

Student Scholarship Recognition Day

April 20-21, 2021

Tuesday, April 20

Room 1

Room 1 Tuesday 9:00 AM

Shuchat Arts Fellowship (Music)

film screening

Cristina Chapa

Advisor: Mike Nord

Blackberry Island

Over the summer months of 2020 I wrote, arranged, performed, recorded, and produced 6 pieces for voice and guitar entitled *Blackberry Island*. In addition to this, I created a visual story out of personal videos from the last few years to supplement the music. While this is a very personal project, I believe it holds a certain sentimentality for the time we are able to share with loved ones during quarantine and hopes for a future where we can all be together again.

Room 1 Tuesday 9:20 AM

Shuchat Arts Fellowship (Art)

Non-Thesis presentation

Sarah Grahn

Advisor: Cayla Skillin-Brauchle

Observation at Minto

Observation at Minto was designed as an exploration of Minto Brown Island Park. Mindfulness walks and observational drawings are tools used to create a more well-rounded image of a space that had been primarily viewed through a scientific lens. As an active restoration site, Minto Brown provides an opportunity to view the relationship between native and invasive species in day to day life. Through my artwork I aimed to explore how I could visually distort and challenge the perceived relationships between native species such as the Spotted Towhee and invasive species such as the Himalayan BlackBerry.

Room 1 Tuesday 9:40 AM

Shuchat Arts Fellowship (Theatre)

Non-Thesis presentation

Gabriel Honeycutt

Advisor: Christopher Harris

I Want This Rage to End With Me

The intent of this work is to make sense of the abuse and disenfranchisement I suffered as a disabled, white/mixed race person. The same issues that had faced my father and grandfather throughout their

lives from both formal and informal institutions. *I Want This Rage to End With Me* is based on interviews and work with established playwrights Ramon Esquivel and E.M. Lewis, I wrote and produced an autobiographical piece that focuses on a lifetime of aftershocks of discrimination.

Room 1 Tuesday 10:00 AM

Shuchat Arts Fellowship (Art)

Non-Thesis presentation

Emma Stocker

Advisor: Cayla Skillin-Brauchle

Cryptid Shuchat Fellowship Work

The series *Cryptids* is a collection of fantastical monsters inspired by exploring and living in the Pacific Northwest for my whole life. With this series I wanted to give these imaginary characters physical form to evoke the same sense of discovery and excitement that comes with witnessing creatures out in the world. The term Cryptid speaks not just to my creatures themselves, but rather the kind of reaction and fascination that comes from stories like the Loch Ness monster, where the desire to believe in this larger than life majestic creature beneath the water leads people to seek out and tell stories of what they hope to discover.

Room 1 Tuesday 10:30 AM

Shuchat Arts Fellowship (Theatre)

film screening

Clare Lebeda

Advisor: Faith Morrison

QUEER ODYSSEY

"QUEER ODYSSEY" is a five-part dance film exploring the many (often conflicting) stories that live in my body. Each of the five solo dances in the film was choreographed, designed, and performed by and for myself. These dances zoom in on the places where my body pushes up against, defies, and breaks boundaries of fixed identity and linear time. Together, they map my path of leaving behind old stories I did not write, in favor of embodying new ones of my own.

Room 1 Tuesday 10:50 AM

Shuchat Arts Fellowship (Art)

Non-Thesis presentation

Billy Ullman

Advisor: Cayla Skillin-Brachle

Knot Feelings

Knot Feelings is a family of soft sculptures inspired by internal and external body parts, ideas of connection, and love. Some are filled to the brim with stuff and guts; others are empty inside and void of filling. Made lovingly with yarn, stuffing, tulle, pins, and more, each Knot Feeling untangles concepts of femininity, attachment and repetitive actions.

Room 1 Tuesday 1:10 PM

Presidential Scholarship

Art and Chemistry

Thesis presentation

Elizabeth Larson

Advisor: Professors Cooper Battle & Chelsea Couch

Reimagining the Quadruplex

This project explores novel nucleic acid dual-loop quadruplex sensors through two distinct lenses: biochemical properties and three-dimensional modelling. Studies of the structure, function and stability of the folded scaffolds are combined with a sculptural exploration of these forms on a macroscale.

Room 1 Tuesday 1:40 PM

Presidential Scholarship

Public Health

Thesis presentation

Claire Johnson

Advisor: Joyce Millen

Community Immunity: Diagnosing Vaccine Hesitancy in Oregon in the Era of COVID-19

Vaccines have spurred one of the greatest paradigm shifts in human health history, albeit not without controversy. As the COVID-19 pandemic continues, vaccines have moved squarely into the forefront of public health efforts, bringing along unique concerns as well. How has vaccine hesitancy in Oregon developed since the emergence of COVID-19? Answering this question is critical to fostering sufficient confidence in the available vaccines (and adherence to safety protocols) to reach herd immunity against this devastating virus.

Room 2

Room 2 Tuesday 9:00 AM

Carson Undergraduate Research Grant

Religious Studies

Non-Thesis presentation

Maddie Campbell

Advisor: Karen Wood

The Intricate Antinomies of Womanhood: An Inquiry into Constructions of Gender in the Seventh-day Adventist Church

Through researching church doctrine, creating a work of auto-theory, and conducting ethnographic interviews with women in the church community, I explored the construction of gender roles within the contemporary Seventh-day Adventist Church.

Room 2 Tuesday 9:20 AM

Carson Undergraduate Research Grant

Art

Non-Thesis presentation

Robbie Daugherty

Advisor: Jeanne Clark

Creating change: Writing and illustrating a children's picture book on climate change

This presentation will provide an overview of the United States National Park system, its relationship to Indigenous peoples, and their rights. It will focus on the interconnection of these topics with anthropogenic climate change and how I learned this through the Carson Undergraduate Research Grant. The presentation will also explore how this complex knowledge can be presented in the form of a children's picture book. This presentation will look at the children's picture book I created for the grant through an artistic lens, where children's picture books as a whole can be used as agents for change.

Room 2 Tuesday 9:40 AM

Carson Undergraduate Research Grant

Anthropology

Non-Thesis presentation

Sarah Dean

Advisor: Peter Wogan

Making noise to confront a silent killer: The sounds of protests in Argentina during the Covid-19 pandemic

This project analyzes protests that occurred in Argentina during the Covid-19 pandemic through qualitative interviews with politically active youth. By using sound studies and the collective memory of protests in Argentina as a theoretical framework, the research asks the following questions: (1) How can cacerolazos help us comprehend the social implications of the pandemic in Argentina? (2) Do the sounds of cacerolazos challenge the reach of the ever-growing digital world? The project examines how cacerolazos have had a profound effect on the urban Argentine soundscape.

Room 2 Tuesday 10:00 AM

Carson Undergraduate Research Grant

Environmental Science

Non-Thesis presentation

Surya Lee

Advisor: Melinda Butterworth

Is Green The New Pink? Gendered Environmentalism Among College Students In The Pacific Northwest

This report is the culminating document of a summer researching environmental responsibility as an indicator of environmental action among college students in the Pacific Northwest, specifically how race and gender influence environmental responsibility. This research explores the question: How gendered is environmental responsibility among college students in the Pacific Northwest?

Room 2 Tuesday 10:30 AM

Carson Undergraduate Research Grant

Classical Studies

Non-Thesis presentation

David Flanagan

Advisor: Ortwin Knorr

Asclepius: Recreating Ancient Greek drama for a modern Anglophone audience

Ancient Greek drama forms the bedrock of western theatrical canon and informs storytelling and literary tropes to this day. I will study extant material culture of ancient Greece while composing a full-length tragedy styled after the works of Sophocles, composed in modern English.

Room 2 Tuesday 10:50 AM

Carson Undergraduate Research Grant

Art History

Non-Thesis presentation

Celeste Gutentag

Advisor: Ricardo De Mambro Santos

Disability Art and its Narratives

Creation and study of art facilitates exploration of humanity which is capable of reframing narratives of disability, and providing support for disabled individuals and communities. The goal of Disability Art and Narratives was to provide art materials to artists with disabilities who have limited access to art resources. Due to the COVID-19 pandemic, the focus of the project shifted from only providing supplies to facilitating community through art making. Over the course of the summer, the project partnered with the Corvallis Disability Equity Center and Cornerstone Associates to sponsor artists and create an inclusive art workshop titled Art for All.

Room 2 Tuesday 11:10 AM

Carson Undergraduate Research Grant

Environmental Science

Non-Thesis presentation

Madeleine Hooker

Advisor: Joe Bowersox

The Highland "Coos": Intersections between native cattle species, symbolic spaces, and cultural identity in the Highlands of Scotland

Kilts, bagpipes, and scotch are just a few of the symbols of Scottish Highland & Island culture. Where do native animals fit in this distinctive identity? Working with cattle farmers, cultural identity experts, and relevant organizations, this project investigates the role of the Highland and Shetland cattle breeds in Gàidhlig & Shetland identity. This project utilizes qualitative, semi-structured interview data and supplemental research. The results indicate that although the significance of these breeds has evolved over time, their role in identity formation has been imperative for centuries and remains important in the formation of historical & cultural landscapes today.

Room 2 Tuesday 11:30 AM

Carson Undergraduate Research Grant

History

Thesis presentation

Jason Lange

Advisor: Leslie Dunlap

Manifest in the West: America's Black Destiny in 19th century Oregon

America Waldo Bogle (b. 1844), was a Black subject from 19th century Oregon History. She has mysterious parentage linking her to the early white settlers John, Joseph, and Daniel Waldo. Although

some records document her life after marriage, her childhood and youth between one and eighteen is missing from the record. The Covid crisis obstructed research for this gap. In response, I used available resources and radical historiography to detail a frame around that lacuna. My presentation is in essence a critical fabulation: sketching America's life and Salem, an audio interview with Shannon Applegate, and a reading from a fictional afternoon on the Waldo farm.

Room 2 Tuesday 11:50 AM

Carson Undergraduate Research Grant

Women's and Gender Studies

Non-Thesis presentation

Jessie Evans

Advisor: Prof. Leslie Dunlap

Okay, But What is Consent Really?: Reframing Consent Education Through BDSM Consent Practices

Consent is a vital part of everyday interactions and has the potential to create safer communities when practiced regularly and intentionally. For this Carson Grant, I conducted interview-based research with members of the BDSM community, and used this to help me create a five-part consent education workshop series designed for college students.

Room 2 Tuesday 1:10 PM

Art History

Thesis presentation

Maia DiTolla

Advisor: Ricardo De Mambro Santos

The Legacy of Cardinal Paleotti's "Discourse on Sacred and Profane Images": The Case of Gian Lorenzo Bernini's Sculptures

This project analyzes Cardinal Gabriele Paleotti's *Discorso intorno alle imagini sacre e profane* (Discourse on Sacred and Profane Images), published in Bologna in 1582, to understand post-Tridentine iconographic prescriptions for religious depictions. This presentation addresses some of the major categories of "abuses" committed by painters and sculptors in their devotional works for public spaces: clarity, novelty, and sensuality. The second part of this paper will investigate if—or to what extent—the seventeenth-century master Gian Lorenzo Bernini (1598-1680) might have worked within the deliberations that Cardinal Paleotti set in his treatise, giving proper "decorum" to his religious and allegorical representations.

Room 2 Tuesday 1:30 PM

Art History

Thesis presentation

Bee Heumann

Advisor: Ricardo De Mambro Santos

Queer Art and the Outsider: Investigating the Works of David Wojnarowicz

This paper uses queer theory to explore the intersection of art, politics and identity in the works of David Wojnarowicz (1954-1992). Through this case study, it examines the political and ideological role of the outsider in the gay liberation movement. It offers an analytical overview of the history of queer theory and the development of the homosexual identity, as it relates to the political and cultural

policing of queerness. Using this foundation, it analyzes the relationship between outsider art and the mainstream art world, as well as the role of art and identity as vehicles of protest and social change.

Room 2 Tuesday 1:50 PM

Art History

Thesis presentation

Isabella Pontecorvo

Advisor: Ricardo De Mambro Santos

Richard Dadd's Fairy Paintings and Their Connection to the Visual Culture of Victorian England

Fairytales were very popular in the Victorian period. Authors such as Hans Christian Andersen (1805-1875) and John Ruskin (1819-1900) have written their own fairytales and also retold well-known stories, hiring artists to illustrate these narratives. A remarkable fairy painter, Richard Dadd (1817-1886), takes this new iconography to unprecedented heights during this time, diving into the world of his own imagination when creating these visionary paintings. Through the use of reception theory, iconographic examinations, and formal analysis this presentation will examine five of Richard Dadd's fairy-themed works in relation to the visual culture of Victorian England.

