

POSTER ABSTRACTS: FACULTY AND GRADUATE STUDENTS

SCHOOL OF ARTS AND HUMANITIES

Department: American Multicultural Studies

Lightning
Talk

Name(s): Dr. Patrick Johnson

Title: “Don’t doubt the s-curl”: Devin Morrison’s Dreamsoul and the Reimagining of a Black 1990s

Abstract: Through close readings of R&B artist Devin Morrison’s music and remix videos, this project seeks to explore how Black cultural producers exhibit a form of Black love that is concentrated in an affection for the aesthetics and media representations of Blackness that emerged from the 1990s. Building on Ahad-Legardy’s (2021) work on nostalgia and Blackness, this project is animated by a central question—how is Morrison’s engagement with a specific set of Black aesthetics associated with 1990s R&B reflective of the ways that the music, and the culture surrounding it, continues to engender pleasure and joy for Black folks in the present moment? This project has particular significance to the field of television studies. By focusing on the intertextuality of contemporary Black cultural production, this project offers new sites and conceptions for thinking through how audiences remember the televisual past.

Lightning
Talk

Name(s): Dr. Katherine H. Lee

Title: Teaching Asian American Activism: Collaborative Ethnic Studies Curriculum Development with University and High School Educators

Abstract: This study piloted a set of lesson plans about Asian American activism in an 11th grade English Language Arts classroom. The research team examined the curriculum’s strengths and shortcomings based on ethnographic observations of the instructor as they taught the curriculum in their class. Research questions guiding the study included: Which curricular activities and pedagogies effectively support student learning and engagement with Asian American activism curriculum? How do instructor pedagogies and priorities shape student engagement with and understanding of Asian American activism curriculum? How can the curriculum be improved to better support student learning and instructor pedagogy? This study challenges the prevalent perception in higher education that university professors are “experts” who are best

equipped to write high school academic textbooks. Drawing on the principles of participatory action, collaborative action, and community-engaged research which center the knowledge of non-academic community experts and engage community members as co-researchers and co-investigators, this study recognizes that high school instructors and students are experts whose knowledge, insights, and specialized skills are crucial for developing effective high school curriculum and pedagogies. It argues that university professors' pedagogies and methodologies are not necessarily effective in high school contexts. This study advocates for pedagogical, curricular, methodological, and structural change in our fields and offers recommendations for how high school and university instructors and students can collaborate when developing curriculum while practicing the principles of Ethnic Studies pedagogy.

Department: Chicano and Latino Studies

Poster #1

Name(s): Dr. Daniel Malpica, Elisa Velasquez, Alexa Rayas, Marc-Emil Sevilla, Isela Gaona, Vianca Hinojosa, Siobhan Rodriguez

Title: Understanding the Role of Social Networks and Academic Success Among Latina Students in Predominantly White Universities

Abstract: Latinos are the fastest growing demographic population in the United States, yet their educational attainment falls significantly behind compared to Whites, Asians, and African Americans populations (Pew Research Center, 2022). It is imperative that we identify factors that contribute to Latino student college success so educational inequities are reduced. In this study, we focused on Latina female students at a Predominantly White University, who developed a unique social relationship, or social capital, or what we refer to as a "Comadre" relationship (Bourdieu, 1986; Coleman, 1988; Lin, 2001). Comadres form a strong social relationship or social network, a sister-like deep emotional bond, from which they support each other. Faculty, staff, and students recognize the presence and value of this phenomenon; however, it has received limited attention in the social science literature as an effective retention and graduation model (Bravo and Chaney, 2014; Stanton-Salazar, 2001; Zarate, 2011). We discuss the implications of our results for reducing educational disparities among Latinos in higher education.

Department: Communication & Media Studies

Lightning Talk

Name(s): Dr. Gina Baleria

Title: The CSU Radio Network: Connecting Students Across CA

Abstract: Podcasting skills are in demand across communications fields, as companies, organizations, and clients seek to disseminate messages and other content to their audiences through popular audio channels. Students audio production, performance, networking, storytelling, and project management skills at college radio and podcasting outlets. The goal of this RSCAP proposal is to connect radio and podcasting students across the CSU. Of the 23 CSU campuses, 20 have active radio and podcasting outlets and two others produce student podcast content. A previous RSCAP fellowship allowed me to begin the work of researching and establishing connections with other CSU audio outlets toward the eventual establishment of a CSU radio and podcasting network, where students can share content, collaborate, learn from each other, network, and convene at an annual conference. This RSCAP funding proposal represents Phase II of this project.

Department: English

Poster #2

Name(s): Dr. Theresa Burruel Stone

Title: "Terrortory," (White) Neutral Rationality, & Settler Literacies

Abstract: With colonialism often thought of as only existing in the past, most non-Indigenous people in the U.S. lack the tools we need to engage meaningful conversations about settler colonialism in the present, and, urgently, meaningful actions to stop Israel's genocide in Gaza. This is at least partially because we do not understand or acknowledge U.S. settler colonialism where we live, do research, and educate. To illustrate how settler colonialism operates here and now, I share from my ethnographic research of a college preparation program designed for Latinx youth in the San Francisco Bay Area via critical place inquiry and language socialization methodologies. I examine the ways that college-going pathways, including program English Language Arts classes, socialized non-Black and non-Indigenous Mexican-origin youth to settler colonial futures through the development of what I describe as settler literacies. I take up Brayboy and Chin's (2020) description of "terrortory" as an analytic to consider the normalizing violence that facilitates racialized

exploitation and dispossession locally and globally as genocide is justified by (white) neutral rationality, wherein accommodating white supremacy signals rationality and college-going competency. I offer the crafting of anticolonial literacies as necessary for deep solidarity across visions and actions towards abolitionist, decolonial, and liberated futures across Turtle Island and in Palestine.

