing more informed guidance for future reconciliation.

How do Angelenos prefer the City of LA to address emergency 911 calls, and how do these attitudes vary by age and race?
Caroline Andrews

Given Los Angeles' history of discriminatory police practices and racial tensions, evaluating current sentiments towards the LAPD is crucial for identifying areas of future reform. The guiding research question for this study is 'How do Angelenos prefer the City of LA to address emergency 911 calls, and how do these attitudes vary by age and race?' The purpose is to assess Angelenos' current attitudes toward LAPD interactions with the community and to identify what response methods Angelenos favor when in need of assistance: either respond only with LAPD officers, respond with teams of officers and unarmed psychiatric professionals, or respond only with unarmed professionals. This study uses data from the 2023 Los Angeles Police and Community Relations Survey conducted by the Center for the Study of Los Angeles at Loyola Marymount University. Data was collected from adult Angeleno residents (n=1,751) through telephone calls, online, and face-to-face surveys, asking a range of questions concerning attitudes toward policing. The survey was conducted between April 19th and May 23rd with a margin of error of +/-3%.
Responses differ by racial and ethnic groups, with Black and white Angelenos (44% and 41% respectively) favoring a team response, Latina/o Angelenos preferring LAPD response only (49%), and Asian Angelenos having no majority preference. Notably, across all studied races, the younger generation (ages 18-29) prefer a team response. Given the nationwide discourse on police reform and refunding, these data are crucial to consider for future police reform.

How do LA residents perceive racism regarding the LAPD across racial/ethnic groups?
Elijah Vera

In Los Angeles there is a prevalent history of racial tensions and unethical police policies, so it is important to gauge how the complex racial-ethnic communities in Los Angeles perceive the LAPD. This study uses data from the Center for the Study of Los Angeles' 2023 Police and Community Relations survey, a survey that asks a wide range of questions concerning the LAPD and general Los Angeles policing. The study will examine whether respondents believe the LAPD treats racial groups equally or have discriminated against them. The survey was conducted through 20-minute telephone sessions, online surveys, and face-to-face surveys, from April 19th, 2023, until May 23rd, 2023, with translations provided in Spanish, Korean, and Mandarin. There is an observable difference in perceptions of law enforcement-based discrimination among racial groups with the highest proportions of Black (41%) participants believing they have faced discrimination "often" or "sometimes". As opposed to White (20%) participants who have the lowest perceived discrimination among the groups. Whereas Asian (36%) and Latina/o (32%) participants falling between the two demographics. Similarly compared with the question of whether participants believe that the LAPD treats races equally it is noticeable that Black (24%) participants have the lowest levels of agreement while White (45%), Latina/o (48%) and Asian (54%) participants are more divided. From these questions it is evident that Black participants have the highest perception of the LAPD as being racially biased against them, an attitude to keep in mind going forward as the racially diverse city continues to develop.

How Euphoria Shapes the Understanding of Domestic Violence
Diana Vazquez

Looking at the current representation of Latinas in the media reveals how domestic violence among Latinas is minimized and desensitized. This highlights the way in which domestic violence is depicted and understood on and off-screen. Building on the topics of domestic violence, Latina sexuality, and representation, this research analyzes the interplay between social scientific research and representation by combining social issues in literature and media and cultural studies. This research conducts visual and discursive analyses on Euphoria as a cultural text by doing a close reading of episodes four, five, and six from season one to further analyze the relationship between representation and domestic violence. The analysis of these three episodes provides a close reading of the discourse surrounding the relationship of the main characters Maddy, a Latina cheerleader, and her abusive boyfriend, Nate. Further examination of the episodes suggest that the depiction of domestic violence in media is crucial as it plays a role in the social construction of what is considered to be domestic violence. Analyzing Euphoria as a cultural text reveals the various tropes surrounding Latinas and sexuality used to shape the understanding of the safety of Latinas when it comes to domestic violence. Understanding this is vital because representation can produce knowledge and shape society's understanding of Latinas through the portrayal and depictions created on screen. Addressing the social issues that Latinas face in the United States can help bring awareness and reduce the unique challenges Latinas face when experiencing domestic violence.

I'll Trade You for It: Examining Political Learning and Views of Trade Among Generation Z.
Ryan Byrne

Scholars have noted Generation Z's extensive use of social media, as opposed to traditional media, as a source of political knowledge. With Generation Z becoming a larger part of the American electorate, it is vital to understand how social media affects how this cohort of voters learn about politics. Few scholars have shown how social media can impact Generation Z's political learning and considerations of self-interest with regard to complex economic issues, like trade. Thus, this study seeks to determine whether the medium on which information about the United States-China trade war is conveyed affects how well participants recall the information they see and whether it affects their support or opposition to the trade war. Using an original survey experiment of 18-26-year-olds, this study reveals that those who saw information about the trade war in a social media post recalled that information no better than those who saw the same information in an online news article format. In contrast, those who saw information about the negative effects of the trade war in a social media post supported United States-China trade more than those who saw the news article. These findings are important as they provide insight into the impact of social media on how Generation Z considers complex economic issues. With American trade policy currently in disarray and rising economic inequality, these findings provide a window into how Generation Z's views can be shaped by social media going forward.

Identification of plant growth promoting rhizobacteria for Ballona Wetlands restoration
Caroline Ehren

The Ballona Wetlands Ecological Reserve (BWER) is home to many California native plant species which contribute to ecosystem services of flood and erosion mitigation, water quality improvement, carbon sequestration, and habitat provisions for threatened and endangered species. Plant growth promoting rhizobacteria (PGPR) improve plant tolerance to abiotic stressors and suppress pathogens through the alteration of nutrient absorption, water uptake, and enzymatic activity, and have potential in

conservation strategies by aiding revegetation methods. Eight bacterial strains were isolated from native Frankenia salina and Baccharis pilularis in the BWER to determine whether these microbes act as PGPR. The strains were characterized using biochemical assays such as phosphate solubilization, cellulase activity, and salt tolerance. Preliminary results have shown that all strains were negative for phosphate solubilization and cellulase activity, seven strains were tolerant of 5% NaCl and five were tolerant of 10% NaCl. The high salt tolerance of these bacteria may be contributing to the salt tolerance of native species in the BWER. Given these findings, in vitro germination and growth assays using Camissoniopsis cheiranthifolia seeds are being carried out to determine the role of these microbes in facilitating the restoration of native coastal species in the BWER.

Identity-Informed Peace: Policy Recommendations for Peacebuilding Influenced by Social Identity
Olivia de Paschalis

Peacebuilding has been widely recognized as a critical process that provides valuable aid in rebuilding previously conflict-ridden and devastated societies. Innovations to peacebuilding policy are constantly being developed in attempts to advance the ways in which these initiatives can accomplish true, just peace following extensive and destructive conflict. This policy-oriented research project explores the social-psychological nexus between peacebuilding and identity in pursuit of improving current practices. Research suggests that when social identity is misunderstood it can be a serious impediment to achieving peace, yet contrastingly, a beneficial facilitator when adequately recognized. This paper argues that understanding and applying relevant theories such as Henri Tafjel's social identity theory and Gordon Allport's contact theory are critical in constructing genuine peace amongst affected communities. Through an extensive review of the literature, this project proposes policy recommendations, grounded in illustrative examples, for building and delivering better peace.

Individual Autonomic and Cardiovascular Responses to the Cold Pressor Test
Jenna Ellinghuysen

The autonomic system, linked with the cardiovascular system, is the part of the body responsible for adapting to stressful situations. The way the autonomic system responds to stress can be indicative of many cardiovascular and other diseases such as type 2 diabetes. Depending on the person, their body's autonomic response varies based on personal biology but also different external factors such as activity levels, mental well-being, and socioeconomic and demographic variables. In previous research, it has been shown that cardiovascular and autonomic responses can be generated through stress tests. In the research, the objective was to assess the viability of using a conventional stress assessment method, specifically the cold pressor test, in eliciting autonomic and cardiovascular responses. During the research process, the participant was exposed to a stressful event, and their different vital signs were monitored. This stressful event included the participant placing their hand in cold water for a total of 2 minutes with 5-10 minute periods of rest before and 5 minutes after the event. The vital signs that we monitored included blood pressure, heart rate, and EKG. Mainly what we found was the participants had a cardiovascular response to the stressful event with data being able to be collected on the R-R intervals which showed autonomic activity. In all, the cold pressor test is viable to show a cardiovascular response, and with more data collected in the future, we can begin to explore how different external factors come into play with eliciting different autonomic responses.

Interaction of RGG-motif peptides with MYC promoter G-quadruplex

Nimrat Sran, Tia Nguyen, Reese McNally, Elizabeth Camberos, Alexa De Anda

G-quadruplexes are secondary structures of DNA consisting of two or more stacks of G-tetrads – square planar structures consisting of four guanine bases associated together through Hoogsteen hydrogen bonds. The quadruplex structure can occur naturally in G-rich sequences and has been identified to be abundant in telomeres and promoter regions. Proteins and ligands can bind to G-quadruplexes, stabilizing DNA and RNA, and inhibit or promote replication, transcription, and translation. As these structures are linked to such diverse functions, understanding how proteins can bind and effect stability of the G-quadruplex structure has garnered significant attention.
The MYC oncogene, overexpressed in a wide variety of cancers, plays a key role in cancer progression and contains a quadruplex motif in its promoter region. The G4 structure that forms in the MYC promoter, functions as a transcriptional repressor element pointing to G4 structures as a therapeutic target to downregulate transcription. Arginine-glycine (RGG) rich domains have been found in many G-quadruplex (G4) binding proteins and have shown to contribute to G4-binding affinity. The goal of our research is to evaluate the binding affinity of RGG-motif peptides on MYC promoter G-quadruplex structures and their effect on quadruplex integrity. Two RGG rich peptide sequences present in RNA helicases were studied. Binding constants were measured using fluorescent-tagged DNA and G-quadruplex stability and unfolding rates were measured through the use of circular dichroism (CD) spectroscopy. Only one peptide sequence was able to bind quadruplex DNA efficiently and unfold the quadruplex structure.

Interdisciplinary Approaches to Studying Climate Change: The Development of a Web-Based Closed-Loop Temperature-Control System for an Aquatic Tank

Adrian Wasylewski, Makena Robison

Studying the effects of climate change on indicator species like intertidal mussels can indicate ecosystem health, but studying mussels in their natural habitat can be costly and labor-intensive. This project aimed to design an automated system to manage the study of mussels through the collaboration of an electrical engineering and computer science team. The computer science team focused on designing a web application for climate researchers that deploys automatic heat ramp interventions, centralizes data collection, and provides time-delineated visualizations of the data. The web application is built upon the Next.js front-end framework and the Prisma ORM PostgreSQL database system and is hosted on Vercel. Through these tools, the user can store, access, and communicate data, specifically timelines, to and from the aquatic tank to initiate and monitor different experiments. Simultaneously, the electrical engineering team worked to design a closed-loop temperature-control system to provide a dynamic heat ramp to an aquatic tank, reflecting intertidal zone temperature patterns. The system uses a Raspberry Pi to continuously monitor the aquatic tank temperature, activate an aquatic heating rod when necessary, and communicate with the designed web app. Using pulse width modulation, the Pi can accurately heat the tank at different rates to mimic real-world sea-temperature data. The final, combined system ensures seamless communication between the closed-loop temperature-control system and the web application through automated and user-prompted HTTPS requests. The results demonstrate a running trial where the web application sends a timeline to the heat-ramp device, initiating an experiment and returning temperature data.

Intersectional Identities and Learning Disability Diagnosis
Lacey Argus

As a future educator and Women and Gender Studies student, I conducted research to answer, "How do intersectional social identities impact learning disability diagnosis?" Based on my personal experience I hypothesized that a learning disability diagnosis had a positive impact on a student's academic career, however, through my research I discovered a much more complex answer. My conclusion was that learning disability diagnosis historically has neglected to acknowledge the intersectional factors present in underdiagnosis, overdiagnosis, and the accommodations available to a student with interlocking identities. In this way LD diagnosis has become a mode of systematic oppression, often benefiting upper-class white students in well-funded school districts and further controlling the condition of the education that students of color from various economic backgrounds receive.

Intertidal Temperature Variation and Mussel Physiology
Cassandra Erickson

Mussels of the genus Mytilus are biological engineers, creating mussel beds in intertidal habitats that increase biodiversity. Mussels experience daily tidal fluctuations that expose them to abiotic stressors, and their tolerance to stress can inform us regarding ecosystem health. However, climate change (CC) is predicted to increase seawater temperature and decrease salinity, which may have detrimental effects on coastal marine animals, like mussels. Therefore, the goal of our study was to determine field thermal and salinity conditions at various sites to collaboratively develop a laboratory heat ramping device that exposes mussels to simulated stress, allowing us to study the effect of CC on mussel physiology. We deployed temperature and conductivity loggers at four sites (Ballona Creek, Marina del Rey, Pacific Palisades, Malibu) at three intertidal heights (high, mid, low) and within tide pools in August 2023. Loggers continuously collected data every 15-30 min and logger data was offloaded every few weeks. We found that minimum and mean seawater temperatures were similar across all sites, but maximum temperature and standard deviation varied by site. The highest temperature recorded (32.15°C) was measured during a mid-day low tide. Salinity within Ballona Creek had the greatest variation compared to Marina del Rey, with a range of 0-37 ppt. Thus, our study shows that there are microhabitat variations in abiotic conditions within the sites we surveyed. Our study identified changes in environmental conditions experienced by mussels at various sites that we will use as experimental parameters in the development of our mussel heat ramping device.