Room 2 Tuesday 2:20 PM

Art History

Thesis presentation

Kai Griffith

Advisor: Ricardo De Mambro Santos

A Study on Bronze Armor from Crete: Cultural Exchange in the Orientalizing Period

This presentation examines the context of a set of bronze Cretan armor from the 7th century BCE, with regards to potential influence from the Near East during the Greek "Orientalizing period." These pieces of armor include iconography that indicates influence from the Near East through the subject matter of sphinxes, as well as influence from Greek myth; specifically, the iconography indicates references to the mythological craftsman, Daedalus, as well as the god Hermes. This presentation furthermore explores the function of this armor, taking into consideration a potential pedagogical aspect as spoils of battle.

Room 2 Tuesday 1:10 PM

Art History

Thesis presentation

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Room 3

Room 3 Tuesday 9:00 AM

Colloquium Research Grant

Art

film screening

Blake Carlile

Advisor: Cayla Skillin-Brauchle

Creating A Wildlife Habitat

Creating a Wildlife Habitat is a short film made entirely during the summer COVID-19 lockdown period that documents the process of converting a backyard space into an authentic habitat for wildlife. This brief documentary takes an insightful look at how nature can intersect with human infrastructure, and how we as human beings can help promote a positive interaction between our own living areas and those of native plants and animals.

Room 3 Tuesday 9:20 AM

Colloquium Research Grant

English

Non-Thesis presentation

Cameron Cole

Advisor: Stephanie DeGooyer

The Humanitarian Crisis at the U.S.-Mexico Border and COVID-19

Since the 2016 election of Donald Trump, the appalling conditions facing migrants at the U.S.-Mexico border have been highly publicized, causing widespread humanitarian outrage. This zine exposes the Trump administration's deplorable treatment of migrants during the COVID-19 pandemic and delves into the racism and xenophobia that have always been inherent to U.S. immigration policy.

Room 3 Tuesday 9:40 AM
Colloquium Research Grant
Environmental Science
Non-Thesis presentation

Jordan Edner

Advisor: Gaetano DeLeonibus

Rousseau's Solution to our Environmental Crisis: How spending time in nature can help us create an environmental ethic

This presentation will explore the relationship between spending time in nature and developing an environmental ethic; it was inspired by Rousseau's idea of the Solitary Walker. This is based on research for a College Colloquium Student Research Grant. It was done by spending time in nature backpacking as well as interviewing people who interact with the natural world in various ways about their connection to nature and how it has influenced the ways they think about the environment. I will share my research findings and how they relate to Rousseau's original ideas.

Room 3 Tuesday 1:10 PM
Politics, Policy, Law & Ethics
Thesis presentation

Sarah Dean, Sophie Goodwin-Rice, Aleesha Kazi, Evan Kohne, Alexander Vasquez

Advisor: Richard Ellis

Oregon's Legislative Democracy and the Pandemic

After interviewing Oregon legislators and advocates during the remote 2021 Oregon Legislative Room, we found several key areas where the legislative process could be improved. These areas fell into two broad categories - efficiency and accessibility. The problems found included the digital divide, difficulties in relationship building, technology and infrastructure shortfalls, issue fatigue, and a major shift in citizen engagement. Using the data gathered from these interviews and feedback, we have proposed several solutions. Implementing these solutions for both the Legislature and advocates may improve Oregon's legislative process to be more efficient and accessible, even after the COVID-19 pandemic ends.

Room 3 Tuesday 1:50 PM
Politics, Policy, Law & Ethics
Thesis presentation

Jasmine Contile-Palacios

Advisor: Melissa Michaux

Reducing Recidivism Through a Reentry Guidebook

Reentering into society post-release from long-term prison sentences disproportionately affects people who suffer from mental illnesses, addiction, housing insecurity, unemployment, and lack of educational opportunities. Because of this information, I sought out currently and formerly incarcerated individuals to get insight into what resources they may need once they're released. For my senior capstone, I focused on producing a reentry guidebook to be used by adults in custody with information on each of these subject areas that they're able to read up on; including mental health and

addiction resources, how to secure housing and employment, and what educational opportunities are available to them.

Room 3 Tuesday 2:20 PM

Politics, Policy, Law & Ethics

Thesis presentation

Jake Procino, Layce Yamauchi

Advisor: Melissa Michaux

Overcrowded Prisons, Aging Populations and COVID-19: Protecting the Health and Safety of Elderly and Medically Vulnerable Adults-in-Custody in Oregon

Oregon's correctional facilities put the health of elderly and medically vulnerable Adults-in-Custody (AICs) at risk. The COVID-19 pandemic has exacerbated these concerns and has exposed the lack of procedures in place to protect the health of AICs. Release by clemency is by far the most efficient option to protect the health of AICs. Early Medical Release (EMR) is currently an ineffective process for early release; structural change in the law is necessary to make it a useful tool. Effective and necessary long term recommendations include creating a separate geriatric facility and improving correctional hospice care.

Room 4

Room 4 Tuesday 9:00 AM

Chinese Studies

Thesis presentation

Andrew Rosebrook

Advisor: Huike Wen

Wuxia, The Heroic Trio, Noble Heroism, and Gender Identity

The 1993 film Heroic Trio directed and produced by Johnnie To (Du Qifeng), is a Hong Kong wuxia action centered on an unlikely alliance between three female warriors to save the orphans of Hong Kong. The Heroic Trio was unique in its depiction of primarily female protagonists filling the traditionally masculine roles. The film enhances the genre by not ending with the assumption of their return to femininity, a common conclusion to female action stars globally. Heroic Trio was a step forward in actual representation of diverse femininity and agency that would continue to and is still evolving in cinema.

Room 4 Tuesday 9:20 AM

Chinese Studies

Thesis presentation

Courtney Chun

Advisor: Huike Wen

Chinese Identity in Children's Literature: Examining Racial Underrepresentation on America's Bookshelves

There is a great lack of diversity in children's literature in America. These stories depict prominently white or white-washed stories that fail to provide children of color with stories to resonate with.

Chinese identities are especially underrepresented in America's children's books and literature. Many

stories that voice Asian characters fail to encompass culturally authentic experiences of those holding Chinese identities. This Thesis both analyzes the importance of availability and accessibility of books that mirror the identities of America's children through literature review, and also proposes a children's book that provides an example of an accurate representation of Chinese identity.

Room 4 Tuesday 9:40 AM

Chinese Studies

Thesis presentation

Miranda Bernhard

Advisor: Huike Wen

Ethical and Sustainable Manufacturing in the Chinese Garment Industry: Barriers and Progress

This literature review explores scholarship surrounding Chinese sustainable and ethical practices in the garment industry to understand the barriers that exist in implementing change. China has grown and developed CSR and sustainability practices in response to government oversight and pressure from international stakeholders. Scholars disagree about the degree to which external stakeholders have a positive impact on Chinese development of systems that prioritize workers and the environment.

Organic development of sustainable and ethical values is seen as the most effective way to promote such change, but expectations of low costs make many companies unable to invest in better practices.

Room 4 Tuesday 10:30 AM

Chinese Studies, Asia 390

poster presentation

August Berquist, Emily Huang, McKenna Lynch, Min Wei

Advisor: Juwen Zhang

Tradition, Science, and Values: Covid-19 Deaths in China and the US

There is great disparity in Covid-19 deaths between China and the US. Why have the responses to the pandemic differed? How have tradition, science, and values played a role? This poster searches for answers through an all-inclusive lens of these three cultural domains. We examine how traditional medicine, belief, and lifestyle contribute to controlling the virus in China. We compare how media affects public attitudes toward the pandemic within both countries. Lastly, we explore social conflict based on race and class in a cross-cultural context, including anti-Asian American sentiments. The pandemic is not only medical, but political, economic, and racial.

Room 5

Room 5 Tuesday 9:00 AM

Biology

Thesis presentation

Molly Hansen

Advisor: Briana Lindh

Using DNA barcoding to identify species of the bee genus *Nomada* from the Salem area

Nomada is a genus of parasitic bees currently undergoing a taxonomic revision due to advances in DNA sequencing, which is necessary because they are difficult to identify based on morphology alone. They are also at a higher trophic level than their host species which may make them valuable for

indicating broader shifts in bee populations. In order to understand the diversity of local *Nomada* species, we collected specimens from the greater Salem area and did DNA barcoding to determine how many species are present here. We found at least 10 different taxa, one of which is *N. lehighensis*.

Room 5 Tuesday 9:20 AM

Biology

Thesis presentation

Noah Snizik

Advisor: David Craig

Design of GIS Protocol for the Willamette University Tree & Biodiversity Inventory

The purpose of this project is to create a series of accurate GIS maps that highlight the biodiversity contained within Willamette University's Campus. The initial goal was to establish an updated archive of trees, other plants, and infrastructure that can be used as a research tool for scientists and management decisions by Willamette Grounds. The project has resulted in new GIS shapefiles that include both historical data and new observations collected over time. The new protocol for data collection and example GIS maps will be discussed in terms of climate change and economic sustainability.

Room 5 Tuesday 9:40 AM

Biology

Thesis presentation

Emily Hutchinson

Advisor: Briana Lindh

Description of the biodiversity in *Disholcaspis* sp. galls (Hymenoptera: Cynipidae) in Salem, OR

Oak gall wasps are known to produce the most diverse and structurally complicated galls of any known gall-forming insects (Stone & Cook 1998). Insect-induced galls provide larvae with nutrients and protection from parasitism and predation; however, many wasps are parasitized regardless due to the species-rich community of associated parasitoid species. This study aims to provide a more comprehensive analysis of the diversity of gall formers and affiliated parasitoids analogous to *Disholcaspis* species in Salem, Oregon. DNA barcoding and phylogenetic analyses were utilized to determine parasitoid species associated with *Disholcaspis mellifera*, *Disholcaspis simulata*, *Discholcaspis eldoradensis*, and *Disholcaspis washingtonensis*. The findings in this study expand current knowledge of the biodiversity of gall-forming insects on *Quercus garryana* in the Salem area.

Room 5 Tuesday 10:00 AM

Biology

Thesis presentation

Ren Chamarro

Advisor: David Craig

A Comparative Study Between *Porcellio scaber* and *Lumbricus rubellus*

A comparative study between the common woodlouse (*Porcellio scaber*) and the redhead worm (*Lumbricus rubellus*) was conducted to learn more about behavior, ecology, and physiology of two organisms that are important in the process of decomposition in natural ecosystems. Both species are detritivores that scavenge through leaf litter but provide different evolutionary perspectives about the

adaptations needed to be decomposers. My research methods included which resulted in original scientific illustrations and photography of anatomy. I find the structure of digestive systems and how the anatomy related to their life habits especially fascinating and outline future research.

Room 5 Tuesday 10:30 AM

Biology

Thesis presentation

Monce Barajas Gomez

Advisor: Rosa León Zayas

Secondary metabolites from marine sponge microbiomes using metagenomic sequencing

Marine sponges have adapted an efficient defense mechanism facilitated by their associated microorganisms (Müller et al 2004). Due to the diversity of the microbial community living on marine sponges, sponges are potential sources for innovative pharmaceutical compounds. We are investigating the relationship between these marine microorganisms and their pharmaceutical potentials found in secondary metabolites using metagenomic sequencing. We have found that when compared to adjacent sediment samples, marine sponge samples have more diverse microbial communities and more secondary metabolites genes. Understanding a rich source of secondary metabolites is important due to the decrease in drug development and growing bacterial resistance to current antibiotics.

Room 5 Tuesday 10:50 AM

Biology

Thesis presentation

Katerin Vasquez

Advisor: Melissa Marks

Interrogating *C. crescentus*'s Stress Management Skills in the Presence of Multiple Metals

Strains of *C. crescentus* that have polymorphisms in two TonB dependent receptor (TBDR) proteins survive differently in mid-stationary phase which may be related to the ability of managing oxidative stress. Preliminary screening displayed lethal concentrations in commercially prepared BioLOG plates. To further investigate our hypothesis, we tracked four strains of *C. crescentus* with different combinations of TBDRs that affect their mid-stationary phase survival. They were exposed to more than 20 chelators and metals, which includes lipophilic and hydrophilic chelators with a wide range of substrate specificities and low concentrations, in order to learn the consequences for cellular homeostasis and survival.