Department: Music

Poster #3

Name(s): Dr. Kim Mieder

Title: Project Noma Winds

Abstract: NOMA WINDS offers Sonoma County high school and middle school instrumentalists an opportunity for a rich cultural and educational experience. Music students currently enrolled in a band program or those who don't have a program at their school are welcome. All recently graduated high school wind, brass, and percussionists are also welcome. There is no fee and no audition required to participate. We are a service learning, community outreach program that offers additional opportunities for instrumentalists to broaden their music education.

NOMA WIND's participants engage in a full Ensemble Performance experience, as well as Masterclasses and Sectional Coaching provided by Sonoma State University Music Education majors and pre-professionals currently enrolled in the California Teacher Credential Program for Music Education. The SSU Music Education volunteers are also given opportunities to rehearse and conduct the group.

Research Questions

This study will examine what the effects of a 15-week community band outreach project for high school and middle school instrumentalists will have on:

- Self-Efficacy in music learning for high school and middle school participants.
- The confidence level of Pre Inservice-Student Teacher candidates who participate in this project by tutoring, conducting, and performing

Department: Theatre Arts & Dance

Lightning Talk

Name(s): Dr. Marie Ramirez Downing

Title: Performing Shakespeare: Voice, Movement and Intersectionality

Abstract: Performing Shakespeare: Voice, Movement and Intersectionality:

I attended the Voice and Speech Trainers Association (VASTA) Conference in La Paz Mexico in July 2023 and presented a workshop titled, "Performing Shakespeare: Voice, Movement and Intersectionality." The workshop was in Spanish and English. There was a discussion to explore how acting, voice and movement instructors can engage mindfully with students/actors of diverse backgrounds (gender, culture, race, neuro-divergence) by examining intersectionality and adjust our voice and movement scripts to become more inclusive. Then there was a discussion about how to connect to Shakespeare's texts while acknowledging physical and vocal habits can manifest in the body out of social issues, bias, and even trauma that may inhibit their relationship to his text and there needs to be space to process before shifting into character. I lead a physical approach to Shakespeare that explored Presence, Power and Freedom in Movement and Voice.

SCHOOL OF EDUCATION

Department: Counseling

Poster #4

Name(s): Dr. Cecile Bhang, Marisol Berta, Natalie Madrid, TJ Sims, Lovie Romes

Title: Practicing Decolonial and Liberation Psychologies: Its History, Development and Future

Abstract: Currently, a burgeoning community of practitioners and researchers is actively disengaging from white centrality and Euroamerican systems of thought. Instead, they draw inspiration from the wisdom of their blood, spirit, and land ancestors, incorporating their lived experiences of surviving and transcending colonization. While much of the existing scholarship has concentrated on decolonizing psychological research, methods, and theories, there is a notable dearth in attention to psychological practice and applied work within communities. This project seeks to rectify this imbalance by acknowledging and disseminating the work of colleagues consistently employing decolonized and

liberatory approaches to mental health. By highlighting community-based, culturally embedded, and liberatory healing strategies, we aim to address the needs and self-determination of those most impacted globally.

Department: Curriculum Studies & Secondary Education

Poster #5

Name(s): Dr. Rajeev Virmani

Title: Engaging Kenyan Teachers in Reflective Practice to Support Student Thinking and Instructional Practices

Abstract: This poster presentation is about the collaborative efforts undertaken during my Spring 2023 sabbatical with Aga Khan Found Foundation, schools, and Kenyan teachers, focusing on the integration of reflective practice to bolster student thinking and enhance instructional practices in mathematics education. The primary focus of this research centers on two one-week workshops where we engaged in an immersive teacher learning cycle that included modeling, rehearsals, and video-based discussions.

The Learning Cycle framework served as the backbone of the methodology, guiding teachers through a systematic process of observation, analysis, practice, and reflection. Within the workshops, teachers were provided with opportunities to observe modeled activities, collectively analyze core teaching practices, think about implications of equity and justice, and decompose complex skills into manageable components. Rehearsals allowed teachers to approximate these practices before implementation in their classrooms where they were video recorded. A key aspect of our approach was the incorporation of video-based discussions, enabling teachers to reflect on their own teaching practices and those of their peers.

The impact of these collaborative efforts was profound, with participating teachers reporting enhanced proficiency in core teaching practices and a heightened awareness of student-centered approaches. By embracing reflective practice, teachers gained valuable insights into their instructional practices, ultimately leading to improved student outcomes. This poster presentation offers valuable insights into the transformative power of collaborative learning and reflective practice in the context of Kenyan education and professional development settings.

Department: Early Childhood Studies

Lightning Talk

Name(s): Dr. Ayesha Rabadi-Raol

Title: For Justice: Rethinking Early Childhood Language and Literacy Development.

Abstract: This study explores the critical pedagogical practices that language and multilingual teacher educators can employ using an intersectional lens to inspire current and future language teachers and promote social justice in early childhood literacy practices.

This qualitative, interview study foregrounds the experiences of two immigrant teachers of color, who discuss how they value English language and literacy development. By outlining the principles of intersectionality, this paper highlights its significance in addressing questions of equity and diversity, specifically focusing on identity. Furthermore, this article emphasizes the importance of understanding teacher positionality as a Nepantlera or Border Crosser to effectively investigate the intersections of race, gender, language, and ethnicity in education. Recognizing the interconnectedness of these factors, this study argues for the inclusion of intersectional understandings in literacy curriculum development and instruction.