Investigating the Conformational Dynamics of the Enzyme Guanylate Kinase from Mutations at Two Locations
Nathan Avey

In this study, we look at the conformational dynamics of the enzyme Guanylate Kinase (GK), as well as three mutants of the enzyme. Achieving mutations with significant functional change to the protein is generally the result of many changes to the sequence of amino acids, but in the case of GK, we see that only two mutations may cause changes in the enzyme's activity. This mutant is the result of Alanines in residues 175 and 176 being changed to Glycine. Taking the use of molecular dynamics, docking, and free energy profiles, we provide a full description of the conformational changes of the three mutants.

Investigating the Impact of Substituent Position on the Excited State Proton Transfer Reaction in Isoquinoline

Samantha del Pozo

Further development of solar energy is important for the future of the green energy economy. Many research proposals involve the storage of solar energy in chemical bonds, like solar-driven generation of H2 gas for use in hydrogen fuel cells. The direct storage of solar energy in chemical bonds requires driving multi-electron and multi-proton reactions with light. One molecular tool that can be used to achieve light-driven control over the necessary proton-transfer reactions is photobase molecules, which become more basic upon photoexcitation and therefore drive excited state proton transfer (ESPT) reactions. Effectively, photobases can "turn on" or "turn off" proton transfer reactions with light and are therefore invaluable in solar-driven chemistry. There is still much about photobase molecules and their reactions that are poorly understood, however. In this work, we study the photobase ESPT reaction of bromo-substituted isoquinolines using UV/Vis spectroscopy, fluorescence spectroscopy, time-correlated single photon counting, and quantum chemistry calculations. Specifically, we investigate the effect of the position of the bromo substituent on the photobase ESPT reaction. To our knowledge, this is the first complete, systematic study of the effect of substituent position on the photobase ESPT reaction. These results are important fundamental steps for the rational design of future photobase molecules.

An Investigation into the Effect of Water Factors on HAB Species in Santa Monica Bay

Gabriella Drumm

Harmful algal blooms (HABs) in the marine environment are spurred by the overgrowth of microscopic marine algae, or Phytoplankton. Santa Monica Bay (SMB) has been historically impacted by HABs as evidenced by the prevalence of toxins in the tissues of benthic organisms and the broadcasted mortality of the California sea lion, Zalophus californianus. Los Angeles is a highly populated area with frequent human interactions with the marine environment. Heavily polluted stormwater runoff is released into the water system during rain events. This study identified the species prevalent and their shifts in concentrations under varying conditions in three locations in SMB: Mother's Beach, Playa del Rey Beach, and Ballona Creek. The study aimed to determine the influence of nutrients such as phosphorus and nitrogen on population dynamics and Fecal Bacteria Indicators (FIB), Escherichia coli and Total Coliform. Research on the influence of nutrients and FIB on phytoplankton species density had not been investigated in Santa Monica Bay prior to this study. Species are identified using light microscopy with Sedgwick Rafter counting slides. Nutrients are determined using the cadmium reduction reaction (nitrogen) and the ascorbic acid method (phosphorus). E. Coli and Total Coliform were determined using the IDEXX quanti-tray system. Preliminary findings show that the three testing locations have distinct population characteristics. The most common species in Ballona Creek (BC) were Lingulodinium polyedra, Pleurosigma, Pseudo-nitzia, and Melosira varians. Mother's Beach was dominated by Pseudo-nitzia and Coscinodiscus. Lastly, Lingulodinium polyedra and Protoperidinium were most prevalent at Playa del Rey Beach.

Investigation into the Impact of Heavy Metals on Beach Evening Primrose and its Associated Microbes

Danielle Leong

Investigation into the Impact of Heavy Metals on Beach Evening Primrose and its Associated Microbes Danielle Leong Beach evening primrose, a plant native to the dunes on the coast of California, is one of

the plants important to the formation and stability of California's coastal dunes. Due to their environment, these plants face various environmental stressors that impact both their settlement rate and their growth rate. One such stressor is the presence of heavy metals in the environment which can have harmful effects on the plants. Utilizing plant-growth promoting rhizobacteria that are tolerant to heavy metals can improve primrose's tolerance to heavy metals and improve their settlement rate and growth rate when under heavy metal stress. This study investigates the impacts of different concentrations of zinc and cadmium on primrose seedlings. When under zinc and cadmium stress at concentrations of 150 µm CdCl2 and 1 mM ZnSO4, seedling growth was the most stunted. Nine different rhizobacterial strains, previously isolated from native plants growing in the El Segundo dunes, were tested to investigate their effect on seedling growth when under heavy metal stress. Strains from the genera Variovorax, Paraburkholderia, and Priestia were shown to have positive impacts on the seedling growth under 150 µm CdCl2and 1 mM ZnSO4 stress. This study also aims to test the possibility to use beach evening primrose in phytoremediation for zinc and cadmium.

Invisible Illness: The Silent Epidemic For Women
Emily Wallack

Background: The following study examines the experiences, including the treatment, diagnosis, and marginalization, that women with invisible illnesses, specifically, autoimmune diseases, have had with medical professionals. Uncovering the experiences that women with chronic illnesses have had with physicians, the following research reveals how these interactions have impacted their mental and physical well-being in their respective social lives. Ultimately, this study brings awareness to the real-life implications for women with invisible chronic illness. Methods: The method used in this study consisted of a content analysis of social media discussion platforms. The data was collected from the social media discussion platforms consisting of Facebook and Reddit and was analyzed using a qualitative thematic analysis of 19 responses. The sample comprised of all women ages eighteen and older with any autoimmune condition. Results: The findings of this study revealed three major themes: misdiagnosis, patriarchal healthcare, and social implications. Doctors rely on orthodox andronormative diagnosis standards to account for women's symptoms, which often delays an accurate diagnosis for women patients. Often, women's pain is attributed to emotional dysfunction and side effects of their physiology, like menstruation. Overall, women with chronic illness are continuously marginalized in healthcare simply because they are women. Conclusion: This study exposes how women with invisible illness experience a healthcare system with the inherent gender biases in diagnostic processes and pain management. It is imperative to end the delays in diagnosis and disbelief of women's pain so that they can live with dignity and purpose.

The Impact of Gender Stereotypes on Lay People's Narrative of Egg and Sperm Cells
Auden Marsh-Armstrong

There is an array of evidence in textbooks, children's books, YouTube videos, etc suggesting that sperm cells are portrayed as aggressive and competitive and egg cells as passive. These depictions do not accurately reflect biological facts of conception and rather personify these reproductive cells with stereotypically gendered characteristics. Though these media portrayals are common, research has yet to examine whether this gendered narrative is held broadly by the public. This study fills this gap by investigating whether laypeople imbue their narrative of the egg and the sperm with traditional gender stereotypes. We hypothesized that, on average, sperm cells would be characterized as more masculine than feminine and egg cells as more feminine than masculine. Furthermore, we predicted that gender

stereotyping of reproductive cells would be positively associated with a variety of measures of sexism. To examine this, we will recruit approximately 150 participants over the age of 18 through LMU's Psychology Participant Pool and online survey platform Prolific to participate in a survey study on perceptions of object characteristics. As part of the study, participants will use the Bem Sex Role Inventory to rate the extent to which various masculine and feminine attributes apply to sperm and egg cells. Subsequently, they will complete measures of ambivalent sexism, feminist perspectives, and rape myths. Though results are forthcoming, they have potential social justice implications, shedding light on ways that gender stereotypes permeate all areas of our thinking.

The Impact of Political Belief and Household Income on Angelenos' Attitudes Towards Taxation and Homelessness

Athena Mahajani

The worsening homelessness crisis in Los Angeles prompts legislators to put forth a range of policy proposals. This research examines if political belief and household income impact whether Angelenos are "willing to pay more taxes for homelessness initiatives, regardless of the result." Data is drawn from the 2023 Angeleno Poll, an annual mixed-mode survey conducted by the Center for the Study of Los Angeles at Loyola Marymount University, to gather opinions of Angelenos on pertinent current issues. The 2023 poll was administered to a random sample of 2,008 adults from Los Angeles County. The study employs a logarithmic regression, establishing correlations and determining statistical significance with $p<0.05$ as the cut-off. Results show liberals display the greatest support for the tax increase with a marginal effect of 0.4088, indicating a one-unit increase in liberal political ideology yields a 40.88% increase in likelihood of supporting the tax. Moderates follow with a marginal effect of 0.3174, and conservatives with 0.2850. Furthermore, marginal effects for income brackets reveal that a higher income corresponds to increased support of the tax. Specifically, households earning over $150,000 have a marginal effect of 0.4465, while those making under $40,000 have a marginal effect of 0.3298. Thus, these findings highlight the influential role of political ideology and household income in shaping views on a potential tax increase for homelessness initiatives, with conservatives and low-income individuals opposing this policy at a higher rate.

It's in the Poo: Testosterone Mediates Aggression in Larus marinus

Frances Dygean, Sofia Carranza, Tyler Gonsowski

Hormones play a critical role in understanding animal behavior and physiology. In our study, we compare testosterone levels to aggression in the Great Black-backed Gull (Larus marinus). Excreta (fecal and urinary waste) samples are used to quantify hormone levels as this method provides a temporal view of the testosterone levels. Samples are collected at our field site in Maine, weighed, and freeze dried. Samples are ground, homogenized, and then a standard mass undergoes three rounds of extraction with 80% methanol to separate the testosterone from debris. Extracted samples are dried, reconstituted, and testosterone levels are quantified with an enzyme-immunoassay. Average aggression scores, average latency scores, and average testosterone levels were quantified for each gull. A total of 23 gulls from 2019 and 36 gulls from 2021 have been analyzed. Using general linear models, we found a slight positive correlation between testosterone and aggression score. Similarly, testosterone and latency to return to normal behavioral were also positively related. To further our investigation, DNA analysis of blood samples is underway to determine the sex of sampled individuals which, once known, will be used in future analyses. Overall, there is an indication that testosterone and measures of aggression are linked

in the Great Black-backed Gull, however, we will conduct additional analyses to further investigate this potential link.

Lean on Me: Variables Associated with Social Support Satisfaction
Lavanya Kannan, Natalie Skaggs

This study investigates how mood state, emotional regulation, and interpersonal closeness are associated with satisfaction in receiving social support. Social support refers to support offered by one individual to another who is coping with emotions/stressors (Marroquin et al., 2017). This study examines 72 pairs of friends in social support interactions. Each participant was randomly assigned to be either a receiver or a provider of social support. Receivers were instructed to discuss a current stressor and providers offered social support during an eight minute videotaped interaction. Receivers completed a set of measures including the Modified Differential Emotions Scale (measuring positive and negative mood states), the Interpersonal Emotion Regulation Questionnaire (measuring healthy emotional regulation strategies), and ratings of their satisfaction of the social support offered by the provider. We hypothesize that 1) receivers' positive mood prior to the interaction is associated with lower social support satisfaction after the interaction and that 2) receivers' own better emotion regulation is associated with more social support satisfaction after the interaction. Correlational and regression analyses will be used to test the hypotheses and examine possible relationships between variables. Additional exploratory analyses will investigate possible relationships between social support satisfaction and other variables such as interpersonal closeness and relationship satisfaction. Insights into which factors (emotional regulation, mood states, and/or interpersonal closeness) are associated with social support may have practical utility in improving relationships and enhancing healthy communication.

Levels of Trust in the LAPD in Los Angeles
Dylan Flood

The Los Angeles Police Department is the second largest municipal police department in the United States, tasked with policing the massive city of Los Angeles. This project will examine the levels of trust in the LAPD by analyzing data from the 2023 Police and Community Relations survey conducted by the Center for the Study of Los Angeles. This survey asked 1751 adults in the city of Los Angeles over the phone, online, or face to face about their levels of trust in the LAPD. Data were analyzed by race and ethnicity, age, and geographic location in the city of Los Angeles. Results were analyzed using a chi-square test to determine statistical significance between demographics and levels of trust. The results showed that there are differing levels of trust in the LAPD throughout the city depending on someone's race or ethnicity, age, geographic location in the city, or the intersection of these factors. For example, older respondents tended to be slightly more trusting of the LAPD than younger respondents throughout the city, with 20% saying they almost always trust the LAPD compared to only 14% of younger respondents. In addition, levels of trust varied by education level with only 12% of college graduates saying they always trust the LAPD compared to 35% of those who did not complete high school. The LAPD must work to increase trust in the department, which would be beneficial for the relationship between the police and the community into the future.

Literature Review on Elementary School Children's Peer Relations
Lavanya Kannan

We conducted a systematic literature review to update our knowledge of children's cross-group relationships. We limited the search to 2019-2023 focusing on the role of race/ethnicity, gender, and other group memberships such as social class in elementary school-age children's intergroup relations. The first pattern that emerged was that children pick friendships based on similarity, for example, choosing friends who are of the same race/ethnicity, gender, and language. These similar choices reflect comfort with those who are similar to oneself. The second pattern is that when children form cross-group friendships, their intergroup attitudes and racial bias are improved, and children show greater inclusive tendencies. Additionally, children who reported having more cross-group friends did better academically. Researchers suggest this is because of the role of intergroup contact, in line with the contact theory (Allport, 1954). The third pattern focused on designing interventions to increase cross-group friendships. These interventions included storybook hours and in-class activities discussing privileges and disadvantages. Results of these interventions showed that children's intergroup attitudes improved (e.g., lower xenophobic attitudes) and children showed more willingness to share toys and other resources. A recent study by Killen et al. (2022) showed a similar pattern with children who were in the Developing Inclusive Youth program, consisting of a curriculum and discussion that asked children about their experiences with social and racial bias. It found that African American children were affected by race-based discrimination while European American children felt more affected by wealth-based discrimination.