Room 5 Tuesday 11:10 AM

Biology

Thesis presentation

Merlyn Rose

Advisor: Melissa Marks

Predicting the substrate of TonB-dependent receptors in gram-negative bacteria via phylogenetic tree analysis

TonB-dependent receptors (TBDRs) are essential nutrient transporters for gram-negative bacteria. There is a wide array of substrates that these proteins can transport, and many identified TBDR

sequences still do not have an identified substrate. The goal of this project is to characterize novel TBDRs by comparing their sequences to ones that are already known. Through an extensive literature search to locate known TBDR gene sequences and phylogenetic tree building, we attempt to evaluate genetic relationships in order to predict the substrate of uncharacterized TBDRs.

Room 5 Tuesday 11:30 AM

Biology

Thesis presentation

Andrew Theil

Advisor: Christopher Smith

Coevolution of Tegeticula Moths and Yucca (Joshua Tree)

Coevolution occurs when two species influence their evolution through interactions. It remains challenging to study because ecological interactions and environmental factors confound the effects of coevolution. The Yucca moth pollinates Joshua trees and are hypothesized to be undergoing coevolution. We performed RAD sequencing on populations of moths to get genomic sequences with relative resolution. We performed a Genome-Wide Association Study (GWAS) and found regions in the genome associated with wing size. We compared this with regions in the genome undergoing selection. Our results provide tentative evidence of coevolution and more moth traits need to be measured to provide stronger evidence.

Room 5 Tuesday 1:10 PM

Biology

Non-Thesis presentation

Maggie Chapin

Advisor: David Craig

Understanding Animal Migration: Exploration of Museum Exhibits of Human and Non-Human Movements in the Rocky Mountains

The purpose of this project is to examine the ways in which various museums located in different areas of Wyoming and Colorado discuss migration of animals, both human and non-human, in their exhibits. Language shapes the ways in which we think, perceive, and understand our world, and certain words carry connotations that either uphold or contradict what we know about migration of animals. Exhibit descriptions will be viewed, photographed, and analyzed in this project to reflect on what image they create, and how they do or do not reinforce Westernized ideas of migration.

Room 5 Tuesday 1:30 PM

Biology

Non-Thesis presentation

Graciela Quevedo-Ramos

Advisor: David Craig

Assessing compliance to recommended protective practices of COVID-19 among Orange County residents

The purpose of this survey was to examine the relationship between guidance information received about COVID-19 and protective practices among Orange County, CA residents. This research was built on work by Dryhurst et al. and Wood et al. by linking information received and other key factors

to risk perception and also to protective behaviors. Over sampling was done to reach quotas to increase representation.

Room 6

Room 6 9:00 AM

Public Health

Thesis presentation

Montana Hunter

Advisor: Sammy Basu

Cosmetotoxicity: Occupational Chemical Exposure of Cosmetologists in O'ahu

There are over one million licensed cosmetologists in the United States alone, a majority of whom are young females of reproducing age. As such, there is significant concern for cosmetologists' reproductive and long-term health due to prolonged chemical exposure, however, there seems to be a lack of research and resources widely available for cosmetologists. This project sampled cosmetologists' chemical exposures at various hair salons on O'ahu, Hawai'i, comparing their exposure to ingredients listed found in commonly used cosmetic products. A key focus of the project has been making educational materials for cosmetologists to better understand what their occupational exposures with an emphasis on accessibility, simplicity, and cultural specificity.

Room 6 Tuesday 9:20 AM

Public Health

Thesis presentation

Margo Lane

Advisor: Sammy Basu

Exposing the Roots of Inequity in Outdoor Education: Creating culturally relevant environmental education in Bush Park

The climate crisis has profound impacts on population health outcomes. There are huge inequities within these health outcomes as a result of one's built environment. Access to both greenspaces and culturally relevant environmental education are two inequities I will explore. How can educational access for marginalized populations contribute to addressing these health inequities? What are ways in which health inequity can be addressed on a local scale? I will be sharing my experience from helping to develop and translate a culturally relevant field guide of native species in Bush's Pasture Park, highlighting the 60+ native species and their ethnobotanical uses.

Room 6 Tuesday 9:40 AM

Public Health

Thesis presentation

Victor Cisneros

Advisor: Sammy Basu

Equity Gaps and Autism: Bridging Gaps Within Latinx Households

In 2003, Newschaffer & Curran (2003) called to the attention of the medical community that Autism was an emerging public health problem. In the years since, there has been dramatic growth in research

and services directed at youth experiencing autism and related developmental disorders. However, there remains ongoing concerns about equity gaps at all stages of the health system's interaction with households. Some of the gaps can include socioeconomic status, primary language being other than English, lack of access to healthcare, and lack of education. In this paper I review What are the Best Practices in Community-responses to Autism (Education, Health) and how are potential Equity gaps being addressed? How is autism within Latinx households being addressed? And lastly what are the outreach workshops for Latinx parents in order to improve health literacy regarding autism and related disorders?

Room 6 Tuesday 10:00 AM

Public Health

Thesis presentation

Vincent Chin

Advisor: Sammy Basu

Development of a Willamette University Campus CERT Program

This project firstly demonstrates the public health problem that the Willamette University CAS student community is vulnerable to several sorts of collective risks and threats of emergency. Secondly, it evaluates the existing emergency preparedness plans, student awareness of these plans, and the level of organized preparedness and collective resilience among CAS students. The FEMA-generated and supported CERT program is identified as the most promising intervention to address the campus preparedness problem and enhance the current plans. The prospect and logistics of establishing WU-CAS as a CERT Campus are evaluated.

Room 6 Tuesday 10:30 AM

Public Health

Thesis presentation

Sianna Moreno

Advisor: Sammy Basu

Consciousness and Community Health: Enhancing Inclusivity & Equity in Public Health Research, and Data Analysis within Marion & Polk Counties

Health agencies in the United States publicly commit to the equitable promotion of individual and community health; while a promising direction, without representative community engagement and empowerment, equity is a goal not yet enacted. Prevailing public health research methods tend to create entry barriers, limiting the reach to groups most at risk for adverse health outcomes. Additionally, methods of analysis often do not account for confounding factors contributing to complex community needs. Oregon Marion & Polk counties commit to uplifting equity yet struggle to reach demographically representative engagement in data gathering for the Community Health Assessment. In this paper, I review three research dimensions: prevailing data sourcing methods, sources of distrust and logistical barriers to engagement, and paths for innovative expansion of community empowerment. I ultimately suggest a mixed-methods collaborative approach that relies on community leadership and deliberation.

Room 6 Tuesday 10:50 AM

Public Health

Thesis presentation

Nat Roadarmel

Advisor: Sammy Basu

Art, Activism, Archives: Disability Studies, the Fairview Training Center and the use of art as a historical practice to contribute to public health evidence

In my senior capstone research, I ask: How can non-verbal and/or unwritten modes of expression of subjective memory be included in archival records? How do art, archival efforts, and notions of public health evidence interact? In addressing these questions, I draw on disability studies theory and my own participation in efforts to solicit memories and artefacts regarding the Fairview Training Center in Salem, Oregon. I argue that art is one method of including non-neurotypical communicators in historical archives and that art can and should be included in holistic histories for evidence-based public health interventions.

Room 6 Tuesday 11:10 AM

Public Health

Thesis presentation

Sweden Smith

Advisor: Sammy Basu

Equity in Health E-communications: evaluating website maternal health information for Black, Indigenous, and Women of Color in Salem, OR

This project operationalizes the theoretical findings of my WGS Thesis, "The Dynamics of Pregnancy: an Analysis of Black Mothers Agency, Pain, and Consent in the era of COVID-19", in relation to public health e-communications and BIWOC in Salem. Health e-communication has emerged as a significant form of public health dissemination and gateway to health access. As such it needs to meet appropriate standards for clarity and equity. This project evaluates maternal health e-communication and informational content in the webpages of Salem Health's Family Birth Center using the CDC's Clear Communication Index and a new Equity Communication Rubric developed for this purpose.

Room 6 Tuesday 11:30 AM

Public Health

Thesis presentation

Enku Castellanos

Advisor: Sammy Basu

Assessing Maternal Health Services from the Perspectives of Swahili Speaking Refugees and Healthcare Providers in Salem, Oregon

The capstone aims to assess refugee women's experiences with the maternal health services that are available to them in Salem. In particular, are the women satisfied with the services, or have they experienced challenges either in accessing the services or in the ways in which the services are delivered. Have the reproductive healthcare providers been attentive to the women's special cultural and linguistic needs? Are they supported and heard by providers? What practices have been helpful? etc.

Room 6 Tuesday 11:50 AM

Public Health

Non-Thesis presentation

Surya Lee

Advisor: Sammy Basu

Let's Talk About Sex: Centering student needs in comprehensive, collegiate sexual health education

This research delves into best practices for comprehensive, collegiate sexual health education. It is supplemental research in conjunction with my position as a Sexual Health Resource Specialist at the Gender Resource and Advocacy Center. I am exploring methodologies of decolonization, sex-positivity, health and wellness, and violence prevention to best inform future peer-educators at Willamette.

Room 6 Tuesday 1:10 PM

Japanese Studies

Thesis presentation

Alexis Louie

Advisor: Miho Fujiwara

A More Historical and Balanced Look on The Basic Law of Shokuiku

This project is looking to provide a more rounded and accurate view on Japanese food and nutrition education through The Basic Law of Shokuiku to examine how effective the law is in teaching the population. The law was established in 2005 but was built upon decades of government acts and laws pertaining to food self-dependence, traditional cuisine, and nutritional education in schools stemming back to the Meiji period. The project compares past government acts to the current law to see how it contributes to the discourse as well as analyzes the data behind the law to test its accuracy.

Room 6 Tuesday 1:30 PM

Japanese Studies

Thesis presentation

Christopher Gatling

Advisor: Miho Fujiwara

The Economic Future of the Japanese Anime Industry

The purpose of this project is to provide a holistic picture of the current economic state of the Japanese anime industry based on previous studies, with an aim to contribute to a growing body of literature concerned with the future of the said industry. The project analyzes important previous studies and then conducts an analysis that centers on the potential results of continuing the current market practices and other outcomes if new market practices were introduced.

Room 6 Tuesday 1:50 PM

Japanese Studies

Thesis presentation

Kyra Uyechi

Advisor: Miho Fujiwara

Textiles and Fashion in Modern Japan

During the Meiji and Taisho periods (1868-1926), Japan underwent a period of rapid modernization while under pressure from Western powers, in an attempt to be seen as equals with countries such as America and France in an international playing field. The purpose of this project is to analyze the evolution of fashion and textiles throughout this period in time and to discuss the historical contexts of these trends, some of which may have been changed or lost in contemporary Japan. Some examples that will be discussed include kimono, school uniforms, and Western attire.

Room 6 Tuesday 2:20 PM

Japanese Studies

Thesis presentation

Nicole Seymour

Advisor: Miho Fujiwara

Studio Ghibli, Shinto, and Environmentalism

This project looks at the works of the animation studio Studio Ghibli and director Hayao Miyazaki and how they portray traditional Japanese environmental beliefs of the Shinto religion. While pre-existing research has already been done on the subjects of Shinto and environmentalism in Ghibli works independent of each other, this project analyzes the environmentalist philosophies present through the lens of the Shinto belief system rather than separately. The project includes a case study of the film Princess Mononoke. The significance of this project is the spread of environmental awareness through Ghibli's popularity across the world.

Room 6 Tuesday 2:40 PM

Japanese Studies

Thesis presentation

Na'aleukahi Wilhelm

Advisor: Miho Fujiwara

Translation and commentary on The Red Beetle by Edogawa Ranpo

This project is focused on translating Edogawa Ranpo's (1894-1965) short story The Red Beetle into English. He was one of the most famous authors in the "erotic grotesque nonsense" genre and is considered the founder of Japanese detective fiction. I chose this story because it has not been translated into English before. I feel that more people should have the chance to read as much of his works as possible. I will also include a commentary containing an analysis comparing The Red Beetle to Ranpo's other works and a look into the period in history that he was active.

Room 7

Room 7 Tuesday 9:00 AM

Physics

Thesis presentation

Isabelle Maxwell

Advisor: Daniel Borrero

Looking for Evidence of Exact Coherent Structures in a Kolmogorov System with Continuous Symmetry

In this project, we will look for periodic exact coherent structures (ECS) from data taken using a Kolmogorov model with continuous symmetry. We will use movies taken of turbulent flow to extract velocity vector fields using Particle Image Velocimetry. We will apply the method of slices to our experimental data to quotient out symmetry and apply periodic orbit theory to weight each ECS by its relative stability. We will then create a recurrence diagram that graphs time values between consecutive states as a function of the distance between these states in state space.