Poster #6

Name(s): Jill St. Peter

Title: Supporting Children with ASD and Trauma: Building Teacher Self-Efficacy and Inclusion Practices Through Targeted Coaching

Advisor: Dr. Elizabeth Ducey

Abstract: Abstract

Title: Enhancing Self-Efficacy and Inclusion Practices in Early Childhood Education Through Targeted Coaching

This project aimed to enhance the self-efficacy of early childhood educators in supporting children with autism and a history of trauma through targeted coaching interventions. Situated in a state-funded preschool in Marin County, California, the intervention engaged four educators with varying levels of experience in a comprehensive, practice-based coaching model. This model focused on building educators' capacities to implement inclusive strategies and manage challenging behaviors effectively. Key components included the use

of KWL charts, reflective practice, and tailored coaching sessions that addressed the specific needs of a child named Tiana, who was diagnosed with both autism spectrum behaviors and has experienced trauma. Results from pre and post-intervention surveys indicated significant improvements in educators' confidence in their understanding of autism and trauma comorbidity, their ability to implement effective inclusive strategies, and their skills in managing challenging behaviors. The project underscores the importance of continuous, context-sensitive support and professional development in fostering inclusive educational practices that accommodate diverse learning needs. By enhancing educator self-efficacy, the project contributed to a more supportive and understanding educational environment, reflecting broader social justice goals in early childhood education.

Keywords: Early Childhood Education, Teacher Self-Efficacy, Inclusive Practices, Autism Spectrum Disorders, Childhood Trauma, Professional Development, Educational Coaching, Trauma-Informed Care, Special Education

Department: Educational Leadership & Special Education

Poster #7

Name(s): Mel Debret

Title: Social Justice Education for Students with an Emotional Disturbance Label through Youth Participatory Action Research

Advisor: Dr. Jennifer Mahdavi

Abstract: This project actualizes a socially just education for students with a diagnosis of "Emotional Disturbance." The study centers on a classroom of students with an ED label who engaged in an action research project over the course of one semester and tracks the students' development of a critical consciousness and their role as change-makers.

Department: Education - Speical Projects

Poster #8

Name(s): Talyha Romo

Title: Nuestra Red: A Design Thinking Approach to Serve our Latinx School Community

Advisor: Dr. Fawn Canady

Abstract: Design Thinking has become a holistic approach to education. Design Thinking comprises a variety of creative strategies for stewarding projects with multiple stakeholders or fostering organizational innovation (Panke, 2019). When faced with situations that deal with the complexities of real life, students can use Design Thinking to develop and enhance critical skills such as problem-solving, empathy, collaboration, and adaptability. As a problem-solving approach that has been tried and tested with socially ambiguous problem settings, it deals with everyday problems, which are nonetheless difficult to solve (Panke, 2019 (Rauth, Köppen, Jobst, & Meinel, 2010). Design Thinking fosters a proactive and interactive learning environment vital for the skills demanded in today's society. Engaging with Design Thinking prepares learners to approach complex problems with a growth mindset, including structured thinking and creative freedom.

Department: Literacy Studies & Elementary Education

Poster #9

Name(s): Megan Braia

Title: Implementing a Vocabulary Assessment System to Accelerate Multilingual Learners' Literacy Acquisition

Advisor: Dr. Kelly Estrada

Abstract: I propose that vocabulary is an under taught yet highly significant component of literacy for Multilingual Learners. By assessing and monitoring the vocabulary progress of Multilingual Learners, we will accelerate their literacy acquisition, and ultimately do justice to their early education and lives. This research project resulted in a guide for literacy coaches and leaders to implement a vocabulary system and assessment cycle for improvement in a collaborative endeavor with teachers.

SCHOOL OF SCIENCE AND TECHNOLOGY

Department: Biology

Poster #10

Name(s): Dawson Bell, Jessi Pluckrose, Auggie Stiltz, Lisa Bentley

Title: Assessing Aboveground Biomass Of Umbellularia Californica Basal Resprouts Post-Wildfire Using Terrestrial LiDAR Scanning

Advisor: Dr. Lisa Patrick Bentley

Abstract: California bay laurel (*Umbellularia californica*) has shown evidence of increasing density over the past 50 years in mixed hardwood forests in northern California, as a result of climate change and historic fire suppression. Since this species demonstrates prolific basal resprouting post-wildfire, land managers are interested in quantifying aboveground biomass (AGB) of resprouts to determine implications for future forest species composition shifts, fuel loads, and wildfire behavior. Currently, however, field approaches to estimating AGB in *U. californica* resprouts have not been validated for accuracy, and it is not known if remote sensing methods might provide a more practical solution for land managers.

Here, we estimate the AGB of resprouting *U. californica* from terrestrial LiDAR scans (TLS) using data from two preserves in Sonoma County, California; Pepperwood and Saddle Mountain. 30 resprouting *U. californica* will be identified, including 10 small, medium, and large resprout clumps. Samples will be scanned with TLS, harvested, and then dried and weighed to obtain AGB. Height measurements and occupied voxels will be derived from TLS data and the relationship between these three parameters will be analyzed. Ultimately, we aim to be able to recommend an approach to estimating resprouting AGB that will be feasible in plots across varying fire severities. The ability to monitor resprouting AGB over time can provide critical information about forest composition changes as well as provide current fuel load data in *U. californica* dominated stands. In turn, these data inform predictions of future wildfire dynamics in this region.

Poster #11

Name(s): Bella Boggio

Title: Assessing Impacts of Herbivore Mitigation on Initial Growth and Survival for Blue Oak Recruitment

Advisor: Dr. Derek Girman

Abstract: The blue oak is an oak tree endemic to the foothills of California, thriving in dry climates with cold and rainy winters. Blue oaks have a known regeneration problem, with declines in recruitment documented since the 1900's. Because oaks are considered to be an extremely important foundation species in the native oak woodlands of California, the slow regeneration and lack of recruitment of seedlings is a point of concern in those environments. This project is located at Safari West, a zoological facility that houses many different species of African herbivores. Safari West has maintained much of the native landscape, which is composed largely of older blue oak trees. Due, in part, to grazing intensity from large exotic herbivore species, there has been a trend of reduced recruitment in blue oak. We employed 20 large mammal exclosures with nested small mammal exclosures to examine growth and survival of blue oak acorns and seedlings. The expectation is that greenhouse-grown seedlings will likely have a higher initial survival and growth rate than non-greenhouse-grown seedlings, and seedlings that are protected from both large and small mammals will likely have higher rate of survival and growth than those that are not protected or only protected from large herbivores.