"¡Mandamelo por WhatsApp!": The Influence of Social Media on Latina Immigrant Political Socialization
Alex Pacheco

This project endeavors to unravel the impact of social media on the political socialization of immigrant Latinas. It offers a comprehensive exploration of several key dimensions: the role of social media in shaping the political landscape in the United States, including its influence on directionally motivated reasoning, echo chambers, and polarization; and the political behaviors and socialization of Latino individuals. Fundamentally, this paper aims to explore the current dynamics in the relationship between social media and political socialization among Latina immigrants in the U.S. as it is an under-researched demographic. The methodology for this study takes a multi- method interdisciplinary approach, comprising a thorough data analysis of the 2016 and 2020 Collaborative Multiracial Post-Election Survey and a screenplay. Examining CMPS' publicly available data provides a glimpse into understanding Latine's relationship with social media and right-wing politics, while the screenplay emboldens the research, emphasizing the emotions and experiences with discovering a community online and the social isolation encountered offline.

Measuring the Impact of an RNA Stem-Loop on the HTLV-1 gag-pro Frameshift Efficiency
Audrey Covington, Mwanday Yamegni, Marisa Gomez

Many viruses use programmed -1 ribosomal frameshift (-1 PRF) sites to permit the synthesis of viral proteins encoded in alternative reading frames. The HTLV-1 gag-pro frameshift site includes a slippery sequence, a spacer, and a stem-loop. While the slippery sequence and frameshift site function were previously established, its frameshift efficiency is unknown and the role of the downstream RNA structure is unexplored. There is substantial conservation in sequence and structure between the HTLV-1 and

HTLV-2 gag-pro frameshift sites. Thus, we hypothesized that the HTLV-1 gag-pro frameshift efficiency is similar in magnitude to the corresponding site in HTLV-2 and its stem-loop is critical to frameshifting. To evaluate our hypothesis, we sought to measure the frameshift efficiencies for three frameshift sites using dual-luciferase reporter RNAs and an in vitro translation frameshift assay. To produce these RNAs, we cloned p2luc plasmids encoding the HTLV-1 wild-type gag-pro, HTLV-2 wild-type gag-pro, or HTLV-1 no stem-loop gag-pro frameshift sites. This involved the design of DNA inserts, the ligation of a restriction enzyme digested insert to the p2luc vector, transformation of that DNA into E. coli, and the purification and sequencing of the cloned DNA. Preliminary results from a coupled in vitro transcription and translation assay suggested that the HTLV-1 gag-pro stem-loop was important to frameshift stimulation. Surprisingly, the frameshift efficiencies for the wild-type HTLV-1 and HTLV-2 frameshift sites were not as close as we expected them to be. This may be due to an issue inherent in the assay, which cannot control for RNA concentration. Thus, it is important to repeat these experiments with an assay that does before drawing conclusions. Towards this end, we are synthesizing and purifying reporter RNAs for each frameshift site. These RNAs will be used in a dual-luciferase assay with consistent RNA concentrations to measure each frameshift efficiency. These results will be used to reevaluate our hypothesis and fill important gaps in knowledge related to HTLV-1 -1 PRF.

Microplastics in Bottled Water: The Influence of UV Radiation
Josh Petteruti

Microplastic (MP) contamination of drinking water is a growing phenomenon and concern for public health, given the potential toxicity of MPs and their chemical additives. MPs have been found in bottled and tap water sources, with higher concentrations in the former. Additionally, the storage time of plastic bottles and their long-term exposure to UV radiation have been documented to increase the number of MPs in bottled water. This research investigates if short-term UV radiation exposure leads to increased shedding of MPs into bottled water and whether this occurs in both reusable plastic bottles and single use. In this experiment, 'soft' plastic bottles (single use) and 'hard' plastic bottles (reusable) were subjected to short-term applications of UV radiation in a controlled environment using a UV Stratalinker. The bottles were then filtered and subjected to microscopic analysis. Water was filtered using 0.8-micron pore gold-plated membranes, and particle identity was confirmed using FT-IR spectroscopy. For one brand of single-use polyethylene terephthalate (PET) plastic bottles, an average MP count was quantified for a control group, a moderate UV exposure group, and an intense UV exposure group; this process was replicated for a reusable plastic bottle. Ongoing research will further quantify the impact of UV radiation at varying intensity levels and determine if significant differences arise between the experimental groups.

Narratives of Sexuality From Undergraduate Women at LMU
Caroline Weiss

My presentation focuses on LMU undergraduate women's dating and sexual experiences. My project aims to explore, understand, and analyze insight from 5 separately interviewed participants, each discussing their thoughts on, experiences of, and understanding of both their own sexuality and dating lives as well as LMU's own campus culture in regard to dating and sexuality. Sexual script theory provides a foundation for how gender and sex influence social scripts pertaining to sexual encounters. Feminist theory and queer theory are essential in this project to explore the profound influences and construction of gender and sex roles, norms, power dynamics, and pinpoint and analyze the prevalence and effects of heteronormativity within dating and hookup cultures. Using these frameworks, I

investigate what sexual exploration in relation to college campus life means to each participant, how they define and explain key topics, and the complexities of sexuality discourse.

Neurodiverstiy Affirming Parenting
Maximilian Urias

Throughout the summer program, extensive research was conducted on kindergarten readiness and social story implementation, especially concerning neurodivergent children. Through a series of literature reviews, the study explored current understandings and findings related to preparing neurodivergent children for school environments. Key areas of interest included the role of social stories in enhancing social understanding and the development of interventions tailored to support the unique needs of children with autism, ADHD, dyslexia, and other neurodivergent populations. This work encompassed the creation of detailed documents, including "Challenging Areas & Social Story Implementation," "Guideline for Parents Using Social Stories for Your Child," and "Guideline for Teachers Implementing Social Stories in the Classroom." These documents outlined practical strategies for addressing challenging areas such as adaptation, behavioral and social-emotional skills, teamwork/communication, and self-advocacy. They emphasized the importance of neurodiversity-affirming handouts, illustrating a comprehensive approach to support neurodivergent children's transition to kindergarten. The research emphasized the role of parents and teachers in utilizing social stories to foster a supportive learning environment, reduce anxiety about transitions, and enhance children's social and emotional development.

Older chicks get better food: An analysis of isotope ratios in Great Black-backed Gulls
Taleen Madikians

Great Black-backed Gulls (Larus marinus) are relatively understudied, especially in terms of their dietary preferences, which can vary intraspecifically. Our project's overall goal is to quantify differences in diet across individual Great Black-backed Gulls via stable isotope analysis. Analyzing isotopes in feathers can reveal diet information since carbon and nitrogen isotope ratios reflect the individuals' foraging ecology. Specifically, nitrogen isotope ratios reflect the trophic level, and the carbon isotope ratios reflect whether the food sources are terrestrial or marine. This approach of using isotope analysis is beneficial compared to other methods because this method enables us to gather more complete dietary information compared to direct observation, for example. We sampled feathers from adults, hatchlings, and pre-fledglings and saved them for isotopic analysis. Feathers were processed, and isotope ratios were determined via mass spectrometry. Isotope ratios from feathers of pre-fledgling chicks indicate that in all sampled nests, most individuals are consuming primarily marine and high trophic-level foods. Pre-fledglings from the same nest had similar feather carbon isotope ratios, regardless of hatch order. However, nitrogen ratios were lower for C chicks (last-to-hatch) compared to A chicks (first-to-hatch), indicating C chicks consumed lower trophic-level foods. We are currently working to further investigate this pattern by comparing isotope ratios in hatchlings and by comparing ratios between chicks and their parents. With this information, we will better understand the diet of this declining species.

One Faith, Multiple Views: Catholicism and Capital Punishment
Olivia de Paschalis

Claimed as the blueprint for Catholic faith, Jesus Christ originated as a figure who intensely cared for the marginalized. However, in modern manifestations of Catholicism his critical call for the tenet of social

equity is often up for debate, specifically in regards to the death penalty. This project explores the theme of theological coherence, or its lack thereof, in contemporary U.S. Catholicism through analyzing the opposing stances on this issue and the way in which many politicians today dangerously justify problematic policies or viewpoints as being rooted in the Catholic faith. If social justice is fundamental to Jesus, why do followers often act in ways that counteract fundamental human dignity, such as perpetuating capital punishment? In discussion with Elizabeth Johnson's Consider Jesus, the following project explores this question and returns to the original framework provided by Christ through his commitment to social justice; ultimately arguing this need be applied to all those incarcerated as they are naturally and inherently deserving of redemption. In attempts to reconcile the current Catholic contradictions, this paper suggests that Liberation theology be increasingly adopted as more congruent with the Christian Gospel.

Osmotic performance of the mussel Mytilus galloprovincialis across increasing salinities
Alyssa Rodriguez

Climate change is a major contributor to causing drastic changes in ocean salinity, temperatures, and acidification. Mussels like the species, Mytilus galloprovincialis, act as biological indicators of environmental changes and studying effects of abiotic stress (i.e., heat, salinity) on mussel metabolic rate provides a metric for understanding changes in energy demand under stress. Climate change is predicted to increase precipitation rates which may alter seawater salinity exposing mussels to hyposalinity. However, there is little information about the osmotic stress tolerance of M. galloprovincialis in the face of climate change. Thus, the goal of this study was to determine the effect of variable salinity on the metabolic rate of M. galloprovincialis from two different sites as a predictor of climate change effects on marine invertebrates. Mussels (N = 300) were collected from Marina Del Rey and Ballona Creek, CA and exposed to 7 days of salinity stress (ranging from 5-40 ppt). Metabolic rate was measured following stress exposure and an osmotic performance curve was developed across all tested salinities. Results showed prime mussel metabolism at the average ocean salinity (34 ppt) and reduced metabolism under exposure to salinity extremes (5 and 40 ppt). Although Ballona Creek seawater variation is more variable than Marina del Rey, we did not identify a difference in metabolic rate between sites. Thus, our study suggests that M. galloprovincialis mussels exposed to hyposalinity will be energy limited and this may influence mussel survival under future climate change scenarios.

Parameter sensitivity analysis of GRNmap, a dynamical systems model of gene regulatory networks
Nikki Chun

A gene regulatory network (GRN) is a set of transcription factors that regulate the expression of genes encoding other transcription factors. The dynamics of GRNs explain how gene expression changes over time. GRNmap is a complex MATLAB software package that uses ordinary differential equations to model the dynamics of small- to medium-scale GRNs. The program estimates production rates, expression thresholds, and regulatory weights for each transcription factor in the network based on time-course gene expression data, using a penalized least-squares function that minimizes the discrepancy between simulated model outputs and observed data. The optimization problem is constrained by the addition of a penalty term, which consists of the square of the parameter vector, multiplied by **α**, which is used for weighting. Exploration of the **α** parameters found that an alpha value of 0.02 is suitable, with a value of 0.002 causing overfitting. Additionally, GRNmap can make parameter estimation from input expression data with missing data points. When using an alpha value of 0.02, there were only slight differences in outputs from workbooks with missing expression data points and no missing data points

(which were filled with the average value of the other replicates for that time point). To better understand where these differences are coming from, a sensitivity analysis will be conducted based on a handpicked trial network. Noise will be added to the expression data systematically to see where the sensitivities arise so that we can better interpret the differences in the missing and no missing data outputs.

Party Lines and Racial Ties: Unraveling the Influence of Racial Identity on Policy Preferences among Latinos

Eylenne Diaz

Terms related to racial and ethnic identification are meant to be used alongside one another. However, to some Latinos, these terms are interchangeable. Despite the discourse surrounding race, its contribution to political heterogeneity in the Latino community has yet to be well studied. My research aims to examine the relationship between racial self-identification and policy preferences in the Latino community. Additionally, the research explores a connection between supporters of a Latino/Hispanic racial identity and political leaning. This study tests the correlation between race, policy preferences, and political leaning using a dataset that surveyed around 4,000 Latinos.

PERCEPTION OF DISCRIMINATION AND CARDIOVASCULAR REACTIVITY TO STRESS

Clara Delnik

Events of discrimination are not only acute but chronic stressors. Chronic stress is a known major contributor for cardiovascular diseases. This study investigated the cardiovascular reactivity to a stress test in college students who experienced discrimination in their adult lives. College students (n=14; 5 women; 7 non-white; age: 18±5.3) were recruited and responded to the Experiences of Discrimination Scale. Then, participants underwent the cold pressor test, immersing their hand into cold water for two minutes while being examined with a beat-by-beat blood pressure monitor (Finapres NOVA). For analyzes, participants were divided into two groups, those who experienced at least one episode of discrimination, and those who never did. Data shows a trend towards a higher reactivity for those with discrimination experiences for both systolic (125.4±11.21 vs. 129.6 ± 17.3) and diastolic blood pressure (71.0±12.7 vs. 79.6±22.6). A similar trend is observed when analyzing the deltas (cold pressor minus baseline) for SBP (6.5±14.8 vs. 10.1±8.3) and heart rate (10.1±5.4 vs. 14.5±15.9). Although it is still premature to jump to any conclusions about the theme, this preliminary analysis shows promising results for the hypothesis that people with more experiences of discrimination have a higher cardiovascular reactivity to stress and could be at higher risk of cardiovascular diseases later in life.