Room 7 Tuesday 9:20 AM

Physics

Thesis presentation

Zachery Luis

Advisor: Daniel Borrero

Characterizing Bouncing Droplet-Laser Interactions with Free-Surface Synthetic Schlieren

Bouncing droplets is a recent dynamic phenomenon, with experiments dating back to as recent as 2005. To induce a bouncing droplet on the surface of a liquid bath, we need to allow the liquid bath to oscillate slightly below the Faraday instability threshold. In doing so, the liquid surface becomes wavy. The bouncing drops can be controlled and can travel on the liquid surface by adjusting the frequency and amplitude of oscillation or by external methods. In this project, we use an infrared laser to develop a method for unobtrusive bouncing drop actuation and use free-surface synthetic Schlieren (FS-SS) to help us understand how this actuation process works.

Room 7 Tuesday 9:40 AM

Physics

Thesis presentation

Zu Huang

Advisor: Dr. Richard Watkins

Analysis of the Velocity-Density Correlation Function Using Cosmicflows-3 and 2MASS Redshift Survey Group Catalog

Galaxies tend to flow from low-density regions into high-density regions. This motion, known as peculiar velocity, is caused by gravitational attraction. Thus, the peculiar velocity of a galaxy and the matter distribution surrounding it should be correlated. This analysis develops a method for measuring this correlation. We analyze simulated data from Outer Rim mock catalogs as well as real data from the Cosmicflows-3 Distance Catalogs and 2MASS Redshift Survey Group Catalog.

Room 7 Tuesday 10:00 AM

Physics

Thesis presentation

Cameron Taggesell

Advisor: Michaela Kleinert

Few pulse ablation on titanium

Pulsed lasers deliver energy in short bursts of light, allowing the precise removal of material from a metallic target surface. This process creates a hole on the sample surface, the size of which depends on the number, duration, intensity, color, and repetition rate of the pulses. In this talk, I will discuss the

effect of these parameters on titanium in relation to the incubation coefficient (a material property). Better understanding of this parameter allows us to advance research on wettability (the hydrophobic property of a surface) and osseointegration (the attachment of bone cells to titanium implants) on titanium samples.

Room 7 Tuesday 10:30 AM

Physics

Thesis presentation

Isabel Sacksteder

Advisor: Michaela Kleinert

Shaping Twisted Light with a Spatial Light Modulator

Motivated by applications in optical communication and quantum information, this talk explores a type of spatial mode that can be experimentally realized in laser beams. These beams, known as Laguerre-Gaussian (LG) modes, have been previously proposed as a candidate for encoding and transmitting information with light. LG modes are particularly good carriers of quantum information since individual photons can exist in superpositions of many LG modes. With these applications in mind, this Thesis explores the generation and detection of LG modes both experimentally through shaping the phase of laser beams and as simulations in Python.

Room 7 Tuesday 10:50 AM

Physics

Thesis presentation

Lexie Andrade

Advisor: Professor David Altman

Exploring the Force-Dependence of Myosin VI in ARPE-19 Cells

Myosin VI is able to generate directed motion along the filamentous protein actin, allowing it to carry cargo throughout cells. We have observed the transport of microscopic beads in retinal pigment epithelium cells in the presence of an optical trap to test that myosin VI is regulating the material properties of the cell by cross-linking actin. We analyzed the bead trajectories to determine the complex modulus, which describes the viscoelastic properties of a cell.

Room 7 Tuesday 11:10 AM

Physics

Thesis presentation

Char Howland

Advisor: Michaela Kleinert

Fish scales can teach us how to clean up oil spills

Oil spills are an increasingly common disaster for marine life and public health. Finding an efficient and cost-effective method for cleaning up oil spills is an active field of research. Mesh surfaces with microstructures that block oil while letting water pass through provide a promising solution. Such surfaces mimic fish scales and can be created artificially using laser ablation, the precise removal of material from a surface using a pulsed laser. In this talk, I will discuss our experiments with ablating titanium and brass surfaces under different conditions and testing their ability to separate a mixture of oil and water.

Room 7 Tuesday 11:30 AM

Physics

Non-Thesis presentation

Madolyn Kelm

Advisor: Michaela Kleinert

Creation of an Automated Python Program to Characterize Hydrophobic/Oleophilic Surfaces Used in Oil/Water Separation

Oil spills are very harmful to marine ecosystems. Current clean-up solutions are harmful, leading scientists to search for a safer method of oil-water separation using hydrophobic surfaces. These surfaces are often found in nature, such as the Lotus leaf, but can also be created artificially using laser ablation. Previous analysis of the hydrophobicity of these surfaces in Python proved to be very hands-on and time-consuming. By automating our code, we were able to cut the analysis time by 95%. This new program has proven viable in gauging how effective these surfaces are at separating oil/water mixtures.

Room 7 Tuesday 11:50 AM

Physics

Non-Thesis presentation

Ethan Levitt

Advisor: Jed Rembold

Detecting Gravitational Lensing Events using Convolutional Neural Networks

Gravitational lensing is a phenomenon in which the gravitational fields around massive objects warp the light passing by, resulting in optical distortions. Historically, images have been inspected manually to identify lensing events. Given the new technology in the next generation of space telescopes, the number of observed lensing events will be in excess of 100,000, and traditional methods of classification will no longer suffice. We seek to train convolutional neural networks to automatically detect gravitational lensing in an image. This would serve as a first-pass for detecting events in large sets of data, significantly reducing the workload of astronomers.

Room 7 Tuesday 1:10 PM

Anthropology

Non-Thesis presentation

Evelyn Newburne

Advisor: Peter Wogan

Upsetting the Expectations of Survivorship: American Jewish Experience as Conveyed by Folk Music in Barbara Myerhoff's "Number Our Days"

Anthropologist Barbara Myerhoff's research with elderly American Jews living in Venice Beach, CA, reached general audiences through her Academy Award-winning documentary. I suggest that Myerhoff's choice to include Ashkenazi (Eastern European Jewish) folk songs in the film is not only intentional, but a core element underpinning the film's theme of survivorship. Through a closer

examination of the film's music in context, we can see how Myerhoff uses Yiddish-language songs—with their particular blending of joy and sorrow—to highlight the community's cultural nuances and to present a story of Jewish resilience, vitality, and pride.

Room 8

Room 8 Tuesday 9:00 AM

Archaeology

Thesis presentation

A. Bergetta Coleman

Advisor: Ann Nicgorski

Material Culture of Funerary Practice and Its Relation to Nomadic Pastoralism in Early Bronze IA Bab edh-Dhra'

The Bab edh-Dhra' burial site is one of the oldest mass cemeteries yet discovered. Its inclusion of more than 20,000 individuals within its boundary is an unimaginable number – especially for a newly sedentary society. Many of these burials took place during Early Bronze IA, a period of transition from nomadic pastoralism in the Late Chalcolithic period to complete sedentism in Early Bronze IB. This era of transition is the focus of this paper, specifically looking at burial practice, patterns, and rituals, and the material culture with which these funeral rites were performed. I concentrate on a vessel group from the southern chamber of tomb A68 within the main cemetery site, consisting of 18 ceramic vessels and one stone bowl. I also focus on the presence and meaning behind basalt vessels within this context. pXRF analysis was used on the 18 ceramic vessels with hopes of grouping the vessels together based on elemental makeup. These 'fingerprints or unique spectra signatures are discussed in detail and compared to one another in order to find patterns. Comparison between proximal sites in the Transjordan region is also taken into account, specifically pertaining to burial patterns and styles, material culture, and the presence of basalt vessels or lack thereof within other communities during the Early Bronze IA period.

Room 8 Tuesday 9:20 AM

Archaeology

Thesis presentation

Holly Piper

Advisor: Ann Nicgorski

Metal Objects in the Neumann Collection

In 2020, the Hallie Ford Museum of Art received a large collection of objects from Mr. Fred W. Neumann. Included in this gift were nineteen metal objects that lacked provenance and were initially identified as "Roman." This presentation shows the work from my archaeology senior Thesis to identify and analyze these copper alloy artifacts through visual comparisons, established typologies, and portable x-ray fluorescence. These objects are grouped by type of object, including weapons: dagger blades, ax heads, projectile heads, toiletries, and surgical tools: hairpins, implements, and miscellaneous: steelyard weight, phalera, situlae.

Room 8 Tuesday 9:40 AM

Archaeology

Thesis presentation

Mo Stein

Advisor: Ann Nicgorski

Bits of Brilliance: A Study of Egyptian Faience Figurines and Amulets from the Fred W. Neumann Collection

This project aims to document, research, and identify about two dozen small Egyptian faience objects that were donated to the Hallie Ford Museum of Art (HFMA) in 2020. These objects include a Bes-head amulet, several animal-headed deity figurines, and a number of ushabtis. Intensive observational methods, including visual assessment, typological research and exploration, and pXRF analysis, will be used to better understand the origins and significance of these objects. Objects from private collections are often poorly documented; this examination will provide the HFMA with a complete understanding of these artifacts for their records, as well as for future exhibition labels.

Room 8 10:00 AM

Archaeology

Non-Thesis presentation

Rowan Barton

Advisor: Ann Nicgorski

Ceramics at the Jason Lee House Site

This presentation examines ceramics excavated at Salem's Jason Lee House last Spring. Lee was the head of the Willamette Valley's Methodist Church in the mid-1800s, and his house was the first built in Salem. Two research questions will guide this presentation: (1) Where were these ceramics manufactured and purchased? And (2) From which period of occupation do these ceramics come? To answer these spatiotemporal questions, the ceramics will be organized into ware types, compared to ceramics from other sites in the Pacific Northwest, and assigned dates through typological analysis. This information will contribute to the knowledge of Salem's historic community.

Room 8 Tuesday, 10:30 AM

Comparative Literature and the History of Ideas

Thesis presentation

Sophie Smith

Advisor: Gaetano DeLeonibus

Constructing Nature: European Romantic ecopoetics and the 'othering' of the natural world

This research explores the ways that European Romantic ecopoetics drew from and helped forge European social constructions of nature, which guided colonial efforts of resource extraction and land degradation of the nineteenth century and beyond. The Romantics' tendency to project human emotions, desires, and needs onto the realm of the other-than-human resulted in a dualistic and anthropocentric construction of nature, the legacy of which persists in modern Euro-American society.

Room 8 Tuesday, 10:50 AM

International Studies

Thesis presentation

Cassandra Gritton

Advisor: Sarah Bishop

Delusions of the Downtrodden: Depictions of Insanity in "Diary of a Madman" and "Envy"

This project examines the nature of insanity in Nikolai Gogol's "Diary of a Madman" and Yuri Olesha's *Envy*, specifically in the stories' main characters: Poprischin and Kavalero. It compares them on an aesthetic and thematic level, while also examining how the nature of psychiatric treatment in the stories' respective time periods affects their depictions of insanity. It will also discuss the themes of social, professional, and creative stagnation, describing the problem's different manifestations between characters and eras and analyzing how they affect the respective characters' states of madness.

Room 8 Tuesday, 11:10 AM

Civic Communication and Media

Thesis presentation

Bethany Abate

Advisor: Cindy Koenig Richards

Communicating Cybersecurity: Education, Awareness, and Engagement

Cybersecurity threats are at an all-time high. While portions of the US government have developed public awareness campaigns to educate and inform citizens about the risks of being a digital participant, the efficacy of these campaigns is questionable. I have analyzed two cybersecurity public awareness campaigns: "STOP.THINK.CONNECT." from the Department of Homeland Security's Cyber Infrastructure Agency (CISA) and the State Of Oregon's "Oregon Cybersecurity Center of Excellence" (Cyber Oregon). I identify parallels and deviations between federal and state level public awareness messaging to identify ways to revitalize strategy that will effectively engage public audiences.

Room 8 Tuesday, 11:30 AM

Economics

Non-Thesis presentation

John Valdez

Advisor: Yan Liang

Financialization's Impact on Racial Inequality in the US

This paper presents evidence of financialization's negative impact on communities of color from 1980-2021. Financialization is the increasing significance and power of financial markets, institutions, and elites in an economy. Financial dominance has shifted the economy from production to finance and has increased economic instability. Increased economic instability has disproportionately impacted people of color. Using economic theory, case studies and empirical data, this paper demonstrates how financialization and financial economic dependence has created and exacerbated racial inequalities.