Poster #12

Name(s): Justin Brasil

Title: Duplication of And Variation in Succinate Dehydrogenase Affects Response to Stress in Willow Beetles

Advisor: Dr. Nathan Rank

Abstract: Montane environments pose unique challenges to animals living there, including elevation-induced hypoxia and variable temperatures, which exert strong selective pressures on metabolic genes. Succinate dehydrogenase (SDH) is a multisubunit enzyme complex that plays a central role in aerobic cellular metabolism and a secondary role in hypoxia signaling. In the willow leaf beetle *Chrysomela aeneicollis*, we discovered a duplication in the gene coding for the SDH-b subunit and characterized polymorphisms at introns and exons for both loci. A phylogenetic analysis of close BLAST matches to these SDH-b loci indicates that the duplication occurred within Insecta. Preliminary evidence suggests that interactions among the two SDH-b gene loci

affect recovery of running speed after heat exposure. To further examine the role of duplicated SDH-b gene products in response to stress, we performed an RNA-seq experiment in which beetle hatchlings collected from an introgressed population were reared at high and low elevation in the laboratory before heat treatment. Analysis of resulting RNA-seq transcripts, including 16 genes involved in the hypoxia signaling pathway, revealed effects of rearing elevation, temperature and mitonuclear genotype on transcript expression, including those of the duplicated SDH-b loci. These results contribute to our understanding of the relationship between nuclear and mitochondrial genetic variation and ability to cope with a challenging and changing climate.

Poster #13

Name(s): Randi Carter, Elliott Smeds, Lisa Patrick Bentley

Title: Using 3D Lacunarity Derived from Diverse Lidar Scans to Examine the Effects of Disturbance on Plot-Level Forest Structure in Northern California

Advisor: Dr. Lisa Patrick Bentley

Abstract: Measuring forest structure is integral to assessing forest health, wildlife habitat, and future wildfire behavior. LiDAR can quickly capture accurate stand measurements from which forest structural metrics can be derived and objectively quantified. These metrics have been otherwise costly, time-consuming, or impractical to measure traditionally. For example, understory fuels can have an effect on localized fire behavior and can be indirectly measured using canopy base height, but the vertical and horizontal distribution of these understory fuels are often not described. One metric suitable for characterizing this distribution is lacunarity, a scale-dependent measurement of spatial heterogeneity. However, 3D-lacunarity has not been widely estimated using LiDAR data due to previous computationally time intensive approaches. Our study aims to quantify changes in sub-canopy forest structural heterogeneity following understory fuels management after a natural wildfire. We measured 22 plots in a Californian mixed hardwood forest before and after a wildfire and post-fire understory fuels thinning treatment. Using LiDAR data and R package "lacunr", we calculated 3D-lacunarity of all vegetation under 8 meters to represent understory fuels. Preliminary results show significant changes in lacunarity following both disturbances with larger changes observed after understory thinning. This suggests that while wildfire did alter the distribution

of understory fuels, the fuels thinning applied to these plots reduced understory fuels and connectivity more. These results support using LiDAR derived 3D-lacunarity as a metric to objectively quantify changes in fuel arrangement and evaluate management strategies.

Poster #14

Name(s): Monica Delmartini

Title: Using 3D Data and Fire Modeling to Examine Future Wildfire Risk Following Understory Fuels Management in A Mixed Hardwood Forest

Advisor: Dr. Lisa Patrick Bentley

Abstract: In the western U.S., fire suppression, logging, and cessation of Indigenous burning has altered forest conditions and shifted species composition. Concerned by threats to forest health, property owners in Sonoma County are undertaking understory thinning to protect biodiversity, reduce hazard fuels, and lay the groundwork for intentional burning. Using 3D data derived from terrestrial laser scanning and a physics-based fire model, this project will investigate how understory thinning in mixed hardwood and hardwood/conifer vegetation communities affects future fire intensity. These data could help inform effective hazard fuels reduction while supporting diverse objectives including improved resilience, sequestration, and biodiversity.

Poster #15

Name(s): Alexander Flores

Title: 50 Years of Heterobasidion Root Disease in the Plumas National Forest

Advisor: Dr. Lisa Patrick Bentley

Abstract: Understanding the long-term effects of chronic root diseases is critical for forest management. Heterobasidion irregulare is a fungal pathogen that causes root and butt rot on conifers throughout the northern hemisphere. This fungus creates chronic disease gaps that spread outward in a concentric growth pattern, infecting and killing trees through root contact and aerial spore inoculation. This study analyzes 48-49 years' worth of long-term HRD monitoring data along with HMLS scans collected 50 years after monitoring establishment to determine disease-gap trends and assess forest structure based on proximity to disease gap center. In 2023, HMLS scans of 6 plots in the Plumas National Forest HRD pathosystem were collected. From these scans, Live Crown Ratio (LCR) and Hegyi Competition Index (HCI) were calculated in order to assess structural changes based on proximity to disease gap center. Results indicate that although tree height and distance from gap

center have an effect on LCR and HCI values, much of the variation in these data is attributed to site. Nearly 50 years after monitoring, time has had the most influence over gap area trends, with density having a marginal effect on area expansion. Structurally, decreases in LCR were associated with taller trees and trees further from the disease gap center. This study uses HMLS to facilitate disease gap monitoring data collection which will allow for rapid assessment of structural changes around HRD and other root disease gaps.