Physiological Bone Adaptations to Blood Flow Restriction Training

Sophia Lissin, Victoria Batlle

Purpose: Blood flow restriction training (BFR) has demonstrated effects on various physiological parameters, with similar regulatory mechanisms to bone. Bone and BFR literature is currently sparse, therefore the purpose of this investigation was to perform a pilot study of bone mineral content (BMC) and density (BMD) responses to BFR. Methods: The BFR group [n = 23; age = 20.72 ± 1.93; BMI = 25.81 ± 4.40 kg/m2] and control (CON) group [n = 19; age = 19.76 ± 1.31; BMI = 23.62 ± 3.18 kg/m2] underwent dual-energy x-ray absorptiometry (DXA) scans at initial and post interventions for forearm, anterior-posterior and lateral spines, and whole body. BFR training (back squat, bench press, deadlift, and bench row) consisted of three sessions per week for seven weeks (4 sets of 30, 15, 15, and 15 reps)

at 50% occlusion pressure while CON participants maintained regular daily activities. Results: No significant differences were seen in the lateral spine, forearm and whole body BMC and BMD from initial to post-intervention assessments. However, the B2RT group showed a decrease in percent difference in the anterior-posterior spine BMC compared to CON (-0.832% ± 0.49g vs. 1.06% ± 0.57g). Conclusion: Results suggest that BFR had little effect on bone BMD and BMC in participants. The brief duration of the study may have limited the scope of these findings, further research with longer duration and increased homogeneity is needed to clarify the potential of BFR training on bone health.

The physiological determinants of endurance exercise performance in men and women collegiate runners

Kayla Kumagai, Madison Fulgham, Emily Curry, Alexis Bowers, Antonio Ballardo, Caio Sousa, Jenevieve Roper, Robert Musci

There are three categories of physiological factors that determine endurance exercise performance: running economy, threshold, and aerobic capacity. While aerobic capacity predicts exercise performance in the general population, its predictive value in trained populations is less clear. Few studies have detailed the predictive value of each category of physiological factors in trained endurance athletes. PURPOSE: The purpose of this investigation was to examine which physiological factors predict exercise performance in collegiate men and women cross-country runners. METHODS: 9 Female (20.15 ± 1.71 years old) and 16 male (20.70 ± 1.52 years old) collegiate runners performed a lactate threshold and VO2 max treadmill test. The physiological factors collected were weight, age, aerobic capacity (VO2max), velocity at VO2max (vVO2), maximum (HRmax), and maximum lactate concentration. A multiple linear regression was performed to determine which variables predict the outcome: fastest race time. RESULTS: The average 6km PR time for women was 1386 ± 99.52 seconds and 8km time for men was 1511 ± 46.30 seconds. HRmax (**β**=15.68; 95% CI (7.85, 23.51) and maximal lactate concentration (**β**=-24.47; 95%CI (-45.02, -3.92)) significantly predict performance in women. Age also contributed to performance (**β**=-42.54; 95% CI (-89.42, 4.33)). For men, age (**β**=-18.78; 95% CI (-34.23, 3.33) and vVO2 (**β**=-40.75; 95% CI (-68.71, -12.79)) predicted performance. CONCLUSION: Age predicted performance for both men and women, suggesting that maturation plays a critical role in success. Aerobic capacity did not predict running performance, which suggests coaches and athletes ought to orient training to other factors such as maximal aerobic velocity. Word Count: 250

Pink Methylobacterium and its Potential Use in Agriculture

Forrest Vogel

Plant growth-promoting rhizobacteria (PGPR) colonize roots and improve plant growth through various mechanisms including nutrient acquisition, phytohormone production, and abiotic and biotic stress mitigation. A potential PGPR was isolated from Saintpaulia ionantha (African violet) tissue culture plates. Plants growing on the same plate as the unidentified bacterium had greater biomass and were able to withstand fungal contamination, suggesting that the bacteria could be a PGPR. PCR amplification and sequencing of 16S rDNA identified the isolate as Methylobacterium spp. Plant-growth promoting activities of this strain were studied. Regarding nutrient acquisition, we found that Methylobacterium was capable of producing siderophores, which can sequester iron for the plant. However, we were unable to determine if Methylobacterium is able to solubilize mineral phosphates. PGPR often have cellulolytic activity, which helps the bacteria break down cell walls to improve root colonization. This Methylobacterium is able to synthesize a small amount of cellulase, as indicated by clearing zones on carboxymethylcellulose plates. Cellulase may also help break down fungal cell walls. In antifungal assays,

Methylobacterium inhibited fungal growth across TY plates. In germination assays on agar plates, preliminary data shows that alfalfa seeds inoculated with Methylobacterium had a higher rate of germination and greater mean weight than the uninoculated controls. When grown in pots, inoculated carrot and alfalfa plants had greater germination rates and biomass, when compared to the uninoculated control groups. Sustainable agriculture aims to reduce the use of chemical fertilizers and pesticides by harnessing the capabilities of PGPR. This novel Methylobacterium exhibits promising PGPR activities.

Pit Wear and Tear: Unearthing Taphonomic Trends at Rancho La Brea Tar Pits
Josiah Dallmer, Paola Lopez de Cardenas*, Joshua Cohen Ph.D., and Wendy Binder Ph.D.*

The Rancho La Brea Tar Pits' diverse fossil deposits provide a large collection of fossils from the Late Pleistocene Epoch. Analyses of taphonomy, which is defined as the processes of bone fossilization from death to excavation, provide us with crucial information about the history of environmental conditions over time. Categories of taphonomy measured include weathering, abrasion, and pit wear. In this study, taphonomy of elements from both large and small mammals isolated from Box 1, Pits 3, 13, 91, and 61/67, which represent different time periods between 40-12kya, were analyzed with new species and pit wear data in order to identify trends across the various deposits. Results demonstrated that the overall trends of variation in taphonomy between the deposits does not change when factoring in the new data, however there is more pit wear in Pit 13 relative to the other pits. Furthermore, higher rates of abrasion do not always indicate higher rates of pit wear, suggesting that the two are not correlated. In order to gain a broader understanding on this project, future work can include sedimentary data and spatial analyses to potentially identify the factors leading to these taphonomy trends.

Police Reform and How Citizen Review Boards May Alleviate The Problem of Police Misconduct
Shani Marzuca

The lack of accountability in law enforcement of police misconduct is an issue that has polarized the law enforcement landscape as well as the nation, awakening a renewed call from community leaders, policymakers, and advocates for citizen review boards and other methods of improving police transparency and accountability. How can Citizen Review Boards improve the rates of police misconduct and ensure greater police accountability? What methods do Citizen Review Boards employ to supervise police misconduct? What are the limitations and problems associated with Citizen Review Boards? The primary method of inquiry employed is a literature review of social science research in the areas of law and society, criminal justice, and policing, containing keywords such as police reform, accountability, police oversight, and citizen police complaints. Online searches using JSTOR, Google Scholar, and SAGE Publications were utilized to gather information on this topic. Based on the literature, one can hypothesize that Citizen Review Boards may affect police behavior, and they may have the potential to play a significant role in shaping police accountability and improving public safety. Previous work on this topic exposes the issue of legitimacy with Review Boards. To combat this, Citizen Review Boards must be given power to be able to reprimand police officers for misconduct, without any interagency interference. With adjustments and requirements, Citizen Review Boards can help reduce the problem of police misconduct and lead to a safer and more just society for its citizens.

Primary Language Dominance Affects Performance in Neuropsychological Assessment
Estefania Valencia Lozoya, Hannah Van den Thillart, Abbey Shlossman, Kelsey Armstrong, Adriana Griot, Dean Symonds, Isabella Chhina, Natasha Khalil, Anton Dionisio, Federico Bos

LMU undergraduate students completed a test battery with various tests and surveys. Analyses were run on those that answered questions about their language dominance on the Language Experience and Proficiency Questionnaire (n = 30). Languages that students marked as being the most dominant in include English, Spanish, Portuguese, and Mandarin. Language and culture differences have affected the interpretation of various cognitive assessment tools with different populations. Research suggests that for this reason many of these assessments are not fully appropriate. Included in the analyses were tests of processing speed and working memory: Symbol Search (SS), Digit Symbol (DS), and Letter Number Sequencing (LNS). A study on Mexico-USA borderland populations, determined tests were overestimating the scores of the Spanish speaking adults when applying the standard neuropsychological norms; these norms derive from research done on white participants. The analyses on data from the students showed statistically significant difference between the languages in the LNS test ($p < .05$). Spanish/Portuguese performed better than English dominant, and both performed better than Mandarin. However, there was no statistically significant difference in SS and DS tests (SS: $p = .426$ and DS: $p = .209$). This aligns with previous conclusions that SS and DS are more culturally appropriate due to not requiring knowledge of the alphabet like LNS does. This finding supports the work various researchers in the field of cross-cultural neuropsychology are doing to adapt various assessments. More research needs to be done to see if these trends continue with a larger sample size. Future analyses will look at whether acculturation or other language proficiency affect performance. This data could provide a better insight into how the norms apply differently to students that attend an English-speaking college or in general to those that are multilingual. Eventually this could lead to the reforming of assessments to make them more inclusive and accurate for various populations.

Project E2024
Jennifer Woo and Nathan Kuczmarski

CSJ Center Panel on Social Justice in Action Project E2024 is a multimedia platform dedicated to informing GenZ on election issues as we head toward November 2024. Through E2024, we got to travel to Washington, D.C., and interview Congressman Maxwell Frost and Congressman Ted Lieu. Over the summer, we had a staff of four with Nathan as our primary videographer and video producer, and Jennifer serving as the student executive producer. We relied heavily on our advisors, Tom Nelson and Carol Costello, for their guidance and input. This project has challenged our team to reach beyond our LMU bubble to increase our understanding for other points of view. Throughout this project, we strived to include racial, geographic, gender, economic, and religious diversity in our reporting. We learned to work as a team and overcome communication issues as we worked remotely from our hometowns over the summer. With the rise of social media and rapid news, it has become increasingly difficult to engage young audiences in politics. We certainly faced challenges to reaching GenZ audiences in a way that is meaningful and effective, and we work to improve every day. E2024 has served as a supplemental to the Loyolan and served the LMU student body for the last nine months and has featured student voices across the country.

Propagating Protein-Protein Interaction Network Support into GRNsight 7.0, a Web Application for Visualizing Gene Regulatory Network Models

Ngoc K. Tran, Cecilia J. Zaragoza, A'Kaia Phelps, John David N. Dionisio, Kam D. Dahlquist

GRNsight is an open-source web application and service for visualizing models of gene regulatory networks (GRNs). A gene regulatory network consists of genes, transcription factors, and the regulatory connections between them, which govern the expression level of mRNA and protein from genes. GRNsight reads user-uploaded Microsoft Excel adjacency matrices or SIF files and automatically displays a graph. Users without their own data can use GRNsight's back-end PostgreSQL database to select a GRN based on the _Saccharomyces_ Genome Database (SGD). Besides GRN data, we have recently incorporated protein-protein physical interaction (PPI) data from SGD so that users can also visualize this type of network. Due to this new type of network, the rest of the application needed updates in order to fully support PPIs. For example, PPI networks have undirected edges vs. directed edges for GRNs. Gene and protein labels also differ. Notable additions include a PPI demo graph, allowing users to visualize a graph automatically without inputting specific data. This new demo exclusively showcases interactions involving yeast mitochondrial protein Aim32p, offering users a detailed exploration of its network connections. Furthermore, GRNsight now incorporates functionality to detect the network type of the imported file, distinguishing between GRNs and PPIs. Ongoing development efforts prioritize bug resolution, user interface enhancements, and improved documentation. In response to user needs, GRNsight is now positioned to comprehensively address GRNs and PPIs, offering a unified platform for visualizing diverse molecular interaction models. GRNsight is available at: http://dondi.github.io/GRNsight/.

Proximity of stormwater green infrastructure on urban park user behavior in east Los Angeles

Lauren Fabre, Stephanie Flores

Urban parks provide opportunities for recreation, education, and biodiversity conservation via natural and man-made elements. Such elements include infrastructure created to manage stormwater runoff. Stormwater grey infrastructure includes impervious hardscapes such as gutters, reservoirs, and storm drains, whereas stormwater green infrastructure may include permeable bioretention basins, infiltration trenches, and bioswales. In this study, we leverage smartphone mobility data to gain valuable insights into user movement patterns and accessibility through eight parks in east Los Angeles. The location, type, and size of all trees and green and grey infrastructure were mapped at each park via ground surveys. We then approximated park user visits, time at the park, and, when possible, where in the park they frequented, using smartphone mobility data obtained from a third-party service provider. Smartphone mobility data was received from the provider anonymously, but we were able to identify the park user's previous location, which allowed us to categorize the visitors as a neighborhood visitor (<3 km) or a general visitor (3+km). Preliminary results suggest that parks with more green infrastructure support a more even distribution of visitation across the park than parks with grey infrastructure, which is typically avoided. Forthcoming analysis will help us identify a potential connection between park user behavior and grey stormwater infrastructure, and the broader value of urban parks to their community and corresponding engagement.