Room 8 Tuesday, 11:50 AM

Chemistry

Non-Thesis presentation

William Braaton

Advisor: David Griffith

Investigating Systematic Overestimation of Synthetic Estrogen EE2

EE2 is a potent synthetic estrogen that can collapse fish populations at concentrations as low as a few

parts per trillion. Many of the 1,635 other studies from the last 60 years reported unrealistically high EE2 concentrations in sewage and natural waters. Our project employed ultra-high resolution mass spectrometry (21FT-ICR-MS) to determine whether systematic overestimates of EE2 levels were due to ubiquitous but previously undetected interferences with the same mass as EE2. Preliminary results suggest several components typical of detergents have the same mass as EE2, implying they are potentially an interference, though more work is needed for confirmation.

Room 8 Tuesday 1:10 PM

Mathematics

Thesis presentation

Elena Greenberg, Joel Westby

Advisor: Dr. Peter Otto

Markov-spirational Quotes

We generated inspirational posters using Markov chains by assembling the words most commonly used in shorter quotes about happiness or the secret to happiness in over 40 unique quotes derived from an inspirational quote website. Our state space was made up of all the unique words contained in these quotes. Our transition matrix will display the probability that a specific word (j) will follow a given word (i). We experimented with including quotation marks as a unique word with absorbing properties. Ultimately, we wish to emulate ispirobot.me using Markov chain methods to create new inspirational quotes.

Room 8 Tuesday 1:30 PM

Mathematics

Thesis presentation

Abygale Jaeger

Advisor: Dr. Peter Otto

Analyzing Trends in Land Use via Markov Chain

This presentation looks at how land-use changes over time-based on the probability matrix of a Markov Chain $\{X_N\}$. The Markov Chain will be created based on maps of a specific area that feature a diversity of biomes, specifically: woodland, agriculture, and urban. These three distinct land designations will function as the state space for the Markov Chain. The Markov Chain will act as a stochastic model, which will then be used to identify trends in land use patterns.

Room 8 Tuesday 1:50 PM

Mathematics

Thesis presentation

Niko Hellman

Advisor: Inga Johnson

An Introduction to Probabilistic Encryption

Today, cryptology is as relevant as ever. As the use of data continues to grow across society, encryption is crucial in protecting individual privacy and security. Cryptology is the study of encryption schemes and the abstract math behind them. The security of cryptosystems rely on certain mathematical functions that are easy to apply when encrypting messages, but difficult to invert when decrypting messages. Probabilistic encryption, first developed by Goldwasser and Micali, is one such encryption scheme. In this presentation, I will discuss Goldwasser and Micali's method, the underlying number theory concepts, and the significance of this contribution to cryptology overall.

Room 8 Tuesday 2:20 PM

Mathematics

Thesis presentation

Zu Huang, Sam Johnston

Advisor: Dr. Peter Otto

A Markov Model for Basketball

Using Markov Chain theory, this analysis constructs a model to analyze basketball posRooms. A previous study analyzed data for the 2006-2007 NBA season utilizing 18 quarters of a basketball game to explore Home team advantage. In both the prior and this study, state space is constructed using information regarding posRoom of the ball, how the posRoom was obtained, and points scored per posRoom. The model presented in this analysis builds on the previous study by using a larger data set to study changes in home-court advantage due to the COVID-19 pandemic, tempo, and the evolution of play-by-play strategy.

Room 8 Tuesday 2:40 PM

Mathematics

Thesis presentation

Emma Donoho

Advisor: Inga Johnson

Factorization Methods in Cryptology

In this talk we will look at multiple methods of factorization, including the Quadratic Sieve and Multiple Quadratic Sieve methods related to the Sieve of Eratosthenes for finding prime numbers. We will also examine their use in cryptology as related to the security of cryptosystems.

Room 8 Tuesday 3:00 PM

Mathematics

Thesis presentation

Isabel Sacksteder

Advisor: Inga Johnson

Quantum Complexity Theory: Breaking Cryptography with Quantum Computers

In this talk, we will discuss the threat quantum computers pose to modern cryptography. Cryptography relies on a computer's inability to perform certain tasks quickly. A highly complex problem takes an infeasible amount of time to solve, even on our best supercomputers. Quantum computers introduce a serious dilemma for cryptography since they can solve problems like integer factorization exponentially faster than their classical counterparts.

Room 8 Tuesday 3:20 PM

Mathematics

Thesis presentation

Nina Hernandez, Nicolette Seina

Advisor: Dr. Peter Otto

A Markov Chain Analysis for PageRank

We apply the theory of Markov chains to derive a PageRank algorithm. This Markov chain represents a random surfer surfing the web who goes from one page to the next by randomly choosing outgoing links. Our state space will be a sample web graph W of a university that takes inspiration from Willamette's home page. We can think of this Markov chain as a random walk where the limiting probability that an infinitely dedicated random surfer visits some page at time step n is its PageRank. In this model, we also deal with the problem of dangling nodes, which cannot be used in a web graph if we are predicting probabilities in a transition matrix T using a Markov Chain. We attempt to eliminate this issue by using multiple methods.

Room 9

Room 9 Tuesday, 9:00 AM

Spanish

Thesis presentation

Lily Painter

Advisor: Ana Montero

Condemning Franco: The Netflix Series, *Cable Girls*, as a Cinematic Representation of Spain's View on the Civil War and Francisco Franco/ Condenar a Franco: La serie de Netflix, *Las chicas del cable*, como representación cinematográfica de la perspectiva de

This Thesis examines the fifth and final season of the show *Cable Girls* and discusses the representation of the Spanish Civil War and the societal regression following the end of the war as a condemnation of the late dictator, Francisco Franco. It demonstrates how the tragic ending, character portrayals, dialogue, and diction work together to present Franco and the Nationalists as the enemy of Spain. This project will reveal the power of modern-day cinema to scrutinize and discuss the past through giving Spain the chance to process their forgotten history and speak on a worldwide scale.

Room 9 Tuesday, 9:20 AM

Spanish

Thesis presentation

Madeleine Hooker

Advisor: Ana Montero

Between "Sons of la Malinche" by Octavio Paz and "The Tlaxcaltecas are to blame" by Elena Garro: Interpretations of the Feminine Figure in Chicana and Mexicana Literature/ Entre "Hijos de la Malinche" de Octavio Paz y "La culpa es de los Tlaxcaltecas" de

The figures of la Virgen Guadalupe, la Llorona, and la Malinche have become archetypes for Mexican mothers, playing an important role in Mexican and Chicana identity formation. Arguably, la Malinche is the most misunderstood and hypersexualized of the three, portrayed as a traitor to her people. But should she be blamed for the actions of Hernán Cortés and the colonizers? Evidently, machismo and patriarchy contribute to dominant narratives surrounding la Malinche. Examining relevant literature,

this research answers the following questions: How has Malinche been traditionally misinterpreted in popular literature? What are Chicana and Mexicana writers doing to reclaim her image?

Room 9 Tuesday, 9:40 AM

Spanish

Thesis presentation

Claire Mathews-Lingen

Advisor: Ana Montero

Uses and Distortions of the Indigenous Concept of Buen Vivir in the Ecuadorian Constitution/ Usos y distorsiones del concepto indígena del Buen Vivir en la Constitución ecuatoriana.

The concept of Buen Vivir ("Good Living") has great significance in Ecuadorian culture. It is a way of being which is contrary to capitalist development narratives, and rather centers Indigenous epistemology and connection with the environment. In its 2008 Constitution, Ecuador drew on this concept for a section on "The Rights of Buen Vivir," which outlines many social issues including environmental protections. In my Thesis I analyze the important influence of the Indigenous concept of Buen Vivir on the Ecuadorian constitution, as well as the ways in which the laws have distorted the concept itself.

Room 9 Tuesday, 10:00 AM

Spanish

Thesis presentation

Conrad Parrish

Advisor: Ana Montero

The Immigration of Cuban Baseball Players as a Microcosm for the Unique Experiences of Their Immigrant Compatriots in the United States / La inmigración de los "peloteros" del béisbol cubano como microcosmo de las experiencias únicas de sus compatriota

Since the start of the Cold War, the complicated relationship between Cuba and the United States has caused many Cuban baseball players to utilize very dangerous methods in order to get to the United States. Looking for better economic opportunities in the United States like so many other immigrants, neither the talent nor the fame of the Cuban baseball players can help them in their journey. As a result of their fame, the baseball players often are held captive and have to pay significant sums of money to smugglers to arrive in the United States.

Room 9 Tuesday, 10:30 AM

Spanish

Thesis presentation

Kevin Martinez-Sanchez

Advisor: Ana Montero

COVID-19 in Mexico: President Andrés Manuel López Obrador's Response to the Pandemic and to Donald Trump's Xenophobic and Anti-immigrant Rhetoric/ COVID-19 en México: La respuesta del Presidente Andrés Manuel López Obrador a la pandemia y la retórica xenó

The pandemic caused by COVID-19 proved to be disastrous across the globe, and Mexico is no exception. Current Mexican president Andrés Manuel López Obrador, better known as "AMLO,"

swept the country with what is best described as an “AMLO phenomenon”. Obrador is considered by many to be Mexico’s “solution” for change. However, the current pandemic proved to be a challenge for Obrador. This project will examine AMLO’s response (or lack thereof) to the pandemic and will analyze it in the context of a reaction to Trump’s xenophobic and anti-immigrant rhetoric, which Obrador describes in his book *Oye, Trump* [Listen, Trump].

Room 9 Tuesday, 10:50 AM

Spanish

Thesis presentation

Martha Alicia Guerrero-Galvan

Advisor: Ana Montero

Mexican Parents, American Children: Effect of Generational Communication within Migrant Families in the US. / Padres mexicanos hijos americanos: El efecto de la comunicación generacional en las familias migrantes en los Estados Unidos.

Based on true events, the film *Spare Parts* (2015) tells the story of four undocumented Mexican-American teenagers who team up to build a robot for a nation-wide competition. By examining this film, this Thesis will explore the challenges of effective intergenerational communication among immigrant families. This study focuses on the situation of Mexican migrant families living in the US. Most first-generation Mexican immigrants have not finished their elementary education and, for this reason, they face communication challenges with their children, who sometimes are more fluent in English than Spanish and have a higher level of education than their parents.

Room 9 Tuesday, 11:10 AM

Spanish

Thesis presentation

Grasiela Quevedo-Ramos

Advisor: Ana Montero

Even the Rain: A Fictional Representation of Modern Day Colonialism in Contemporary Cinematography/También la lluvia: una representación ficticia del colonialismo moderno en la cinematografía contemporánea

Historic moments like the discovery of the Americas remain a topic of conversation. Its narrative is present in contemporary cinematography. *Even the Rain* follows a crew in Bolivia creating a film on the colonization of the Americas from the perspective of Christopher Columbus. During the filming, the crew members find themselves in the midst of an uprising of the local natives against the privatization of their water supply. The juxtaposition of the real-life struggle for the rights of indigenous people and the fictional representation of colonialist events reveals the privilege the crew carries and their contribution to the dominant narrative.

Room 9 Tuesday, 11:30 AM

Spanish

Thesis presentation

Garrett Blackburn

Advisor: Ana Montero

Chocolate and Satire: Perreo as Protest, and Parody as Reclamation in the work of Chocolate Remix /
Chocolate y Sátira: el perreo como protesta y la parodia como reclamación en la obra de Chocolate
Remix

This project explores the representation of women within the popular Latin American music genre reggaeton, specifically how the style is being reshaped and reclaimed by queer, female artists who use parody to critique and reclaim space within a genre traditionally dominated by masculine, and often misogynistic, voices. By analyzing the work of Argentinian musician Romina Bernardo, known by her stage name Chocolate Remix, this Thesis examines how her lyrics represent a reclamation of reggaeton as a queer, feminist space and the use of popular music as a vehicle for social change.

Room 9 Tuesday,, 11:50 AM

Spanish

Thesis presentation

Alejandro Garcia Iboa

Advisor: Ana Montero

Lives in Interplanetary Limbo: Science Fiction and the Representation of Migrant Experience in BEF's
"Bajo un cielo ajeno"/ Vidas en el limbo interplanetario: La ciencia ficción y la representación de la
experiencia migrante en "Bajo un cielo ajeno" de BEF

This project explores the ways in which Bernardo Fernandez (B.E.F.) uses the genre of science fiction in his story "Bajo un cielo ajeno" to explain the migrant experience. By portraying the isolating and seemingly surreal life of the protagonist, a Mexican immigrant working in outer space, whose only purpose is to do the work not even robots want to do, BEF underscores the pervasiveness of racism and the dehumanizing quality of anti-immigration policies. Through this literary analysis, I will focus on the value of immigrants, particularly undocumented ones, and problematize the concept of "illegality."