Poster #16

Name(s): Katelin Fox

Title: Evaluation of Impacts of Limb Inflammation on Locomotion in Captive Giraffes

Advisor: Dr. Derek Girman

Abstract: There are over 1500 giraffes (*Giraffa camelopardalis reticulata*) kept in captivity, typically for the purposes of conservation education. Support for captive breeding requires that individuals are managed to ensure the safety and well being of the individuals under human care. In captive giraffes foot ailments are the predominant cause of lameness. In this research, we aim to develop a gait scoring system that can be used for early detection of lameness associated with limb tissue inflammation to assist in detecting foot health issues well before individuals become chronically impaired. We used non-invasive thermographic imaging to identify inflammation in hooves. We compared stride lengths as measured on the ground with those estimated from digital video imaging analysis among inflamed and non-inflamed individuals to verify video-based gait evaluation. As an initial step in developing a standardized gait evaluation system, preliminary results show a significant relationship between non-inflamed and inflamed individuals. Through ethogram analysis of spatial use by individuals, we also found that individuals with inflammation used reduced portions of their habitat compared to individuals without limb inflammation. The future of this project is to refine a suite of locomotory motion measurements from digital analyses that further identify and categorize the initiation of lameness from limb inflammation.

Poster #17

Name(s): Hale Garcia-Dean**Title:** Seasonal Migration and Early-stage Dispersal Patterns in Adult and Juvenile Red-legged Frogs (*Rana draytonii*)**Advisor:** Dr. Derek Girman**Abstract:** We examined the patterns of dispersal and seasonal migration in the California Red-legged frog (*Rana draytonii*), a federally threatened species. We used radio telemetry techniques to examine the movement patterns and habitat use of post-breeding adults and metamorphs migrating away from an established breeding pond in a grassland and oak-savannah habitat in Sonoma County, CA. By sampling one to three times per 24-hour period, we were able to evaluate the effects of weather, canopy cover, ground moisture, and time of day on migration, forays, and rate of movement across these age classes. We found significant patterns of movement with respect to time of day, precipitation, wind, canopy cover and location relative to known moisture corridors (inundated waterways and wetlands). Patterns of humidity also impacted movements of non-migrating frogs making frequent forays between the pond and adjacent wetlands. Both experienced adults and naïve metamorphs demonstrated a non-random orientation away from the pond, suggesting a preference for specific landscape features. Finally, preliminary results suggest that short-term survivorship of first year metamorphs may be highly dependent on microhabitat use and dispersal timing.

Poster #18

Name(s): Emerson Herrmann**Title:** Homologous Chromosome Organization in a Human Fibroblast Cell Line**Advisor:** Dr. Lisa Hua**Abstract:** The underlying mechanism that prevents homologous chromosome recombination in human somatic cells remains unknown. It has been reported that human cells hinder mitotic recombination by keeping two haploid sets of chromosomes spatially separated throughout mitosis (Hua and Mikawa, 2018). This antipairing organization segregates a pair of homologous chromosomes to opposite sides along the centrosome axis in polarized human endothelial cells (Hua and Mikawa, 2018). To test whether the antipairing pattern is cell type dependent, we employed chromosome painting and high resolution confocal microscopy to visualize human fibroblasts during mitosis. Our preliminary data

shows an absence of homolog separation of chromosomes 4 and 17 in metaphase cells. This data suggests that the antipairing organization may not persist for chromosomes 4 and 17 in a nonpolarized cell type. Future experiments with additional chromosomes are necessary to confirm the absence of antipairing in fibroblasts or if fibroblasts may exhibit other forms of chromosome organization. Outcomes of our project will provide models for chromosome organization that may differ among somatic cell types and additional evidence for preventing chromosomal misregulation.

Poster #19

Name(s): Shelby Hotz, Zach Spade

Title: How Hot is Too Hot? Bull kelp's Response to Climate Change

Advisor: Dr. Mackenzie Zippay

Abstract: In 2013, a stagnant body of water formed in the northern Pacific Ocean, increasing average temperatures by +2.5°C, causing Northern California's bull kelp (*Nereocystis leutkeana*) population to decrease by 90%. Investigating thermal tolerance of bull kelp will demonstrate how these warming events might impact their physiological performance. Bull kelp vegetative and reproductive blades were collected from a northern and southern population, acclimated to two temperatures (13°C-ambient and 17°C-warm) for 7- or 56-days then were heat shocked for 1 hour. Heat shock protein 70 abundance measured in adult bull kelp after a 7-day acclimation increased by 27.5% in the warm treatment compared to the ambient, and was 30% higher from the northern population relative to the south. Photosynthetic fitness was also measured using a PAM fluorometer on the adolescent bull kelp, acclimated for 56-days under both temperature treatments, as a way to measure electron transfer between chlorophyll and photosystem II. Acclimation temperature affected saturation irradiances (the limit of the receptors that absorb light) and photoinhibition irradiances (the reduction of light absorption from receptors after being fully saturated). Next, hsp70 gene expression will be measured in the adult and adolescent bull kelp to determine if there are similar or different patterns in expression relative to protein abundance. Results from this study will be the first to report any molecular data on bull kelp, but more importantly, elucidate a better understanding of how thermal stress can impact a physiological response in bull kelp as warming events become more frequent and severe.