Push and Pull Factors Affecting the Migration Decisions of Ukrainian Refugees
Evan Fekete

The Ukrainian Refugee Crisis is the largest forced movement of people in Europe since World War II. The European Union has responded with an unprecedented Temporary Protection Directive offering Ukrainians access to residence permits and social services. The literature on the decision making of forced migrants centers on choice theory, finding that even in the crisis of war, people are actors making choices about their lives. However, researchers debate what factors are most impactful on the decision to leave and the final destination of migrants. Some find that economic factors are the most important, while others point to safety from violence, access to social services and large ethnic networks as more significant to forced migrants. Through a mixed methods analysis of semi-structured interviews with Ukrainian migrants and analysis of migration data, I will examine their motivations for leaving their homes and choosing to seek asylum in certain countries over others. These findings will add to the literature by testing established theories on a significant displacement event and examine the impact of an unprecedented Western response to a large number of forced migrants.

QL+ Slantboard Project
Kaleb Agonia

The slant board project, in association with the Quality of Life Plus organization, works with a WISH charter school to design and supply specialized school equipment for students with disabilities. The purpose of the slant board project was to not only to provide students with the opportunity to learn and excel in a classroom environment despite disabilities, but to also enable STEM students at LMU to create innovative solutions to improve quality of life for others. This project is one of many under the QL+ organization at LMU, each of which has a team manager that leads the project and reports progress to the student board. The slant board project has served as a transformative experience, contributing to personal growth in design, management, and manufacturing, as well as providing a way to give back to communities and improve lives. While still in the manufacturing phase, once finished these boards will provide students with disabilities with better equipment tailored to their specific needs.

Quantifying animal biodiversity within a nascent micro- forest in Southern California
Alexis Wong

Quantifying animal biodiversity within a nascent micro-forest in Southern California Urban development and expansion frequently lead to habitat fragmentation and disturbance of native ecosystems, resulting in animal biodiversity loss. In this study, we compare biodiversity in a recently established micro-forest to a parallel control plot. A micro-forest is a tiny, self sustaining, densely planted, multilayer forest, and provides benefits including absorbing carbon, cooling adjacent habitat, and increasing animal biodiversity. Both control and experimental plots reside within Ascot Hill Park, a 93-acre urban park in east Los Angeles. From November 2023 to January 2024, 800+ seedlings were planted within the 10,000 sq. ft. experimental plot. No changes were made to the 10,000 sq. ft control plot. The plant pallet for the micro-forest included climate-canopy species of black walnut Juglans californica, coastal live oak Quercus agrifolia, and elderberry Sambucus nigra, as well as 25+ native species of other trees, sub-trees, and shrubs. Animal biodiversity was measured bi-weekly from August 2023 through March 2024 across both plots using a 40-minute roving survey method. Observed animals were identified to lowest taxonomic level and enumerated into frequency categories of single, rare, common, and abundant. 37 different animal types have been found in the microforest to date, averaging 7.4/survey;

versus 24 animal types and average of 4.8/survey within the control. Surveys and seedling survivorship measures are on-going. Our preliminary results suggest installing native plant micro forests may be an effective and potent solution to combating both animal biodiversity loss and habitat fragmentation in urban areas.

Queer and Trans Migrations: The Impacts of Presidential Discourse
Isabella Richards

Political discourse, defined as "the totality of all speech acts used in political discussions, as well as rules of public policy, sanctified by tradition and proven by experience" (Valerevna 88) has a profound impact on shaping societal perspectives, policies, and cultural norms. In the United States, historical presidential rhetoric has reinforced ideals like the nuclear family, inadvertently promoting heteronormativity and white supremacy. Consequently, this has led to marginalized groups, such as queer and trans migrants, being unjustly portrayed as outsiders or threats. This research project demonstrates how presidential discourse has framed queer and trans migrants as outsiders or invaders spanning from the 80s to today. By contrasting the words of Reagan, Obama, and Trump I argue that frameworks of race and sexuality, specifically heteronormativity and white supremacy are deeply interconnected to the immigration process. I explore how despite shifting discourse, this community continues to face mistreatment and exclusion, often catalyzed by presidential rhetoric and the corresponding legislation. While there have been immense shifts in policy and culture the use of common sense rhetoric remains consistent and unwavering.

The Real Cost: Analyzing How Cash Bail Creates a Wealth-Based Justice System and Violates the Due Process and Equal Protection Clauses
Juliana Angel

The use of cash bail in the United States has long been questioned for its role in creating a system of wealth-based justice within our criminal justice system. However, despite the criticism and reform over the years, cash bail has never been declared unconstitutional. Through historical analysis, I will examine cash bail's origin, evolution, and current practices, and conduct a thorough review of the literature on the racial, gender, and class disparities in cash bail and pretrial outcomes. This thesis asserts that the lack of individualization in the cash bail process results in a violation of the Due Process Clause. Additionally, this lack of individualization contributes to inconsistent treatment of defendants of color as well as between genders, and also violates the Equal Protection Clause. In order to preserve the liberty and freedom of all Americans, I believe there is a compelling case to be made for the abolition of cash bail informed by the Equal Protection and Due Process Clauses of the Fourteenth Amendment.

Relationship of Temperature Variability and Methane Flux at the La Brea Tar Pits
Charles Karim

The relationship between temperature variability and methane fluxes at the La Brea Tar Pits in Los Angeles, California is a topic that has yet to be fully understood. The La Brea Tar Pits represent a unique natural environment where asphalt seeps continually release methane, a known potent greenhouse gas into the atmosphere. Methane contributes approximately 25 times more to the enhanced greenhouse effect compared to carbon dioxide and with the growing concerns of climate change, understanding the factors influencing methane emissions is crucial. This study aims to investigate the impacts of temperature fluctuations on the rate of subterranean methane release. Other factors such as soil

moisture as well as solar irradiance have also been considered while conducting the research. Preliminary findings have shown that soil with colder temperatures has a higher than average methane flux from macro seeps and a lower than average flux from mini seeps. The measurements have shown that for macroseeps, areas that are hotter have a flux rate of approximately 16.04 mg cm-2 s-1 to 3762.2 mg cm-2 s-1 of methane while the flux rates for miniseepage was found to be 62.22 mg cm-2 s-1 to 2766.3 mg cm-2 s-1. For areas that are cooler, the flux rates were seen to be 0.161 mg cm-2 s-1 to 82483.2 ug mm-2 s-1 of methane and miniseepage was found to be 0.41 mg cm-2 s-1 to 2445.5 mg cm-2 s-1 From these numbers, we can start to see that for cooler areas, methane has a higher tendency to escape through macroseeps while in hotter areas, there is a higher flux in the form of miniseeps. Ultimately, the findings from the research strive to provide a foundation for future methane managing and mitigating strategies at the La Brea Tar Pits.

The Residents of Los Angeles' Preferences For How The City Should Respond To Emergency Calls
Bella Buccino

With an increasing awareness of police brutality, community members debate police involvement in emergencies. The 2020 Police and Community Relations Survey conducted by the Center for the Study of Los Angeles asked a sample of 1,753 adult Angelenos how they would prefer calls about suicide prevention to be handled—using only Los Angeles Police Department officers, teams of LAPD and non-police, or only non-police alternatives—and how their preferences vary by race/ethnicity and age. Residents were randomly selected and participants answered questions online, by phone, and face-to-face. Their responses were then analyzed by how they might correlate to their demographic characteristics. Many people regardless of their race/ethnicity and age preferred the option to respond with teams of LAPD and non-police. However, most of those who chose in favor were Latinx residents (52.64%), Black residents (48.84%), and Asian residents (48.48%). White residents were the lowest percentage of those who preferred the same (44.8%). Regarding age, almost half of those who selected that option were between the ages of 18 and 34 (49.69%) which is about 6-8% more than those who were between the ages of 34 to 55+. These results highlight how although Angelenos agreed similarly about LAPD and non-police involvement in suicide prevention calls, the majority were younger and/or residents of color while the minority were older and/or white residents.

Scurvy and Seafaring: A History of the Evolution of Treatments for Sea Sicknesses
Isabella Inglin

From the earliest eras of seafaring, the captain and crew of a ship often endured a plethora of illnesses and deficiencies, the most common of which was scurvy. This project seeks to understand how approaches to treating scurvy changed over time, with many failed attempts by seafarers and medical professionals to understand its cause and remedy of proper nutrition. Drawing primarily upon medical journals kept at sea, and supplemented by scholarly journals on the subject, this project reveals how the introduction of citrus fruits as an effective prevention and treatment for scurvy impacted the seafaring industry and the struggle to implement these practices. Using such resources, this project portrays the lengthy history of scurvy beginning in 1550 B.C.E. with the first reports of scurvy and ending in 1937 C.E. with the discovery of vitamin C. Though the research on scurvy is extensive, few resources recount its entire history, and there is little focus on the time periods outside of the Age of Sail, between the 16th and 19th centuries. This project uses what was left behind by scholars, surgeons, and sailors to tell a story of perseverance and medical innovation that remains relevant in the modern era when people in developing countries still suffer from scurvy.

The Search for Meaning: The Essence of Human Life
Peter Robilio

At the forefront of human activity there is a search arising from a universal desire for meaning, a guiding principle that gives life a sense of purpose and direction, without which the notion of life itself seems pointless. It is an account of the "why" of human existence, usually best understood as a worldview or a life philosophy, that forms the very basis on which we conduct life. Due to its centrality in human life the desire is usually held subconsciously appearing even in cases of proposed disinterest or indifference. Yet when it comes to this search for meaning, people arrive at different and conflicting accounts of it. My paper will attempt to help address this issue by providing a new framework from which to understand these conflicts. It will defend the thesis that meaning is an essential motivator for human activity defined by the fulfillment of one's end consisting of both an objective and a subjective aspect. First I will show why meaning is an essential motivator for human action. Then, I will outline several common accounts of meaning, showing how they fit into one of two general categories; meaning based on the self and meaning based on external reality. Finally, I will defend that the notion of meaning in question is best understood as a synthesis between these two accounts enabled by a third transcendent account of ultimate reality that grounds their existence and coexistence.

Selective Acylation of Indole in the Presence of Hexanol and Phenol Using 1-(Trimethylsilyl)imidazole as a Protecting Group
Ryan Schmiesing

Chemoselective reactions are essential for precise chemical synthesis; however, given an electrophile in the presence of multiple nucleophiles, chemoselectivity can be difficult to achieve. While chemoselectivity is important, it is also necessary to consider the efficiency of a reaction; a selective reaction that is decidedly inefficient is not an ideal solution. This project aims to identify a procedure that allows for the chemoselective acylation of indoles in the presence of other nucleophiles such as alcohols and phenols that is more efficient than existing methods. This most efficient method of inducing selectivity would employ catalysis. We created a model system utilizing common heterocycles as catalysts in the presence of an acylating agent, hexanol, and indole. We monitored these reactions with 1H and 19F NMR. However, this method proved unsuccessful as the catalysts were either ineffective and produced no acylated products or the catalysts were not selective enough and produced acylated hexanol. We modified our approach using a similar model system but added 1-(trimethylsilyl)imidazole, which acts as a temporary protecting group, and used 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU) as the catalyst. Using excess 1-(trimethylsilyl)imidazole, we achieved selective acylation of indole in the presence of hexanol. Even when phenol and hexanol were present, 1-(trimethylsilyl)imidazole protected both nucleophiles, allowing for the selective acylation of indole. Although further work is needed, this procedure offers a potentially novel method for selective acylation that is more efficient than current techniques.

Selling Society's Ideals: Women's Evolution in Advertising
Claire Hagemeister

The purpose of advertising in its most basic role is to draw attention to a product or service; however, for over a century, advertising has been used as a powerful tool to manipulate the masses. Part of this shaping of human behavior is to sell more products, but a more nefarious purpose is to shape and control society – and often this controlling has been aimed at creating conformity in regard to societal

roles. While this pressure toward role conformity often reflects the assumed preference or the comfort of subjects when aligning with the greater society, it can also create one-dimensional, shallow images that propagate unrealistic and negative stereotypes. The manner in which women have been depicted in advertisements from the 1940's to the present has evolved dramatically. These changes reflect the values of the society in which they were created and are a reflection of where those in control of this medium want society to move in terms of values and behaviors. Through analyzing advertisements from Sears, RJ Reynolds, and Procter & Gamble from the 1940's to present, I was able to identify how advertisements changed within a company based on the popular attitudes towards women at the time. I discovered that advertisers create a false reality that in return limits aspirations and opportunities for women and also shapes how society's expectations about women evolve. As a society people must take back their power and recognize that everyone is much more than the one dimensional images produced in the media.