Room 9 Tuesday, 1:10 PM

Spanish

Thesis presentation

Adriana Escorcía Lopez

Advisor: Ana Montero

Mexican Identity in the 20th Century from the Perspective of Octavio Paz's *El laberinto de la soledad*/
La identidad mexicana en el siglo XX desde la perspectiva de *El laberinto de la soledad* de Octavio
Paz

My Thesis explores the identity of Mexico during the twentieth century. I will focus on Octavio Paz's work and on his interpretation of two historical events: the Mexican revolution of 1910 and the massacre of Tlatelolco in 1968, which in my opinion are essential to understand contemporary Mexican identity. I will be analyzing the perspective Paz presents in his essay *El laberinto de la soledad* in order to examine the construction of Mexico's identity and culture and the impact that the aforementioned historical events had on it. I will analyze how the Mexican revolution creates an opportunity to mold a collective identity for those that have created their lives in the country.

Room 9 Tuesday, 1:30 PM

Spanish

Thesis presentation

Benjamin Burton

Advisor: Ana Montero

Examining the Dangerous Lives of Undocumented Immigrants Through the Documentary *Which Way Home*/Examinando las vidas peligrosas de los inmigrantes indocumentados a través del documental *Which Way Home*

Through the examination of the documentary *Which Way Home* this Thesis explores the accuracy of the representation of the many dangers immigrants face on their way to the US. It focuses primarily on undocumented immigrants from Mexico and the northern triangle living in the United States. For the purpose of this study, I will break down the journey of an immigrant into three major stages, life before, the crossing, and life now. During my presentation, I will show an accompanying short documentary, created and produced by me, examining the same topics and featuring interviews with undocumented migrants from the local community.

Room 9 Tuesday, 1:50 PM

Spanish

Thesis presentation

Amairani Santillan

Advisor: Ana Montero

Postcolonial Societal Dynamics: A Comparative Study of *El Lazarillo de Tormes* and *El periquillo sarniento*/Las dinámicas sociales poscoloniales: Un estudio comparativo de *El Lazarillo de Tormes* y *El periquillo sarniento*

The picaresque novel is a literary genre that originated in sixteenth-century Spain and later expanded throughout Europe and, finally, to America. At its full potential, the picaresque genre functions as a window into the society of its time. This transatlantic project analyzes two of the most famous and representative picaresque novels in Spain and Mexico, *El Lazarillo de Tormes* and *El periquillo sarniento*. By comparing these two works, we can observe a parallelism in the way they portray their respective historical circumstances and events, but also significant differences, which are in my opinion based on postcolonial class dynamics.

Room 9 Tuesday, 2:20 PM

Spanish

Thesis presentation

Alexander Sanchez

Advisor: Ana Montero

The Influence of Guillermo del Toro's Cinematography and his Film *Pan's Labyrinth* in the U.S. Film Industry / La influencia cinematográfica de Guillermo del Toro y su película *El laberinto del fauno* en el cine estadounidense

This project analyses Mexican director Guillermo del Toro's cinematography and its influence in the U.S. film industry. This study will focus on the film *Pan's Labyrinth* as one of the earlier and more impactful films from del Toro's repertoire, where we see some of his most iconic themes, his emblematic use of monsters or animatronics, as well as his use of either bright vibrant or dull dark

colors to depict the mood of the scene. I will argue that the way that del Toro designed and filmed *Pans' Labyrinth* has influenced how films that followed were directed and filmed in the U.S.

Room 10 - Poster Sessions

Room 10 Tuesday 10:30 AM to noon

Poster Presentations: Chemistry 116-01

Instructor: J. Charles Williamson

Claire Bonnet, Maddie Chastain, Corinne Christian

How Chemistry Makes the Color of Fireworks

When we see a fireworks display we might not think about the chemistry behind it all. The goal of this project is to understand the molecular process fireworks undergo to create the vibrant colors. We can understand this process by looking at the balanced chemical reactions and the components that are in these reactions such as: elements, energy, wavelength produced, etc. We will discuss the sequence of events a firework undergoes in order to explain how and why those specific colors are produced. Lastly, we will discuss the impact chemicals released from fireworks have on both humans and the environment.

Maddie Garcia, Kiana Gottschalk, Layton Wagner

The Effects of Acid Rain in the Eastern United States

Acid rain has been a significant environmental issue since the late 20th century. Natural rainwater has a pH of about 4.2-5.0, but has been found as low as 3.6 (equivalent to the acidity in vinegar) in the Eastern United States. Sulfur and nitrogen oxides produced from pollution are converted into sulfuric and nitric acids, which mix with the rainwater to create acid rain. These acidic conditions cause damage to aquatic ecosystems and strip soils of the natural minerals needed. One of the major effects is the leaching of aluminum from soils into streams, causing organisms to die.

Oliver Anderson, Cole Fisher, Haven Wagner

The Importance of Vitamin Solubility for Optimal Consumption

Vitamins are coenzymes that facilitate reactions in the body. There are thirteen vitamins, which are sorted into two types: fat-soluble and water-soluble. Fat-soluble vitamins are stored and absorbed by fat molecules. Water-soluble vitamins are not stored and are excreted out if not utilized. Solubility determines how vitamins function; the structure of vitamins dictate which solvent it is dissolved by and thus how the body stores the nutrient. Polar vitamins are soluble in polar solvents like water and nonpolar vitamins are soluble in nonpolar solvents like fat. Understanding vitamin solubility can help increase their absorption and combat vitamin-related diseases.

Daniel Alvarez, Irving Montes, Hunter Vetter

Chemistry Behind Hydrocodone Combination Drugs

Since hydrocodone combination drugs gained approval by the FDA in 1998, Vicodin and other similar drugs have become one of the leading causes for addiction and drug overdose. The purpose of this research is to analyze the chemical aspect of hydrocodone combination drugs to further understand

how and why they are becoming one of the leading causes of overdose in the U.S. By analyzing the chemical compound, its synThesis, side effects, and how hydrocodone combination drugs react with the chemical receptors in the human body, the information will further our understanding as to why hydrocodone combination drugs are becoming as popular as they are and how they react within the body.

Koko Silva, Clara Mattison, Jasmine Shigeno, Morgan Yamane

The Chemistry of Baking

Baking is a vital part of culture and comfort in our society, and it would all be impossible without chemistry. Specifically within bread-like baked goods, yeast and baking soda play an important role in the process of rising by creating air pockets due to release of CO₂ - making baked goods fluffy and delicious. Both yeast and baking soda have to be added in the correct ratios (as seen in their balanced chemical reaction equations) in order for these reactions to occur, affecting the taste, texture, and enjoyment of baked goods, highlighting the importance of chemistry in everyday life.

Melissa Duncan, Katrina Morrison, Gabe Owen

Carbon Nanotubes: The Solution to Regenerative Medicine

The medical field is always looking for ways to advance its technology to solve the many problems that trouble human health, it needs something of abundance that also has qualities that can interact with the human body safely and effectively. Recently, nanotubes, a form of carbon, display highly useful properties that are greatly sought out within the medical field, such as having a high surface-area to volume ratio, and being able to interact well with the body. In this presentation, we will be examining the properties that make nanotubes some of the most advanced devices to the field of science.

Room 10 Tuesday 2:20 PM to 4:00 PM

Poster Presentations: Chemistry 116-03

Instructor: Andrew Duncan

Kamis Monohan, Nathan Rutter, Morgan Schetter

Heavy Metal Based Tattoo Pigments and their Health Effects

The popularity of tattoo body art has increased in recent years (Laumann, 2006). With this growth trend in mind, it is important to recognize the toxicity of the ink used. Potentially toxic heavy metals, specifically, cadmium, chromium, mercury, zinc, and arsenic, are one of the main ingredients in tattoo pigments and the source of many health concerns. High concentrations of these metals can have serious effects on human health, including impaired learning, and behavior management, brain atrophy, and interference with reproductive systems in both women and men (Tilley and Fri, 2015).

Annie Coss, April Holland, Emma Honberger, Miriam Michels

Air Pollution's Relationship with Ocean Acidification and the Resulting Effects on Marine Ecosystems

Air pollution's relationship with ocean acidification is creating detrimental effects on not only marine species, but entire ecosystems. The burning of fossil fuels leads to the release of CO₂ and the introduction of H⁺ ions into the oceans, causing the pH to decrease, hindering the ability for calcium dependent organisms to form the CaCO₃ needed in their bodies. Ecosystems dependent on organisms like mollusks and corals are being affected by declining populations. The rate of ocean

acidification needs to be curbed in order to prevent further damage to ecosystems and the communities dependent on them for economic and subsistence use.

Aiden Daley, Danielle Groff, Annette Hernandez Bran
Chemistry of Fireworks

Throughout history fireworks have been used for celebrations all over the world. The wide array of colors have more insight from a macroscopic level as well as microscopic. Colors can indicate the makeup of the elements and compounds in specific fireworks. Such as various salts that indicate metals and non metals within the composition. With the rising concern of air pollution, fireworks also relate to this real problem. Our presentation will indicate how fireworks contribute to climate and pollution. As well as debilitating the potency of fireworks to make them more eco-friendly.

Seth Beach, Nathan Garcia-Diaz, Jenna Harris, Edgar Villa
Addressing the Association with Vitamin D and COVID 19

Both SAR-CoV-2 and Vitamin D utilize the ACE2 receptors, which are located throughout the body, for their individualistic purposes: Vitamin D decreases inflammation while increasing the innate immunity, while the infection site for SAR-CoV-2 are these receptors. Correlations show low Vitamin D levels cause the body's immune system to work less effectively, thus lowering its ability to fight COVID-19. Racial minorities have increased exposure to the virus due to social factors that are related to low socioeconomic status. Given the accessibility and affordability of Vitamin D, its role will be discussed as a tool to protect these high-risk communities.

Tassos Foster, Noah Ghiselli, Cole Mosley

The Detrimental Effects of Organochloride Pesticides to Our Environment Agricultural Chemicals
We will be exploring the benefits and detriments of the use of organochloride pesticides and insecticides in agriculture. This is a morally charged issue because along with doing a lot of harm, pesticides also do a lot of good. They substantially increase the production of crops around the world. One-third of all crops produced would be tainted by pests if not for pesticides. However, when these pesticides are put into our crops they can spread through soil, air, and water contaminating a wide range of the environment. This, in turn, causes adverse health consequences to biological organisms.

Room 11 - Poster Sessions

Room 11 Tuesday 10:30 AM to noon
Poster Presentations: Chemistry 116-02
Instructor: Patrick Poletti

Corwin Bowersox, Gwyn Fritz, Alicia Hall

The Chemical Effects of Nicotine Patches on the Body

Nicotine is a highly addictive drug that 2,000 youths under the age of 18 fall victim to everyday in the United States. As nicotine ($C_{10}H_{14}N_2$) is a commonly unhealthy habit, our research will explore nicotine patches, a treatment option for nicotine addiction. When nicotine is inhaled it's absorbed into the bloodstream as nicotine's pH easily allows it to permeate through the lung's membrane; however, nicotine patches slow down the rate of absorption. This research will explore the chemistry of why nicotine patches are an ideal way to quit smoking.

Britney Mural, Grace Sheehan, Pardeep Kaur

What are Greenhouse Gases and How Do They Affect the Ocean?

The greenhouse effect, involving a multitude of gases, is largely responsible for climate change and the earth's extreme weather changes. We are observing how the different chemical structures of these gases play a role in Henry's constant and its direct effect on marine life. In company with the comparison of the structures of greenhouse gases versus non-greenhouse gases to identify differences in characteristics. The objective of this study provides a base of understanding of why the greenhouse effect is dangerous for marine biomes and our planet, along with methods to prevent further damage.

Emelia Sherman, Madelynn Brown, Zuri Sizemore

What is Acid Rain?

Acid rain is precipitation with a pH significantly lower than normal rain (pH 5.6). Acid rain is the result of sulfur dioxide and nitrogen oxides reacting with water, oxygen, and other chemicals in the atmosphere to create sulfuric and nitric acids, which then mix with water and fall to the ground as precipitation. There are both human-caused, fossil fuels, and natural, volcanic activity, sources of SO_2 and NO_x . Acid rain has various consequences on aquatic ecosystems due to both acidification and nitrogen pollution of bodies of water.