Poster #20

Name(s): Dr. Shannon Lee, Bobbi Lance, Shannon Lee

Title: Establishing a Post-SSWD Baseline of Sea Star Density in Sonoma County

Abstract: Sea stars are iconic and recognizable coastal organisms of interest to biologists due to their documented role in community ecology. In 2013, west coast sea star populations were nearly decimated due to a highly virulent pathogen that resulted in Sea Star Wasting Disease [SSWD]. Rapid population declines of $\geq 80\%$ were seen across 20 or more species, including *Pisaster ochraceus*, which is the most conspicuous sea star species found in rocky intertidal habitats along the west coast. Populations of this species seem to be on the road to recovery but very little population data has been reported post-SSWD. To begin filling this gap, we conducted surveys of upper-mid intertidal habitats along the central coast of Sonoma County during the summer of 2023. Sea star density, color morphology, and size data were collected from 11 sites. In this initial survey we found considerable differences in density and color morphology between all sites, indicators of modest recovery in comparison to pre-SSWD data sets, and suggestive patterns in size frequencies within the populations. A striking finding was the correlation of small star size to a specific grey/olive color morph. It is unclear if this represents a camouflage-driven coloration in juveniles prior to size refuge attainment or if this is a newer color morph in these populations. Survey 2023 is time zero for what we hope will be an annual collection of sea star data. Long term population and color morphology observations are critical to understand sea star population dynamics along the Sonoma coast.

Poster #21

Name(s): Alex Martin

Title: The Effects of Sudden Oak Death on the Overstory Community Composition in Mixed Evergreen Forest

Advisor: Dr. Nathan Rank

Abstract: Sudden Oak Death (SOD) disease, caused by the introduced, generalist pathogen *Phytophthora ramorum* (*P. ramorum*), has killed millions of trees in California and Oregon since its emergence in the 1990s. A few species are of primary importance to the current epidemic: California bay laurel is the primary driver of SOD in mixed evergreen forests, spreading the pathogen aerially from non-lethal foliar infections, while non-reproductive trunk infections on SOD susceptible oak species

are lethal. The differing harm that species face from SOD may be ecologically destabilizing as the balance between tolerant hosts (bay laurels), intolerant hosts (susceptible oaks), and non-host tree species is disrupted. Using longterm data from 192 forested plots located in Sonoma County, I investigated the effects of SOD on the species composition of affected forest over time. I asked: how has SOD affected patterns of overstory compositional change in mixed evergreen forest? I found that overall, species composition has generally shifted away from forest characterized by susceptible oak species' and Oregon white oak and towards forest characterized by bay laurel and Douglas-fir. These directional changes were positively correlated with increased *P. ramorum* foliar symptom intensity. At the species level, we found that bay laurel had a substantially slower rate of growth than susceptible oak species, but that bay laurel exhibited a much greater overall level of growth, with black oak showing the greatest level of decline. These results indicate that SOD is driving increases in its primary reproductive host at the expense of SOD susceptible oaks and other species.

Poster #22

Name(s): Catherine Quecan

Title: Characterization of A Centromeric Diminished Zone, Devoid of Chromosomal Linkage Components in Mouse Embryonic Fibroblast Cells

Advisor: Dr. Lisa Hua

Abstract: It was recently found that individual homologous chromosomes are spatially segregated, or antipaired, in dividing human and mouse cells. The spatial segregation of the homologous pairs formed a haploid chromosome set along the nuclear division, or centrosome, axis. Recent data from our lab has shown the presence of a centromeric diminished zone (cDZ), devoid of DNA satellite sequences, and CENP-B protein, along the centrosome axis in human metaphase cells. The data suggest the cDZ may be the boundary between the two chromosome sets, and may regulate the spatial segregation of homologous pairs along the centrosome axis. However, the underlying mechanism remains elusive. The cDZ may regulate the haploid set organization by partitioning the two haploid chromosome sets apart. However, it is unknown whether the cDZ is evolutionary conserved in other mammals. Here, we use DNA Fluorescence In Situ Hybridization (FISH) for Major satellite sequences, and immunofluorescence (IF) to γ -tubulin to visualize the cDZ, and

centrosome axis, respectively, for mouse embryonic fibroblasts (MEFs). High resolution confocal microscopy and 3D reconstruction analysis shows the presence of a cDZ in mouse metaphase cells between the two chromosome sets. The data suggest that the cDZ may be evolutionarily preserved in mice, and higher order genome organization may be conserved between humans and mice. Findings of our project will deepen our understanding of the conservation of genome organization, and provide insight into the fundamental mechanisms of cell biology.

Poster #23

Name(s): Jason Romero, Dora Avanzi Mesquita

Title: Chromosome Organization in the California Bay Laurel *Umbellularia Californica* and a Human Cell Line

Advisor: Dr. Lisa Hua

Abstract: Project 1: The California Bay Laurel, *Umbellularia californica*, is a non-traditional model system. It is a foliar host for *Phytophthora ramorum*, an invasive fungus-like eukaryote, that infects the oak and tanoak trees in coastal northern California regions and causes Sudden Oak Death (SOD) (Rizzo et al. 2011; Davis et al. 1994). Currently, there is a lack of tools to study molecular mechanisms in California native plants including the Bay Laurel. Here, we optimize a histological procedure to visualize plant chromosomes *in vivo*. Developing a protocol allows us to answer questions on DNA organization in disease-driven plant hosts. Therefore, providing the essential tools to allow for molecular investigation of a California native plant. This research opens opportunities for a new model to understand chromosome organization.

Project 2: Recombination in meiosis is key to creating genetically diverse offspring. Recombination occurs when two homologous chromosomes are paired, and undergo crossing over to exchange genetic information (Wetterstrand K, 2024). Mitosis is similar to meiosis but instead, it generates two genetically identical daughter cells (Wieser S, Pines J 2015). Somatic chromosome pairing in non-sex cells can be detrimental and associated with genome instability (Koeman JM, 2008). It was recently discovered by Hua and Mikawa (2018) that human cells impede homologous chromosome pairing by keeping two haploid chromosome sets apart throughout mitosis. However, the underlying mechanisms of the haploid set segregation remain elusive.