Serotonin (5-HT) receptor 5-HT1A/B and 5-HT2A/B expression during gastrulation and neurulation in chick

Sophia Shoham

Serotonin (5-HT; 5 hydroxy tryptamine) is the serotonergic system neurotransmitter, relevant to broad physiological and neurological vertebrate processes. 5-HT acts as a morphogen in early vertebrate development by its interaction with receptors, which mediate downstream effects. Fifteen different 5-HT receptor subtypes, classified in 7 families, regulate 5-HT-dependent developmental events. Receptor localization and subtype influence craniofacial, neuronal, gastrointestinal, and cardiac growth in ovo. Surprisingly, little is known about the spatiotemporal expression of 5HT receptors during early development, from gastrulation to neurulation. Understanding when and where subtypes are present in the developing embryo may provide insight into the role of the receptors in development. By conducting indirect immunohistochemical staining, this study assesses the expression of 5-HT receptor subtypes 5-HT1A/B and 5-HT2A/B in early embryogenesis. Chicken eggs were incubated and collected at Hamburger Hamilton (HH) stages 4 through 14. The embryos were fixed in 4% paraformaldehyde and indirect immunohistochemical staining was conducted, using primary 5-HT1A/B and 5-HT2A/B specific antibodies. Expression of these receptors begins asymmetrically in Hensen's node at HH4. During neurulation, expression is elevated in the neural tube and neural folds. Somites, head fold, and anterior intestinal portal expression are also similar across all tested subtypes. At later stages, the receptors are expressed strongly in the optic and otic vesicles. Notably, all receptors are expressed by migratory craniofacial cranial neural crest cells. 5-HT receptor subtype expression may have pharmacological implications pertaining to the exogenous disturbance of embryonic receptors. Future directions include determining the spatiotemporal expression patterns of 5-HT2C.

Serotonin Receptor Disruption Affects Cardiac Neural Crest Cell Migration: A Morphometric Analysis of Valve Development

Gwyneth K. Garramone, Brian K. Wells, Mandoline H. Nguyen, Max Ezin, Ph.D.

During embryogenesis, developmental functions are influenced by serotonin (5-Hydroxytryptamine; 5-HT), a monoamine neurotransmitter. Notably, 5-HT affects the migration of the cardiac neural crest (CNC) during embryonic development. Cardiac crest cells are migratory cells that form various cardiac derivatives. Our previous work demonstrated that targeted disruption of 5-HT receptors disturbs CNC migration. Here, we treated Hamburger-Hamilton stage (HH) 8 (day 1) embryos in ovo with a 20 μM solution of 1-methylpsilocin (1-MP), which acts as an inverse agonist for receptor 5-HT2B and as an

agonist for receptor 5-HT2C. Embryos were then collected at HH14 (day 2) and HH36 (day 10). In HH14 control embryos, the length of CNC cell migration stream in rhombomere 6 was shorter than the migration stream in the circumpharyngeal ridge. However, 1-MP treated embryos demonstrated even stream lengths, signaling dysfunctional migration. 1-MP treated embryos were incubated to HH36 to visualize the long-term effects of dysfunctional migration and the completion of cardiac septation. At HH36, treated embryos exhibited an abnormal or absent membranous interventricular septum (mIVS). Current preliminary data shows thinning of the CNC-derived semilunar (SL) valves, but normal formation or thickening of the non-CNC-derived atrioventricular (AV) valves. This differing response of valves to serotonergic receptor disruption may be due to differences in origin. The thinning of the SL valves is likely a result of the same disrupted CNC migration causing mIVS defects. Further morphometric analysis of the SL and AV valves is being conducted using FIJI to compare the effects of 5-HT2B/2C disruption on valvulogenesis.

The Shield: Evaluating the Impact of Qualified Immunity on Police Behavior
Jae Hodge

"Qualified immunity is the most brazen act of pure judicial policy in the history of the Supreme Court." This sentiment has intensified in recent years as it has become increasingly difficult for citizens to sue the police. In the United States, the relationship between law enforcement and the community they serve has been strained by a pattern of police abusive behavior. Police accountability is a topic of high contention, and qualified immunity is at the core of this discussion. Many people argue that qualified immunity undermines police accountability and is not well grounded in law or history. The existing literature predominantly overlooks the active impact of the doctrine on police behavior. Something that is extensively researched is the legal faults of the doctrine specifically its increasing, and arguably illegitimate, success in protecting police excessive force use. However, the existing literature does not comprehensively demonstrate the how, how (if true) is qualified immunity becoming increasingly protective. Thus, this study aims to fill these empirical gaps by answering the question: "What is the impact of qualified immunity on police behavior?" This study will answer this question in two parts: Has qualified immunity become increasingly protective of police excessive force use? What impact does the doctrine, in its current state, have on police behavior?

Shifting Paradigms: The Effect of Language on Disability Policy
Violet Wright

Language has long contributed to the perception of disability. Despite this, the evolution of these colloquialisms—from "handicapped" to "neurodiverse"—has not yet been examined as a contributing factor in the creation of public policy. This study seeks to investigate how shifts in terminology in the mass public influence disability-related policy at the elite level. Guided by in-depth text analysis and the use of an American Political Development style, this work constructs a timeline of the social attitudes, language use, and political platforms related to disability from the 1970s to the present day. This historical context is supported by qualitative interviews with a diverse group of 15 disability advocates, organizational leaders, and policymakers from the past half century. Through this research and narrative collection process, I propose a framework that sees language having a cyclical yet evolutionary effect on the disabled community; as discriminatory norms are upheld, solidified into policy, and work to suppress disabled pride, they then get overturned for minimally progressive change. Incrementally, as terminology and societal perceptions shift, more equitable policies and practices are put into place.

Social Justice in Action with Quality of Life Plus
Michael Hennessy

Quality of Life Plus (QL+) is a nationally chartered student club that was first founded by Mechanical Engineering students at LMU four years ago with the goal of designing assistive technology devices for and with people with disabilities. QL+ seeks to improve the lives of community members and teach engineers about the positive impact they can have with their degree. Our student teams employ a human-centered design approach by including significant input from device users. There are four projects that QL+ students are currently working on, ranging from the redesign of an assistive stander, modification of surfboards for use by paraplegic athletes, and a classroom slant board. I worked on an individual project during both my freshman and sophomore years before transitioning to a leadership role as the Vice President. Now, I oversee each project. Student members learn basic engineering principles and gain experience with the design process. They also learn the benefits that an engineering background can provide to community members. Overseeing the projects showed me the broad scope that engineers can cover, and the various groups of people we can impact. Further, lending a hand to multiple groups can help as much as putting all effort into a single project. Each project benefits the client directly because they now have a product that increases their quality of life. For example, the assistive stander project benefits a person with a physical disability that impedes his balance by offering a structure to lean on when standing.

Social Justice in Action: Service and Engaged Learning Experiences Panel
Nicolas Gentile

"Integrating Tongva Indigenous Knowledge with Modern Environmental Stewardship: Educational and Community Engagement at Ballona Discovery Park" This research project studies the role of Indigenous knowledge, practices, and stewardship in contemporary environmental protection efforts, focusing on the Tongva people and their relationship to the Ballona Wetlands and nature. Native relationships with the environment can inform modern conservation efforts, and the value of integrating these long-standing indigenous perspectives into current-day practices can provide pathways towards achieving restorative justice goals. At the trailhead of the Ballona Wetlands, Ballona Discovery Park is an outdoor museum, classroom, and certified native wildlife habitat that offers formal and informal educational and research opportunities to over 5,000 visitors per year. Through the Center for Urban Resilience (CURes) I designed and led a semester-long 'Oak Tree Monitoring Project' (collecting data on the distribution, size, and age of oak trees) at the Park in Fall of 2023. The California Coast Live Oak, recognized as a keystone species by the Tongva people and modern day scientists, holds significant ecological import. This research experience has been transformative for me. By getting to know and engaging with Indigenous community members, I deepened my understanding of environmental stewardship at a spiritual level. This research also had impacts in the Playa Vista community, serving to bridge cultural gaps and foster an inclusive and accessible approach to conservation. Finally, 'Oak Tree Project' offered hands-on, applied science research experience to participating LMU students. Taken together, the impacts of this research project underscore the overall success of the BDP's mission to inspire the next generation of environmental stewards.

Social Media and Medicine: Maternal Care as Healing Intergenerational Trauma for Black Women
J'aira Brown-Simmons

The topic of race has been at the forefront of conversations for the past few years. Undoubtedly, social media and collective community movements has set the tone for outcries of equality on all fronts for Black people. With this in mind, various problems within the Black community have been brought into discussion. Regarding Black women, the alarming death rates within a year of birthing have gained greater attention. Aside from death rates, concerns for the general treatment of Black women along their perinatal journey have come to light. Negative treatment and medical neglect/trauma have shaped many Black women's experiences. This research aims to explore how maternal care for Black women, when being provided with the foundation of understanding systemic oppression as well as Black women's troubling past with reproductive care, heals intergenerational wounds of Black women's neglect and mistreatment at the hands of medical workers. I use the TikTok app to give insight into medicine's unresolved implicit biases and how it affects Black women in contemporary spaces. Posts and comment testimonies made by users depict both the factual statistics and the experiences of Black women that cause mistrust within medicine. In addition to this, I evaluate two organizations that actively work to combat Black women's death maternal death rate. These include Kindred Space LA and Maternal Health Now. Both organizations' published articles and resource pages give light to what medical advice is being given by Black healthcare professionals and allies in this discourse. My research draws lines between discourse and conversations directly from the Black community in comparison to that of the medical world. Framing this research from a feminist lens aids in identifying power systems and the danger found in implicit bias. For the care of Black women it is essential to acknowledge a past that has been coated in bias and misogynoir in order to embrace a future that centers Black women's humanity.

Social Media's Effect on Women's Rights in West Africa
Ava Thorpe

In the Western African countries of Guinea, Equatorial Guinea, Guinea Bissau, and Papua New Guinea, various social, political, and economic issues tie into the ever-present gender inequality. Through increased access to what Manuel Castells calls the global network society, women are using social media technology to positively transform their lives and challenge practices that hurt them. Through case studies, I analyze the contrast between how traditional legacy media has empowered men and how newer social media is challenging these dominant gender and power structures. By examining social media accounts, I study the changing conditions of the status of women in these regions as the journey toward equal rights has progressed because of social media. It has made gender-based violence in West African nations an international issue acting as a crucial impetus for uprooting ideologies domestically and generating responses and aid from the international public. Becoming more connected online also increases economic opportunity as more careers are becoming digitized. This, in turn, empowers women with better access to the newer economic sphere. With access to more careers in technology such as online journalism, an increase in online influence, and potential revenue from avenues such as TikTok or other social media sites, as my case studies show, digital media is improving women's lives status in West Africa.

The Sociology of Auschwitz: How Bureaucracy and Rationalization Presented a Paradox of Ordinary Versus Evil

Emily Wallack

The purpose of this study was to examine how Auschwitz-Birkenau resembled a functioning social institution, operating through the means of bureaucracy and rationalization and was maintained on the basis of the exploitation of individuals. Taking a socio-psychological approach, this project focused on the study of Auschwitz as a social institution fundamentally designed for the purpose of mass murder. This paper was guided by the following question: how did Auschwitz function as a social institution through bureaucratic processes and how did this bureaucratization contribute to the rationalization of both the actions of prisoners and Nazis? The exploration goes further by addressing how the division of labor led to the removal of the killing process in order to try and understand the psychological reasoning and/or motivations behind the rationalization of ordinary people's actions. Using renowned sociological theorists such as Zygmunt Bauman, Émile Durkheim, and Max Weber, the theory developed in this paper looks to expand upon existing knowledge citing numerous reasons for both the organization and rationalization of Auschwitz as a social institution that often go unnoticed in scholarly research regarding the Holocaust. Disproving the popular opinion that Auschwitz was merely a product of inherently sadistic individuals, the following study offers explanations for both prisoners and perpetrators; the subsequent findings reveal the paradox of Auschwitz as a mask for evil, hiding behind the elements of a functioning society, but ultimately serving the purpose as an institution for mass murder.

'Speaking into the Wind': The Impacts of Ehlers Danlos Syndrome

Jocelyn Thew

Ehlers Danlos Syndrome (EDS) is a connective tissue disorder effecting the stability of joints. It causes severe, constant pain throughout people's bodies. Since the pain is different in everyone, the few treatments available also affect everyone differently, making is difficult to manage EDS symptoms. This study is a qualitative understanding of the physical effects of EDS on individuals' bodies based on a 10-question questionnaire I shared with individuals diagnosed with EDS. The questions ask about their pain, experiences with medical professionals, and how it affects their day to day lives. The main topics I am analyzing based on their responses are their ongoing and progressing pain, the psychological effects, social changes, financial burden, and varying experiences with the medical system. My intention for this presentation is to amplify the experiences of people living with EDS. I have the energy and ability to perform research on people's experiences with EDS because I don't have EDS. I have two family members with EDS, so I'm familiar with the ongoing effects of EDS and how it significantly affects every aspect of their lives. My sibling described their efforts advocating for themselves, and others with EDS, as "speaking into the wind" because they have years of experience and research, but no one understands the extent of their symptoms. The systems within our society are silencing their voices and isolating people with EDS.