Ursula Townsend, Katrina Ellars, Jacob Kuklok

Alchemy's Legacy in Modern Chemistry

Alchemy is the scientific and religious study of changing a substance into its purest form. It was a framework centered on manipulating matter before chemistry and acted as a foundation for the modern field. Both are focused on combining different elements to make new substances, including black powder and elemental phosphorus. Alchemy is similar to nuclear chemistry, both focusing on transmutation or the act of changing one substance to another. We will focus primarily from ca 1200 -1800, when atomic theory begins to develop. Without alchemy, there would be no modern chemistry today.

Taylor Hamura, Angel Park, Grace Shiffrin, Eden Katz

The Effects of Carbon Monoxide Poisoning at Different Stages of Life

Carbon monoxide poisoning is one of the leading causes of death by poison around the world due to its properties of being odorless, tasteless, and colorless it is known as a "silent killer". This project will discuss the structure of the compound itself and why it can replace oxygen. We investigate the levels of carbon monoxide poisoning within the human body through case studies that compare the effects

of carbon monoxide poisoning at different stages of life. These case studies include; the diagnosis, treatment within infants, and a middle-aged man including their short-term and long term side effects after treatment.

Shaye Mott, Ethan Dunnam, Dani Queja, Trevor Thompson
The Properties and Chemistry of Modern Cleaning Products

In this day and age, it is easy to take cleaning products for granted without fully understanding what they do and how they work. The effectiveness of these products depends on the products used and the active ingredients that make up the chemical compounds, in correspondence to what they clean. Looking at three specific types of active ingredients in household cleaners (alcohol, reducers, and hypochlorous acid) and their respective properties (denaturing lipid proteins by clumping, disrupting lipid envelope, and oxidation of proteins) we will compare the properties and chemistry behind these cleaners and relate them to the situation of today.

Room 11 Tuesday 2:20 PM to 4:00 PM
Poster Presentations: Chemistry 116-04
Instructor: Patrick Poletti

Ingrid Aosved, Elias Banjar, Donovan Cazares
An analysis of modern biodegradable plastics

In this presentation, we give an overview of biodegradable plastics (BPs) that focuses on their chemistry, such as their variable and potentially weak intermolecular forces. We analyze the synthesis and degradation of polyester-based biodegradable plastics, such as PLA (as many common BPs have similar problems to PLA). We discuss potential solutions for their shortcomings, including temperature invariability, that research intends to address. Finally, we predict the reasons that biodegradable plastics have not been fully accepted and integrated into our everyday lives.

Emma Bass-Kendall, Billie Henderson, Tristin Campbell
The Science Behind Natural and Synthetic Medicines

Medical drugs have revolutionized the world and the medical industry. It has allowed for people to live longer and become immune/resistant to numerous viruses and diseases. This project aims to go through the science behind medicine including its structure, properties, and effects as well as how large pharmaceutical companies monopolize the medical industry. It is important that as we learn how medicines are created both naturally and synthetically; we also must understand how these medicines can be altered to be more effective or have other uses, as well as how companies can use these alterations to advantage of the public and increase sales.

Carol Ann Edwards, Lily O'shea, Jordan Pearce
The Invisible World of Art

Art encompasses creative expression in combination with complex chemical processes to convey human emotion or thought. Chemical processes such as redox reactions, are used in photographic development, specifically in developer and stop. Physical properties of graphite, an allotrope of carbon, allow us to draw. The chemical decay of carbon-14 allows us to accurately depict the ages of

different types of art. In this project, we explored the areas in which art and chemistry intersect in order to gain a scientific understanding of the creative world.

Marni Aosved, Heaven James, Noé Sánchez, Sophia Valva

The Structure and Dangers of Chemical Weapons

Chemical weapons are munitions made of specialized chemical formulas specifically designed to cause harm or death to humans. They have historically been used in warfare, but have since been banned due to the severity of damage they can cause. This study isolates sulfur mustard (a blister agent), A-234 (a nerve agent), and Agent Orange. The first two examples fall under the primary forms of chemical weapons because they were specifically developed to physically harm humans. On the contrary, Agent Orange was an environmental deviation that set its primary purpose apart from the rest; human harm was merely a side effect.

Jesus Barocio, Maia Masamoto, Evan Wylie

Afterparty: The Chemistry of Fireworks and the Effects on Air Quality

Fireworks play an important role in various holiday celebrations worldwide, but behind the shock and awe of your average display of pyrotechnics lurks the sinister threat of air pollution. Different metals used in fireworks, including strontium, barium, and other metals which form salts, can linger in the air as hazardous particles, and various toxic gases may also be produced depending on the type and quality of the firework. By examining the chemistry of fireworks, one can come to understand why such metals are used in the construction of fireworks and to what extent these polluting effects may be a problem.

Lillian Grant, Nathaniel Honanie, Charlotte Underhill

The Chemical Differences and Biological Effects of CNS Stimulants and Depressants

Our research juxtaposed a Central Nervous System Stimulant (CNS-S) and a Central Nervous System Depressant (CNS-D) concerning the chemical differences and the biological differential effects on the human body. We selected cocaine as the CNS-S research drug and heroin as the CNS-D research drug. We utilize a molecular structure model and a chemical production procedure difference to elaborate the CNS-S and CNS-D chemistry differences. We chose to focus on illicit drugs because we believe it's important for the public to know what these substances consist of and how they interact with the body, not just physically but chemically.

Wednesday, April 21

Room 1

Room 1 Wednesday, 9:00 AM

Anthropology

Thesis presentation

Madison Houston

Advisor: Rebecca Dobkins

A Shift in Reality: The Role of Advocacy and Entertainment in Documentary Film

Documentary filmmaking as an art form and discipline has two main aims: to entertain and to advocate by giving voice to stories that are worth sharing. Advocacy is said to be rooted in reality, while entertainment seeks to distract from reality. How do documentary filmmakers balance these two potentially contradictory aims? I interviewed documentary filmmakers to learn how the roles of advocacy and entertainment shape a documentary. My findings will shed light on how filmmakers can increase the likelihood their films generate positive change.

Room 1 Wednesday, 9:20 AM

Anthropology

Thesis presentation

Juniper Scheel

Advisor: Prof. Rebecca Dobkins

How Participation in Writing Groups Impacts Sci-Fi-Fantasy Writers

I examine how the experience of sci-fi and fantasy writers within writing groups affects their careers as writers. There have been examinations of what writing reveals about the author, but little about how writers are affected by their writing group participation. I conduct fieldwork via interviews and participation in a writing club and Discord channel online. I draw on theories of emic and etic perspectives and storyteller-audience relationships to help frame my growing understanding of the ways these social groups affect writers' identities and careers. My findings identify the social aspect of writing and how social forces modify creativity.

Room 1 Wednesday, 9:40 AM

Anthropology

Non-Thesis presentation

Tasia Riley

Advisor: Rebecca Dobkins

Visual Arts in the Era of Coronavirus

This presentation examines online exhibitions and their increase in popularity during COVID-19. Online galleries and collections are not a new concept, but have seen a rise in interest due to current health and safety restrictions. As a response, many museums and cultural centers have begun to work on presenting art and other materials to engage with visitors in creative ways. To help highlight some

of these examples, I will present a sample online exhibition. Additionally, discussion will center around the challenges and benefits these new methods present for museum staff as well as visitors.

Room 1 Wednesday, 10:00 AM

Anthropology

Thesis presentation

Oscar Wecker

Advisor: Prof. Rebecca Dobkins

Animating the Inanimate: The Puppeteer, Liminality and Ritual

Puppets are an enigma to many. They are inanimate, often a collection of sticks and string. Through the puppeteer's touch, the puppets are given anima to these items to create something alive, social and interactive. What forces create these creatures? By investigating the puppet, the puppeteer, and the stage, I hope to illuminate the semiotics behind this ancient art of performance. Through discussions of liminality, spirituality, and ritual, and through an ethnography of the puppeteer, we come to our question: what brings puppets alive?

Room 1 Wednesday, 10:30 AM

Anthropology

Thesis presentation

Liam Chambers

Advisor: Prof. Rebecca Dobkins

Family Trees: The Role of Family Forestry within the Contemporary Timber Industry

Famous environmental conflicts in the history of the PNW can be viewed as cultural conflicts between environmentalists and timber-dependent communities, which have created an image of commercial forestry focused on large-scale, private timber production. This fails to represent family-owned forestlands in the US, which are managed under different forest management objectives. This ethnographic study seeks to understand relationships family foresters have with land that has potentially been managed for generations and how these relationships distinguish family forestry from the rest of commercial forestry. I conducted a series of interviews with owners of small forest lands and timber companies in the US.

Room 1 Wednesday, 10:50 AM

Anthropology

Thesis presentation

Alison Pitcher

Advisor: Prof. Rebecca Dobkins

Unearthing Perceptions of Community within Archeological Research

As community archaeology grows more popular, archaeologists have increasingly involved local communities in research, emphasizing Indigenous groups' involvement. While the benefits of public and community archaeology are widely agreed upon, there is disagreement over who exactly constitutes the "public" or the local "community." Through interviews with archaeologists and a review of scholarly literature, I have theorized that archaeologists disagree on the nature of community stemming from different perceptions of themselves and their profession in relation to the general public. I aim to reveal how these varying perceptions can impact archaeological scholarship.

Room 1 Wednesday, 11:10 AM

Anthropology

Thesis presentation

Analyssa Ruiz

Advisor: Prof. Rebecca Dobkins

Women in Agriculture: Self -Perceptions of Women in a "Man's" Industry

After talking with a multitude of women in agricultural occupations, I discovered the many roles they play in their daily work and personal lives. By participating in ethnographic research and working alongside these women, I investigated the preconceived notion that a farmer is a man in overalls plowing a field. Why don't these women believe themselves to be farmers? The scholarly literature describes how times have changed, and views of traditional gender roles have also shifted, so why do women in agriculture still feel devalued and not worthy enough to consider themselves farmers?

Room 1 Wednesday, 11:30 AM

Anthropology

Thesis presentation

Truman Smith

Advisor: Prof. Rebecca Dobkins

The Implications of a Song

In U.S. history, outdoor programs have appropriated elements of Indigenous cultures as a way of creating camp traditions; historian Philip Deloria calls this "Playing Indian". In this study, I draw upon interviews with workers in the industry as well as 18 years of my own experience to learn how progressive outdoor programs are navigating these issues today. Using Deloria's analysis and Pauline Strong's history of how "indigenouness" is used by American nature institutions, this study aims to look at how modern outdoor schools can promote connection to nature while avoiding this racist past, an urgent question as our planet changes.

Room 1 Wednesday, 11:50 AM

Anthropology

Thesis presentation

Marion Powell

Advisor: Prof. Rebecca Dobkins

Recounting the History and Legacies of Moloka'i's Persevering Sakadas

The sakadas are Filipino male plantation workers who arrived in Hawaii from the Philippines from 1906 to 1946. These workers are known for enduring harsh labor conditions within the pineapple and sugarcane plantations, along with their fierce determination to unionize and advocate for workers' rights. This project will collect ethnographic data through interviews with the wives and children of the sakadas in order to answer the question, what are the legacies of the sakadas? The purpose of this project is to recount the history of the sakadas and identify the legacies they've created, specifically on the island of Molokai.

Room 1 Wednesday, 1:10 PM

Anthropology

Thesis presentation

Frankie McClure

Advisor: Prof. Rebecca Dobkins

Saving Seed, Cultivating Self

Seed savers preserve both the genetics of the plants that sustain us, but also the culture they are connected to. This ethnographic study aims to understand the meaning behind the work that seed savers do and what they are preserving beyond the physical seeds themselves. Interviews done with seed savers from across multiple industries, along with scholarly research, reveal how incredibly powerful it is to save seeds. Drawing from the theories of practice and agency, I hope to uncover the connections between seeds, identity, and cultural knowledge.

Room 1 Wednesday, 1:30 PM

Anthropology

Thesis presentation

Sydney Louchard

Advisor: Prof. Rebecca Dobkins

Ethical Complexities in Linguistic Revitalization

Indigenous languages have historically been the target of intentional eradication; in recent decades, such endangered languages have become the top candidates for linguistic revitalization projects. Incorporating theoretical frameworks of ethics (O'Reilly), control over education (Thorne et al.; Brayboy), and the reframing and decolonization of resources (Todd), I hope to create an ethnographic analysis of the relationship between linguists and language communities. My research has relied on documenting individual experiences and reviewing linguistic fieldwork and theory, focusing on the history of language loss, generational language learning, and the impact of social structures and colonial systems on culture, language, and individuals.