Recent data in the lab has shown that haploid set segregation may be present throughout the cell cycle (Cai et al, bioRx). Live imaging of Retinal Pigmented Epithelial (RPE1) cells that express fluorescently tagged chromosomes showed the movement of each chromosome was restricted along a subcellular, centrosome axis. The subcellular axis-based chromosome restriction was present prior to, and after mitotic spindle disassembly. This data suggests the mitotic spindle may not regulate haploid chromosome set organization. This project will directly test whether microtubules play a role in haploid set organization by using the drug, Nocodazole, to perturb microtubule function, and (Blajeski et al. 2002) Reversine, a drug that will block a spindle checkpoint, and allow for mitosis progression (Lui X, Winey M, 2012). After the sequential addition of Nocodazole/Reversine, the formation of micronuclei will be analyzed. Two possible outcomes: 1) Two large micronuclei may form suggesting a compartmentalization of the two haploid sets; or 2) A random number of micronuclei, or more than 2 micronuclei form suggesting that microtubules may still play a role in haploid set segregation. The findings of this project will build upon the current model of chromosome organization and provide new insight into the mechanisms of the human cell.

Poster #24

Name(s): Beth Sabo

Title: Amphibian Egg Deposition Patterns in Response to Abiotic Gradients

Advisor: Dr. Derek Girman

Abstract: Climate projections for the North Bay Area predict longer, drier summers with increased scouring flood events. Such climate regime shifts will have major impacts on the stream systems most vulnerable to climate change: headwater streams and the aquatic-obligate species that depend on them. Before we can predict how cohabiting, potentially competing amphibians will adapt to these alterations in streamflow, we must first understand how they are currently using these systems. This study investigates current habitat use by Foothill yellow legged frog, *Rana boylei*, and red-bellied newt, *Taricha rivularis*, in their most critical life stage, the egg mass, in the systems most vulnerable to climate change, first order streams.

Poster #25

Name(s): Jesse Schmieg

Title: Effects of Invertebrate Predation on Endangered Larval California Tiger Salamanders (*Ambystoma Californiense*)

Advisor: Dr. Derek Girman

Abstract: The Endangered California Tiger Salamander (*Ambystoma californiense*, CTS) is a listed endemic salamander native to California. The endangered distinct population segment (DPS) in Sonoma County is reliant on vernal pools for the completion of their complex life cycles. Our study investigates the predation of macroinvertebrate predatory larvae of aquatic beetles (Families Dytiscidae and Hydrophilidae) on CTS during the larval stage. The goal of this study is to determine the predation pressure placed on CTS larvae by aquatic beetles and examine factors that may influence larval CTS mortality such as the size of CTS larvae and the size of beetle larvae. The findings of our study can assist in further understanding the CTS food web dynamics within the threatened vernal pools communities they occupy and suggest that CTS have a different role in the food web than previously thought.

Department: Nursing

Lightning Talk

Name(s): Dr. Kaija Freborg

Title: Evaluation of an Equity-Minded Nurse Education Curriculum

Abstract: Beginning in the fall of 2022, the nursing department implemented an equity-minded nursing curriculum revision. A new law, AB 1407, established a requirement to include implicit bias training for prelicensure BSN students by January 1, 2023. The prelicensure program faculty were required to add specific content on implicit bias in the curriculum. The faculty took this opportunity to evaluate the existing curriculum and determine what additional lecture content and assignments should be included in our curriculum to ensure that our graduates are prepared to address bias, implement harm-reduction strategies, and provide equity-minded nursing care. We mapped several lecture topics through the curriculum that we felt were essential to preparing new nurses for practice, including but not limited to implicit bias, racism in nursing, gender-affirming health, reproductive justice, and health equity. The cohort that began their prelicensure education in fall 2022 will graduate in May 2024. The purpose of this project is to evaluate the efficacy of the equity-minded nursing curriculum in preparing nurse graduates to

feel confident and competent in advancing health equity. An end-of-program evaluation survey will be administered in May 2024 to evaluate the impact of this new curriculum. Further, we would like to repeat this process with the incoming fall 2024 class and do a pre-test and post-test study with the incoming fall 2024 cohort using our established curriculum.

SCHOOL OF SOCIAL SCIENCES

Department: Anthropology

Poster #26

Name(s): Dr. Allison Ford

Title: Prepared: The Environmental Politics of the End of the World

Abstract: Change your lightbulbs, fly less, use reusable shopping bags, donate to an environmental charity. Many of the things that Americans are told to do in response to environmental problems are isolated behaviors that ultimately don't address structural causes or do much to solve the problem. These suggestions are often linked to environmental movement organizations or political figures like Al Gore, whose messages only reach a politically left leaning audience anyway. How do Americans who do not necessarily identify as environmentalists, make sense of environmental risk? What cultural and structural systems enable or constrain their practices? My book project, Prepared: The Environmental Politics of the End of the World, uses ethnographic methods to explore the social world of prepping. Preppers are not necessarily environmentalists, but they are preparing for many types of disasters, including environmental ones. Storms, fires, floods, resource scarcity, infrastructure collapse; whether they identify as environmentalists or not, preppers are thinking about environmental conditions. Prepared asks, how might we explain the rise of prepping in the context of a climate confused public, broad distrust in public institutions, and an environmental movement that has been increasingly siloed in the political culture? In Prepared: The Environmental Politics of the End of the World, I situate prepping as an environmental practice, through which relatively privileged Americans respond to environmental risk in everyday life, even as they ignore or downplay questions of responsibility for creating the disasters they anticipate. Considering prepping through the framework of environmental and feminist theories, I show that prepping emerges as a practice that allows Americans to address environmental risk by

engaging familiar cultural practices that do not threaten their sense of order in the world, even as climate change and ecological decline threaten to do so.