Spray Integration in the Cooling of High Heat Flux Electronics

Nicholas Aiello

Spray cooling is an effective method for managing high heat flux in applications such as metal forming and electronic cooling. Its success, however, hinges on a detailed understanding of fluid mechanics within these specific settings. Without this knowledge, issues like dry-out at low spray rates or excessive liquid accumulation at high rates can compromise its effectiveness, potentially resulting in critical and

costly failures in electronic components, including computer chips. This research aims to enhance spray cooling efficiency. The investigation initially focused on the impact of single droplet impingement. We employed a high-speed camera to record detailed footage of microdroplets, produced by a piezoelectric nozzle and consisting of ethanol, impacting a heated aluminum surface with temperatures ranging from 60 to 200 degrees Celsius. Parameters such as droplet diameter, velocity, and residence time were meticulously measured, along with the related phenomena of evaporation, boiling, or the Leidenfrost effect, and their rates of occurrence were quantified. Furthermore, thermo paste was applied between the test surface and the heating element to ensure seamless thermal contact. These findings are crucial for grasping the mechanical behavior of microdroplets and identifying the ideal mix of droplet characteristics and liquid properties to boost spray cooling performance.
Additionally, the research explored the effectiveness of multi-droplet spray cooling on a heated surface through impingement and subsequent evaporation. The experimental framework included a system of pressurized air and water connected to an ultrasonic atomizer nozzle, a heated plate, and thermocouples for data transmission to a comprehensive data acquisition system. Early results suggest that cyclic operation of the nozzle achieves cooling results comparable to continuous spraying, but with up to a 70% reduction in fluid usage. Future research will investigate factors such as the reclamation of atomized vapor, optimization of cycle timing, and the exploration of additional liquid mediums for cooling potential.

Survival of the Oldest: Examining Great Black-backed Gull Chicks' Diet Longitudinally and Investigating the Effects of Hatch Order
Jacqueline Raetz-Vigon

Great Black-backed Gulls (Larus marinus) fulfill an important ecological niche, as they forage for marine, terrestrial, and anthropogenic foods. Although some studies have investigated their dietary habits, few have examined individual gulls' diets longitudinally or compared intraspecific preferences. We study the diet of chicks through their developmental period, from hatching to pre-fledging, and investigate variation across nestmates. We used stable isotope analysis of carbon and nitrogen in feathers to determine dietary habits. Because feathers are metabolically inactive after growth, they provide an ideal representation across growth stages. Carbon ratios reflect food source, terrestrial or marine, and nitrogen ratios indicate the trophic level of the food. Preliminary data on pre-fledglings shows significant differences in nitrogen ratios between nestmates but no difference in carbon, suggesting that first-to-hatch chicks consume higher trophic level foods than their younger siblings but that nestmates do eat from the same sources. In a small, five nest follow-up examining chicks from hatchling to pre-fledgling stages, we found greater intra-stage variation in feather nitrogen ratios of hatchlings than pre-fledglings, but no significant differences between stages and no clear patterns based on hatch order in hatchlings. However, pre-fledglings do follow the previous trend of first chicks having higher feather nitrogen. More data are required to properly analyze these trends, but if these patterns remain, then future studies should investigate the reasons for these hatch-order differences in pre-fledglings and consider the potential survivorship consequences for later-hatching chicks. As populations decline, this information will be important for conservation efforts.

Synthesis, Characterization, and Surface Functionalization of Gold Nanorods
Madrid Ghanavat

Rod-shaped gold nanoparticles, also referred to as gold nanorods, are the subject of growing research. Gold nanorods have recently found many applications, including as tools in photocatalysis,

optoelectronics, sensing technologies, bioimaging, and therapeutics. Their wide-ranging applicability is in part due to their adjustable size, shape, and surface functionalization. In this study, we report on the successful synthesis of gold nanoseeds and gold nanorods. We then report the functionalization of the nanorods with the molecule thioquinoline, a molecule with known light-driven proton transfer capabilities, via gold-thiol click chemistry. These nanostructures were then characterized (before and after functionalization) using UV/Vis spectroscopy, fluorescence spectroscopy, time-correlated single photon counting (TCSPC), and scanning electron microscopy (SEM). These novel functionalized nanostructures have exciting applications in the fields of photocatalysis, where the interactions between gold nanorod plasmonics and surface-functionalized thioquinoline may result in simultaneous electron- and proton-transfer reactions. Future steps involve the application of these functionalized gold nanorods to photosynthetic reactions.

Tracing the Populist Radical Right in Italy and Germany: A Historical and Political Comparison
Audrey Wassel

The rise of radical right populism in Europe has been one of the defining political phenomena of the 21st century. Currently, both consolidated democracies in Western Europe and transitional/semi-consolidated democracies in Central and Eastern Europe have experienced a surge of support for the populist radical right. As two of the EU's largest and most influential countries, Italy and Germany are at the forefront of this discussion. Their respective populist radical right parties (PRRPs), the Brothers of Italy (FdI) and the Alternative for Germany (AfD), have both seen unprecedented success in recent years and have generated significant controversy due to their anti-immigrant and nationalist ideology. While the FdI is currently leading Italy's governing coalition after its victory in the 2022 general elections, the AfD is making strides in eastern Germany but has not reached the same level of success nationally. Using process tracing, I establish the causal chain of events that has resulted in the FdI's and the AfD's respective levels of power and influence. In doing so, my research identifies the political, historical, and structural factors that have resulted in the differing levels of success of the FdI and the AfD. Through a comparative analysis, this work determines what factors contribute to the success of the populist radical right, allowing them to move from the fringes of the political spectrum into the mainstream.

Tractors and the Spread of Technology to Rural Areas of California
Jaryd Veserat

Advents of new technology often introduce newer and more efficient methods to people's lives. New technology makes older methods archaic and expensive, effectively working to improve the lives of individuals. Such is the case of the tractor, its use in otherwise isolated and rural areas revolutionized farming and brought new technology into the lives of remote individuals. California is famously full of farm fields, producing food for much of the US and the world. The integration of tractors into remote areas had the potential to simultaneously introduce other technologies to these same areas. Urbanization of these rural areas may seem like a contrasted idea, but some counties in California experienced this spread of new technology despite their isolation. San Joaquin County, Kern County, and Fresno County will be the main focus when discussing specific rural communities in this paper. I plan to utilize mainly photos from the early 1900's in order to provide accurate evidence of the use of different technologies across California. By examining these different counties throughout California and the integration of new farm technologies, urbanization of these previously isolated areas can be attributed in part towards the introduction of technology such as tractors.

Trust for City Government Across Ethnicities in Los Angeles
Mariah Allen

In 2022, Angelenos witnessed multiple events that shifted their perspectives toward their city government, one of which was the leaking of a racially insensitive recorded conversation between several city council members. This study examines the shift in responses among adult Angelenos between 2022 and 2023 when asked how much of the time they think they can trust the city government to do what is right? These mixed-mode surveys were conducted by the Center for the Study of Los Angeles at Loyola Marymount University with 1755 respondents in 2022 and 1751 respondents in 2023. About 52.63% of Black respondents said that they trust the city government to do what is right "some of the time/none of the time" in 2022. This percentage increased to 58.49% in 2023. White respondents who trust city government "only some of the time/none of the time" increased from 48.89% to 54.56%, between 2022 and 2023. In contrast, 52.04% of Asian respondents said they trust their city government "only some of the time/none of the time" in 2022 while only 43.07% of Asians said the same in 2023. Latina/o respondents' trust in their city government who indicated "just about always/most of the time" grew from 42.99% in 2022 to 54.42% in 2023. For the year 2023, Latinos held the highest number of respondents who indicated they trusted their city government to do right "just about always". In conclusion, Black and White residents hold more mistrust for their city government than their Asian and Latino counterparts.

Understanding the Role of Tae2
Andrew Nei

Tae2 is one of the many stress granule factors. When diving into the functionality, Tae2 is a component of the Ribosome Quality Control complex, required for the degradation of polypeptides arising from stalled translation. However, identifying the exact functional behind the relationship between Tae2 and stress granules is unknown. To achieve this, techniques include tethering Tae2 to a reporter mRNA while also inducing double-strand break using a CRISPR-Cas9 technique along with a repair template containing the MCP sequence. Furthermore, Homology Directed Repair is used to incorporate the MCP sequence into the genes. PCR is used to verify the incorporation of the MCP sequence at the proper place in the genome. Transformation of plasmid and incorporation into Yeast Cells is also conducted. A western and northern blot will be used to visualize protein synthesis, allowing us to determine the effects of Tae2 on protein expression and measure mRNA levels respectively. Preliminary results in the form of Gel Electrophoresis have been gathered. These techniques along with the designing of primers and CRISPR have all been taught and implemented within the project. mRNAs play a broader role in posttranslational control, influencing aspects such as stability, translation efficiency, and regulatory mechanisms should be a promising field to study.

"The Universe Is So Much Bigger than You Realize": Unconventional Production Design in Everything Everywhere All At Once
Josephine Spanier

Production design interprets a film's script into a stunning, immersive visual world. However, in the classical Hollywood style of design in film, these settings are only supposed to convey necessary information and maintain a sense of realism for the audience. While this approach succeeds in many films, it limits the alternative styles of production design we could be seeing, and in turn limits the diversity of stories. "Everything Everywhere All At Once" (Daniel Kwan and Daniel Scheinert, 2022) is an

example of a film that innovatively subverts conventional production design expectations. As the main character Evelyn Wang travels throughout parallel universes that challenge her traditional beliefs of how her world should be organized, the film's usage of a wide range of design styles also challenges Hollywood filmmaking norms. Alternating rapidly between realistic and fantastical worlds, it utilizes design techniques such as maximalism, theatricality, and alternate film mediums to support Evelyn's journey towards acceptance of a universe she can not control. As streaming services and movie theaters battle for viewership, it is important to understand the stories and styles that resonate with an audience; the critical and popular success of "Everything Everywhere All At Once" may open the door for more mainstream films and filmmakers to continue evolving standards in production design.

University Professors' Views About Diversity, Equity, Inclusion, and Justice (DEIJ) in University Courses
Adelaide Battin

Implicit theories of teaching skills refer to beliefs about the changeability of teaching skills i.e., whether teaching skills can be improved significantly through effort or experience. These have been found to predict interest in professional development for improving teaching skills (Thadani et al., 2015). Are implicit theories of teaching related to faculty members' willingness to engage with diversity, equity, inclusion, and justice (DEIJ) in their teaching? This study investigates how university professors' implicit theories of teaching skills and awareness of equitable pedagogy predict their attitudes toward DEIJ in their courses. Specifically, the study examines whether implicit theories of teaching skills and awareness of DEIJ teaching strategies (Sheets, 2009) predict self-reported engagement with DEIJ within university courses (Dixon et al., 2019); self-efficacy for teaching DEIJ (Thadani et al., 2015; Miller, 1994); and comfort level teaching for DEIJ (Roose et al., 2019). To assess the variables, 34 participants completed a 15-minute survey. Data analysis will examine the following hypotheses: (1) University professors with a growth mindset toward teaching skills demonstrate more comfort teaching DEIJ, engage more with DEIJ within their courses, and demonstrate greater self-efficacy teaching for DEIJ than those with a fixed mindset towards teaching skills.; (2) University professors with greater awareness of DEIJ teaching strategies show greater comfort teaching DEIJ, engage more with DEIJ within their courses, and demonstrate greater self-efficacy teaching for DEIJ than those with less awareness; (3) Implicit theories of teaching predict each outcome above and beyond being aware of DEIJ teaching strategies.

Use of Biopolymers and Bacterial Isolates to Improve Primrose Growth Under Drought Stress
Atrina Bonihe, Isabelle Bermudez

With climate change becoming a growing concern, the issue of drought stress is on the rise. Plant growth-promoting bacteria possess numerous biochemical properties that can promote plant growth under drought. In California, developing an inoculum is essential to promoting plant growth in native plants facing this issue; however, bacteria might not retain viability on seeds during storage before being planted in restoration sites. Biopolymers may improve the bacterial viability on seeds. Different concentrations of polyethylene glycol (PEG) were tested for simulating drought stress and the biopolymers xanthan gum, gum arabic, carboxymethyl cellulose, and sodium alginate, were tested for improving bacterial viability and germination of primrose seeds. It was found that 20% PEG simulates drought, resulting in reduced germination and growth. Furthermore, seeds coated with xanthan gum retained the best germination. Bacterial strains originally isolated from California native plant roots were characterized for different plant growth-promoting properties. To further test these strains for improvement of primrose germination under drought conditions, micropipette tips were filled with sand

and topped with primrose seeds, each inoculated with their respective bacteria. Five strains improved germination compared to 20% PEG alone and were chosen for further testing with biopolymers. Primrose seeds were coated with xanthan gum, inoculated with bacteria, and tested for germination in 20% PEG. Strains 11D and 5A continued to show promising results in improving germination and are being used for further testing. Future results will indicate whether the bacterial strains will individually or conjointly improve primrose growth under drought stress.

Using eDNA to detect marine invasive species along the Antarctic coast
Aria Fulton

Invasive species are a major threat to biodiversity loss and are a challenge for the maintenance of ecosystem health and structure. This is particularly concerning for Antarctica, a continent with a fragile ecosystem and high level of endemism. Although previously believed to be isolated by the powerful Antarctic Circumpolar Current, marine invasive species are now known to reach the Antarctic coast through human activities such as tourism, fishing, and government operations. Here, we describe our collaborative and explorative study to trial environmental DNA (eDNA) as a potential monitoring tool for the detection of invasive species in Antarctica's coastal waters. 15 eDNA samples were taken using our lab's patented eDNA collection device at locations along Fildes Peninsula and Doumer Island in March 2023. Sampling time ranged from 30 minutes to four hours. Sampling occurred in parallel with other species surveys, of which we will contrast to this study's findings. Captured genomic eDNA was extracted, the COI gene region was amplified, and then sequenced using the Oxford Nanopore Technology MinION Mk1C sequencer. After proofreading and base calling, sequences were assigned to the closest taxonomic match using a database created from available NCBI data and the identified species in the parallel surveys. Results will inform further use of eDNA as a tool to conserve Antarctic biodiversity and help meet multinational goals to combat biological invasions, including the Antarctic Treaty, which both Chile and the United States are parties to.