Department: CALS

Poster #27 + Lightning Talk

Name(s): Dr. Malinalli López, Jorge Alejandro Martinez, Christina Montanez Olivares, Erika Banuelos

Title: "Islands of Loneliness"

Abstract: Synopsis: When undocumented immigrants cross the US Border from Mexico, the journey is dangerous and will impact their mental health for the rest of their lives. Immigrants who cross the border will experience stress and anxiety while others develop depression. In spite of the challenges, healing is part of the culture of resiliency that immigrant embody as they acculturate into new communities. Islands of Loneliness a film that will be produced by SSU faculty Malinalli López together with SSU students and documents the experiences of Mexican immigrants in Northern California and their resilience through their eyes and the testimonials of immigrants, Mexican scholars and psychologists who are also from immigrant families.

Film: Islands of Loneliness will be a 90-minute documentary that features subjects who are immigrants from Mexico who will share their stories of dealing with mental health challenges of survival and resilience. Psychologists and scholars of Mexican-American history will provide their cultural analysis as well as the historical context of why the journey across the border that immigrants take changes them permanently and how they are able to form new bonds in their communities. The journey crossing the border is treacherous and immigrants tend to suffer high levels of anxiety, stress and trauma due to the violence they experience which have long lasting effects. When they come to the US they face multiple pressures of assimilation, and racism which further deepens the effects of stress and anxiety when they are treated as second-class citizens. Yet, in spite of so many obstacles, immigrants have influenced and shaped the communities they live in even as they often face limited employment opportunities, poverty, lack of access to health services as well as mental health challenges. The history of Mexicans in the US as laborers has been well documented yet the trauma and mental health challenges that

are faced and how they manage mental health challenges comprise stories that are not often told. Mexican immigrants are historical actors and not just victims. In order to have a more diverse and rich understanding of the history of California it is critical to understand the key role immigrants play in shaping and transforming vibrant communities through their work ethic, their commitment to acculturate and to give their families the best of what they are able to give. Islands of Loneliness investigates how history intersects with the journey across the US-Mexico border, cultural beliefs and resilience in order to understand the trauma of immigrants pushed to the margins of society.

Department: Geography, Environment & Planning

Poster #28

Name(s): Dr. Matthew Clark

Title: Changes in GEDI-Based Forest Structure Relative to Burn severity in Large California Wildfires from 2019-2021

Abstract: Fire is an essential ecosystem process that maintains ecosystem productivity, biodiversity, function, and resilience. However, recent trends toward historically uncharacteristic high-severity crown fires have resulted in fire regimes that are more destructive to natural ecosystems and more dangerous to human communities. Remote sensing is a vital tool for understanding regional changes in fire regimes. In California, multispectral satellite-based measurements of wildfire severity have shown regional shifts toward larger patches of high-severity burns, where fire spreads to crowns, kills trees and can lead to stand replacement by shrubs or herbaceous species. Here we assess near-coincident pre- and post-fire spaceborne lidar (Global Ecosystem Dynamics Investigation, or GEDI) measurements to quantify changes in forest structure due to wildfires. Our study domain included 34 large wildfires in California from 2019 to 2021, which span a range of ecosystems, wildfire sizes, and burn severity patterns across the state. We focused on structural metrics that respond to a variety of both vertical and horizontal fuels properties, with GEDI shots from 2019 to 2022. We found that, relative to pre-fire conditions, all metrics indicate highly significant ($p < 0.001$) change within post-fire areas relative to nearby areas outside of fires. Further, we found that GEDI metrics had highly significant ($p < 0.001$), increasing change with greater burn severity. We conclude that GEDI

measurements are useful for detecting post-fire structural changes in forests related to fuel loads and habitat, and they could be used to refine regional estimates of burn severity.

Department: History

Lightning Talk

Name(s): Dr. Samuel Cohen

Title: Foreigners and Foreignness in Post-Roman Italy

Abstract: My project considers the rhetorical work being done by ‘foreigners’ and the idea of foreignness in the official correspondence of the Ostrogothic Kingdom of Italy (498-554 CE), especially the letters preserved in the *Variae*, the epistolary collection compiled by Magnus Aurelius Cassiodorus Senator (d. c. 585 CE), who served as Prime Minister (*praefectus praetorio*) of Italy in this period. As I will argue, foreignness in the *Variae* serves a schismogenic purpose – that is, it rhetorically defined and thereby created an in-group by contrasting this ingroup with an out-group, here ‘foreigners.’ Importantly, the in-group described in the *Variae* consists not only of the Ostrogoths, but it also non-Gothic Italians and people living in the Ostrogothic provinces, regardless of their religion or ethnicity. The members of the out-group – the ‘foreigners’ – are other barbarians and the East Romans. The language of foreignness is also used to subtly reinforce the Roman and imperial nature of the Ostrogothic state, which Cassiodorus depicts as a staunch defender of Italian interests. Taken together, this study represents an important intervention in the scholarship of identity formation in Late Antiquity, rhetoric and polemic, and the history Italy in the sixth century. Moreover, it contributes to our understanding of Cassiodorus and the letters he produced, which are our primary evidence for the history of this period.

Department: Sociology

Lightning Talk

Name(s): Dr. Zeke Baker

Title: Governing Climate: How Science & Politics Have Shaped Our Environmental Future

Abstract: After decades of debate about global warming, the fact of the climate crisis is more widely accepted. People at all scales—from the household to the global market—are attempting to govern climate to deal with its causes and impacts. Although the stakes are different now, practices of governing climate are centuries old. In this book, sociologist Zeke Baker develops a genealogy of climate science that traces the relationship between those who created knowledge about climate and those who attempted to gain power and govern society, right up to the present, historic moment. Baker draws together over two centuries of science, politics, and environmental change to demonstrate the “co-production” of what we know about climate with power-seeking activity, with a focus on the United States. This book provides a fresh account of contemporary issues transecting science and climate politics, specifically the rise of “climate security” and examines how climate science can either facilitate or reconcile the unequal distribution of power and resources.