Using eDNA to detect marine invasive species along the Antarctic coast
Ashley Lee

Invasive species are a major threat to biodiversity loss and are a challenge for the maintenance of ecosystem health and structure. This is particularly concerning for Antarctica, a continent with a fragile ecosystem and high level of endemism. Although previously believed to be isolated by the powerful Antarctic Circumpolar Current, marine invasive species are now known to reach the Antarctic coast through human activities such as tourism, fishing, and government operations. Here, we describe our collaborative and explorative study to trial environmental DNA (eDNA) as a potential monitoring tool for the detection of invasive species in Antarctica's coastal waters. 15 eDNA samples were taken using our lab's patented eDNA collection device at locations along Fildes Peninsula and Doumer Island in March 2023. Sampling time ranged from 30 minutes to four hours. Sampling occurred in parallel with other species surveys, of which we will contrast to this study's findings. Captured genomic eDNA was extracted, the COI gene region was amplified, and then sequenced using the Oxford Nanopore Technology MinION Mk1C sequencer. After proofreading and base calling, sequences were assigned to the closest taxonomic match using a database created from available NCBI data and the identified species in the parallel surveys. Results will inform further use of eDNA as a tool to conserve Antarctic biodiversity and help meet multinational goals to combat biological invasions, including the Antarctic Treaty, which both Chile and the United States are parties to.

Venetian Vogue Unveiled: On the Hierarchical Fashion Trends of Renaissance Venice
Danielle Champine

The Renaissance in Venice was a time of cultural, artistic, and economic growth that greatly changed the patterns of the city-state's social life. Venice became one of the wealthiest and most powerful cultural centers in Europe, leading to the emergence of a highly hierarchical society. One of the most striking features of Renaissance Venice was its reputation for extravagant displays of wealth through fashion trends. Sumptuary laws, restrictions that emerged to control extravagance, resulted in highly stratified fashion displays among Venetian citizens. These fashion trends can be examined through the mutual, intertwined relationship between art and fashion, which resulted in artworks that reflect the period clothing, underlying social hierarchies, and the profound influence of sumptuary laws on fashion in Renaissance Venice. This paper showcases artworks and artifacts demonstrating how sumptuary laws, aimed at restricting excessive spending on luxury goods, were used as weapons of social immobility, limiting lower classes from emulating grandeur while exempting the wealthy who could afford to pay fines. Stratified styles emerged in the patriarchal city-state, as wealthy and powerful Venetian men used fashion to limit the power of others while displaying their own wealth by donning sumptuous, elaborate garments. Equally patriarchal laws dictated women's fashion trends based on social and marital status, with one notable exception to these laws, the courtesans. This research paper examines the stratified hierarchical nature of fashion in Renaissance Venice and the emergence of fashion as a tool for social position.

Waay Kot and Waay Pop: The Mutual Gains and Exploitation of Amerindian People's at the Hands of Buccaneers in the 17th and 18th Centuries
Aaron Iglesias

This paper analyzes the complex and often ambiguous relationships between buccaneers and indigenous Amerindian peoples in the 17th and 18th centuries, using the Maya myth of Waay Kot as a metaphorical lens. The myth depicts Waay Kot as both a benevolent provider, Waay Kot, and a malevolent sorcerer, Waay Pop, mirroring the symbiotic yet exploitative nature of buccaneer-indigenous interactions. Some groups like the Moskito allied with buccaneers militarily and economically, gaining weapons and luxury goods in exchange for loyalty and knowledge. Others, like the Maya, were victims of pillaging and enslavement by buccaneers. However, cooperation through accounts of raids aided by indigenous guides, and buccaneer-native figures like Juan Gallardo counter this. It also details atrocities, such as the kidnapping of Maya families, enslavement on logging camps, and raids that devastated communities. The Waay Kot myth further emphasizes this period cannot be boiled down to a black and white analogy, but reflects the complex realities shaped by regional economic trends, personal ambitions, and the common goal of resisting Spanish rule. While buccaneers contributed to the oppression of many groups, this period also saw indigenous peoples gaining power, forming economies around piracy, and in some cases even establishing semi-autonomous proto-bourgeois classes. This paper presents a cycle of mutual exploitation and opportunism against a backdrop of global proto-capitalism and resistance to Spanish imperial hegemony.

What Physics Students Value About Physics: A Case Study
William Meaney

Physics is a notoriously difficult field of study, and much research has been done in physics education to analyze how students solve physics problems and how physics can be taught better. I focused my

research within this area on what, if anything, students value about learning physics. To explore this question, I interviewed fourteen non-physics majors currently enrolled in lower division physics classes. The interview was designed to categorize the interviewees thought process and get a sense of their relationship with physics before discussing the extent to which they value having to learn physics. The interviewed students found physics to be difficult and require more critical thinking than their other classes. They struggled with motivation to put time and energy into the course, as it did not feel relevant to their major or intended career path. However, students agreed or realized that there are valuable, underlying skills taught in physics that are generally applicable to their everyday life, even though on the surface, physics might not seem relevant to them. The contrast between students' perceived value of physics and its actual value to them hindered their motivation to engage with the course. Among the implications of this study are the need for better explanations to students in physics classes as to why they are required to learn physics and how the skills learned in physics are in fact valuable to them.

What's the matter with the trade war? The Frank-Bartels dispute in an international political economy context.
Ryan Byrne

The question of why individuals vote against their economic self-interest has long been a source of intrigue for political scientists. Two of the predominant theories that seek to answer this question come from Larry Bartels and Thomas Frank. The former posits that those who have more political knowledge or information will support policies aligned with their economic self-interests while those who lack that same knowledge or information will support policies that run contrary to their economic self-interests; the latter asserts that an obsession with fighting for cultural or esoteric political issues causes individuals to vote against their economic interests so long as policymakers are fighting for their cultural concerns. Both scholars have engaged in a long-running dispute as to whose theory is correct. While both Bartels and Frank use examples of Americans voting against their economic self-interest in domestic American politics, neither theory has been expanded to issues on the international stage. As such, this study seeks to understand why Americans are supporting the United States-China trade war when that trade war damages their economic interests using Bartels and Frank's theories. Using data from the Cooperative Election Study, this paper demonstrates overwhelming support for Bartels' theory while finding mixed results for Frank's theory. These findings can have a major impact on the future direction of the trade war as an electorate that is uninformed about many key domestic and international political issues heads to the polls in the 2024 general election.

Who should control housing policy in Los Angeles?
Tyler Bushey

There is much debate on how much control the state government has over housing policies in local jurisdictions to address the homelessness crisis in Los Angeles, so much so that the Newsom administration is filing lawsuits against cities who fail to create enough affordable housing units. This research examines countywide attitudes toward state and local control of housing policies and regulations related to solving the homeless crisis. Data are derived from the 2019 and 2023 Angeleno Polls (n=2,008, n=2,000 respectively), both mixed mode surveys of LA County residents conducted in January through early February of that year. Questions included in this study are related to local control of shelter and permanent housing locations. When asked if the state should force cities to build more housing or leave approvals to city officials, 49.9% believe the state should force construction, while 20.97% said to let cities decide. Nearly half of Angelenos (49.9%) also felt comfortable allowing the city

to determine where new housing shelters should be placed, versus 24.35% saying that community stakeholders should determine. 50.15% strongly-support and 14.85% somewhat-support building supportive housing within 10 blocks of their own home. Angelenos support limiting community input for housing shelters and allowing the city to determine housing shelter locations even if it means they are within 10 blocks of their own home. This research shows that Angelenos are willing to compromise local and community control of housing policy if it leads to a quicker solution to the housing crisis through centralized policy making.

Why do people make decisions that are bad for them economically? The role of Transgender issues
William Dickens

The aim of this article will be to explore why citizens make counterintuitive economic decisions due to their personal political agendas. To examine this issue I will use the current debate over transgender rights as a lens to explore this phenomenon. This research will be conducted through a comprehensive experimental survey of 600 participants. First half of the survey asks participants to rank social and economic issues' importance. The second half of the survey will force participants to choose political candidates that have liberal and conservative views on economics and transgender issues. Ideally this will force people to come into conflict with their political and social identities through choosing an issue that is more valuable to them. With this survey I will gain insight into how people make tradeoffs between economic and social issues when deciding political ideology and party. Potential data results will show that many voters make drastic tradeoffs that go against their economic principles due to social issues like trans issues.

Women at the Forefront: An Analysis of Peace Building and Empowerment in Rwanda and South Africa
Caroline deCordova

This research seeks to understand the impact of women's involvement in peace building processes for gender empowerment outcomes in Rwanda and South Africa. In line with the current literature, I hypothesize that women being involved in the peacebuilding process leads to better outcomes for women following a civil conflict. To examine this, I performed a comparative analysis of the two cases and analyzed twenty testimonies from women's experiences of conflict and peace (the Rwandan Genocide and Apartheid, respectively). Data was also collected on women's involvement in peacebuilding processes, and indicators of post-conflict empowerment with measures such as rates of violence against women, literacy rates among women, and women holding office was examined. The testimonials combined with data collection supported my hypothesis that inclusion in peacebuilding results in gender empowerment outcomes. This study is critical for understanding how and why women are able to become empowered globally, and should serve as encouragement for women-involved or even women-led peacebuilding following conflicts today.

Writing Memory to Fill Absence: Willful Colonial Forgetfulness and Writers' Resistive Memory
Izabel Mah y Busch

My research explores the role of memory as a form of resistance for diasporic communities of color focusing on Asian American memoir. In utilizing Anzaldúa's Borderlands as a framework, this research articulates how memory, in post-coloniality, is inherently resistive. My research also demonstrates the ways in which Latine and Asian American communities exist similarly in post-coloniality further

demonstrating the ways that white supremacy works to separate communities of color to structurally dismantle any possibility of coalition building between different ethnicities and races. This research is conducted through discourse and literary analysis including a close reading of excerpts from Li-Young Lee's The Winged Seed and Theresa Hak Kyung Cha's Dictee. In a postcolonial context where there is an effort to erase marginal persons' memories, we see two different ways in which memory can be resistive. In Li-Young Lee's usage of memory he documents his migration which is counter discursive as the US racial imaginary does not account for identities and lives beyond the US borders. In Theresa Hak Kyung Cha's work she is particular about the memories she documents to highlight the active and purposeful erasure of women revolutionaries and asserts a presence that was not even there. In conclusion, memory is important in post-coloniality because it is a space where as a community we can reassess reality and how our collective memories structurally omit and exert control over marginal communities but especially diasporic communities of color.

The yeast [2Fe-2S] mitochondrial protein Aim32 supports cytochrome c oxidase biogenesis
Caroline Thorpe

Mitochondrial respiratory complexes, the ATP synthase, and mitoribosomes have a genetic hybrid origin; most of their components are encoded by the nuclear genome and a few by the mitochondrial DNA (mtDNA). Mitochondrial gene expression is finely regulated, and yeast studies have unveiled serval regulatory events in the translation of mitochondrial encoded proteins (Tang et al., 2020). Mitochondrial ribosomes are functionally specialized for the synthesis of several essential inner membrane proteins of the respiratory chain. Extensive interactions of ribosomes with factors involved in all steps of posttranscriptional gene expression occurs in higher-order complexes termed as mitochondrial organization of gene expression (MIOREX) complexes (Kehrein et al, 2015). Recent work has demonstrated that translational activators coordinate mitochondrial and nuclear gene expression to facilitate biogenesis of the oxidative phosphorylation (OXPHOS) complexes (Micketal, 2011). In S. cerevisiae, Altered inheritance of Mitochondria 32 (Aim32) is a thioredoxin-like ferredoxin mitochondrial protein dual-localized to the matrix and intermembrane space (Zhang et al., 2021). Deletion of AIM32 (Δaim32) results in poor growth on respiratory media and accumulation of proteins with aberrant disulfide linkages (Zhang et al., 2021). In this work, we identify Aim32 as a new regulatory component required for the final stoichiometry of the OXPHOS complexes. We demonstrate that cells need Aim32 to adapt efficiently from fermentative to respiratory carbon sources. Western blot analysis indicated substantially lowered steady-state levels of mitochondrially encoded subunits of cytochrome c oxidase in fermenting Daim32 cells. To explore if formation of OXPHOS complexes is impacted, we examined the organization and activity of the Respiratory SuperComplexes (RSCs) using a combination of colorless native and blue native -PAGE. In yeast, CIII and CIV further assemble into RSC structures consisting of a dimer of CIII and one or two copies of CIV [III2+IV1-2], which enhances the efficiency of electron transfer between complexes. Although reductions in CIV activity were not observed, we detected more of the active CIV monomer and prevalence of the smaller RSC (III2IV > III2IV2) and increased pool of free dimeric Complex III in the Daim32 mitochondrial extracts. Finally, immunoprecipitations (IP) of Aim32 tagged with FLAG followed by mass spectrometry analysis revealed several mitochondrial ribosome proteins as binding partners, including mitochondrial acidic matrix protein (Mam33) which is a known COX1 translational activator in yeast mitochondria.

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