Room 1 Wednesday, 1:50 PM

Anthropology

Thesis presentation

Jeidah DeZurney

Advisor: Prof. Rebecca Dobkins

Creating Government to Government Cultural Understanding

Tribal liaisons work on improving relationships between government agencies and tribes. Individuals in these positions must keep cultural values and collaborative management principles in mind while negotiating across significant differences. For this study, I conducted multiple interviews with indigenous leaders who have a job or role as tribal liaisons who cooperate with government agencies. I hope to gain insight into the tension that indigenous leaders face when working with government agencies. These findings can help build more effective and beneficial programs for tribal communities.

Room 1 Wednesday, 2:10 PM

SSRD Committee

Student Presentation

Angel Espinoza Robles and Montana Hunter
Student-Led Panel on Diversifying Scholarship

A student panel discussing the intersection of scholarly work at Willamette and the opportunities and challenges to the scholarly/intellectual/creative lives of BIPOC and LGBTQIA+ students. The panel will discuss topics of diversity, inequality, bias, and inclusivity. The goal of the event is to highlight research on marginalized topics and promote diversity.

Room 1 Wednesday, 2:30 PM

SSRD Committee

Faculty & Staff Presentation

David Craig and Juwen Zhang
Student-Faculty Research Report

The panel will explore recent faculty achievements and how their scholarly expertise informs and supports the mentoring of student work. For example, in the last five years, 29 faculty from 10 different departments have been awarded \$7.2 million, which has supported 196 paid student research positions. Faculty leadership in professional networks is an essential source of inspiration, advice, and partnerships contributing to student work. Faculty and students regularly co-author publications, travel together to international conferences and perform together for prestigious audiences. There is no student scholarship without faculty scholarship and our diverse resources of staff, administration, and facilities.

Room 2

Room 2 Wednesday, 9:00 AM

History

Thesis presentation

Leah Bushey
Advisor: Ellen Eisenberg

Ontological and Emotional History: How Fictional Literature Can Influence the Creation of History and Depict Broader Perspectives

The study of history has changed drastically over time, as historians have become increasingly aware of gaps that exist within written academic histories. Reevaluating the ways in which historians think about sources presents an opportunity to create more well-rounded histories. For example, using fictional literature as a source of historical knowledge undoubtedly allows us to expand our understanding of the past because these works depict concepts, such as the emotional experiences of those who lived in the past or the thoughts that people had about the nature of humanity, which is difficult to convey in traditional, academic work.

Room 2 Wednesday, 9:20 AM

History

Thesis presentation

Evan Kohne

Advisor: Ellen Eisenberg

Blanche the Formidable; Navigating Gender and Political Norms in 13th Century France

Blanche of Castile lived in a place where women were expressly excluded from power and in a time when authority was viewed as being closely tied to traits considered to be masculine. When her husband, King Louis VIII, died and her son needed a guide to survive to adulthood, Blanche took up the reigns of government, coming to lead it militarily, politically, and culturally. This exploration of her reign seeks to uncover how Blanche justified her position, where she sourced these explanations in medieval conceptions of gender, and why she was ultimately more successful than queens before and after her.

Room 2 Wednesday, 9:40 AM

History

Thesis presentation

Tatiana Chudy

Advisor: Ellen Eisenberg

Images of Evil: The Transformation of the Tyrant Archetype in Published Texts about Vlad the Impaler and Ivan the Terrible

In the late 15th century, pamphlets circulated in Europe about the tyrannical prince of Wallachia, Vlad Țepeș. Despite the prince being described as the worst of all villains, the pamphlet's character fits the folklore archetype applied to past tyrants. The cycle repeated when the Russian tsar, Ivan IV, filled the role in 17th century texts. Rather than a clear villain, Ivan ranges from morally ambiguous to a model ruler. This work explores the motivations behind the pamphlets' publication and how cultural shifts in early modern Europe helped transform the tyrant character in printed folklore from Vlad Țepeș to Ivan IV.

Room 2 Wednesday, 10:00 AM

History

Thesis presentation

Louis Polcin

Advisor: Robert Chenault

Hasmonean-Roman Relations: Diplomacy, Legitimization and Security in the Anarchic Hellenistic Mediterranean

Scholars have long been puzzled by the treaties between the Roman Republic and the Hasmonean Dynasty of Judea during the second century BCE. The geopolitical, religious and cultural differences between the two states, as well as the enormous power differential between them, has caused skepticism over their mutual cooperation. Yet placed within the larger framework of Hellenistic diplomacy, these treaties become quite sensible. Using Arthur Eckstein's analysis of militarized anarchy and John Ma's examination of Hellenistic diplomatic patterns, I argue that Hasmonean-Roman relations illustrate each regime's geopolitical strategies, as well as the opportunistic employment of cultural values for pragmatic ends.

Room 2 Wednesday, 10:30 AM

History

Thesis presentation

Alejandro Garcia Iboa

Advisor: Ellen Eisenberg

I am illegal: A historical analysis of illegality and worth as it pertains to undocumented immigrants
This project explores the creation of worthiness and illegality as concepts pertaining to undocumented immigrants by following immigration reform from the Immigration Reform and Control Act (IRCA) under Reagan up to the contemporary period. The IRCA may not have created these concepts but the conversation surrounding it and the subsequent immigration reform changed the perception of immigrants for the worse. Undocumented immigrants now are solely defined in public discourse by their master status of illegality. I want to examine the way current immigration legislation/executive orders like DACA and others uphold these dehumanizing concepts.

Room 2 Wednesday, 10:50 AM

History

Thesis presentation

Maddie Campbell

Advisor: Ellen Eisenberg

Reproductive Righteousness: Shelley Shannon & The Army of God's Radical Anti-Abortion Activism
In 1993, Shelley Shannon shot Dr. George Tiller in both arms, attempting to take his life. Tiller was an abortion provider whose Wichita clinic had been the site of frequent anti-abortion protests for years prior. Shannon viewed her attack as a divinely sanctioned intervention designed to prevent the murder of infants through abortion. Sixteen years later, Scott Roeder, a friend of Shannon's through their shared membership in the extreme anti-abortion organization Army of God, fatally shot Tiller, finishing what Shannon started. This paper explores the intersection of religion, violence, and reproductive rights through a biography of Shelley Shannon.

Room 2 Wednesday, 11:10 AM

History

Thesis presentation

Jared Bothel

Advisor: Ellen Eisenberg

African American Baseball

My Thesis is looking at the African American Baseball Leagues when baseball was professionalized. My primary focus is to look at the player's experiences in the west coast league and compare them to the player's experiences in the leagues in the East and Mid-West which were more stable.

Room 2 Wednesday, 11:30 AM

History

Thesis presentation

Eamon Gover

Advisor: Seth Cotlar

The Bugle Call of the South: Southern Attitudes on American Intervention in Europe, 1933-1941

In 1940, four out of every five Americans opposed involvement in the Second World War. However, support for intervention came overwhelmingly from white Southerners, conservative and liberal. Why would they, of all people, be so eager to wage war against Nazi Germany, a state whose racial institutions were directly influenced by those established in the Jim Crow South? What did Black communities in the South have to say about American involvement in Europe? And how did President Roosevelt respond to and use the support of Southerners? This paper will reveal the contradictions, conflicts, and consequences of interventionism in the South.

Room 2 Wednesday, 11:50 AM

History

Thesis presentation

Zoe Chittick

Advisor: Seth Cotlar

A Land Widowed by Providence: How Colonial Settlers Understood the Genocide of Indigenous Populations by Disease in 17th and 18th Century New England

In the late 17th and early 18th centuries, New England colonists were witness to countless epidemics of infectious diseases that appeared to cause more damage to the local Native American populations than their own, and over time, the colonists' understanding of disease contributed to the construction of racial identity in North America. Focusing on New England as a window into the greater colonial sentiment, this investigation intends to contribute to the discussion about the usefulness of the term genocide to describe the mass death of the Indigenous Peoples of North America.

Room 2 Wednesday, 1:10 PM

History

Thesis presentation

India Rockey

Advisor: Wendy Peterson

To the Window, To the Wall: Constructions of Gender in the Medieval Anchorhold

The 12th century monastic rule for anchorites urges: "My dear sisters, love your windows as little as you can." Anchorites were usually women who entered monastic life by voluntarily being enclosed within a small cell. In a religious culture that so valued women's physical enclosure, the window of a medieval anchorhold was an uncomfortable space. Applying political theory about walls and enclosure, windows emerge as sites of discourse about "women's nature," sight, and erotic transgression. My project explores why windows were considered problematic spaces for an anchoress and how authorities attempted to mitigate the window's subversive capabilities.

Room 2 Wednesday, 1:30 PM

History

Thesis presentation

Olivia Sanchez

Advisor: William Smaldone

Antisemitism in West and East Germany and Poland in the Post Second World War Era

How did antisemitism survive and evolve in West and East Germany and Poland between 1945 and

1970 and how did its development compare in the three nations? What factors contributed to the survival of antisemitism and what were the various forms it took? Using the approaches of social and political history, I will examine how antisemitism manifested itself and how the public and the state reacted to it. I am consulting a variety of primary sources including memoirs, speeches, and reports, as well as a wide range of secondary works.

Room 2 Wednesday, 1:50 PM

History

Thesis presentation

Sirena Rodriguez-Kobayashi

Advisor: Ellen Eisenberg

Hildegard: A look into the middle ages through the letters and visions of a prolific scholar and nun. Hildegard was one of the most influential women of the middle ages and her influence has been so great that centuries later her impact remains clear. This paper examines the life and works of Hildegard with an emphasis on her holistic approach through her contributions to science, music, and medicine. Her visions and letters contributed to our modern understanding of her influence and further emphasis will be placed on these aspects of her life. This paper seeks to explore and reveal how Hildegard's letters and visions can illuminate our understanding of the middle ages, gender dynamics, and holistic approaches to learning.

Room 3

Room 3 Wednesday, 9:00 AM

Sociology

Thesis presentation

Eleanor Timmermann

Advisor: Jonneke Koomen

"Just staying alive": Learning in College During COVID-19

COVID-19 has dramatically altered how we learn, how we teach, and how we understand academic success. This is why understanding the experiences of college students learning during a pandemic is essential. My research asks how COVID-19 has impacted habits of success for final year students in the PNW within new structural learning environments. Based on the experiences of eight final year students in the PNW, I discuss changes in study habits, concentration, self care, and stress, while also celebrating the resiliency and support students find in their social networks in a time of crisis.

Room 3 Wednesday, 9:20 AM

Sociology

Thesis presentation

Ellen Blezinsky

Advisor: Jonneke Koomen

Bridge Over Troubled Water: Undocumented Activists' Pursuit for Education in Oregon

Undocumented immigrants are barred from several facets of the American Dream, including the pursuit of higher education. Despite federal restrictions, some states have created state legislation

granting tuition equity for undocumented students thanks to the work of undocumented activists (UndocuActivists). Through a content analysis of the submitted testimonials and ten qualitative, semi-structured interviews with UndocuActivists (undocumented activists) and UndocuAllies (allies to the undocumented community), I discuss the strategies and tactics UndocuActivists and UndocuAllies used in order to pass Oregon's four Tuition Equity laws. I center the voices and experiences of UndocuActivists and draw on critical ethnic studies.

Room 3 Wednesday, 9:40 AM

Sociology

Thesis presentation

Karina Hernandez Ziranda

Advisor: Jonneke Koomen

Invisible work(ers): The Hidden Work of Public School Custodians in Salem, Oregon

Do we really understand custodial work? My research aims to unveil the unseen custodial work. I interviewed seven public school custodians in Salem, Oregon twice who talked about their experiences. This shaped my research concepts: invisible work which is the informal and hidden work they do, gender, as there's a disproportionate gender demographic, and job satisfaction because their experiences of gender and invisible work among other factors influence their fulfillment in their position. My goal is to challenge and break down the misconceptions about custodial work. I hope that my research will empower those who are in the cleaning industry.

Room 3 Wednesday, 10:00 AM

Sociology

Thesis presentation

Micah Fleming

Advisor: Jonneke Koomen

Mentoring Aspiring Youth: Using Basketball as a Vehicle to Reach Opportunities

Many Black and Latinx teens want to help their families while also striving for their professional and educational goals. However, many lack support and resources. This is why understanding the experiences of aspiring youth is important. My research examines the roles of people who mentor aspiring youth. I interviewed members of a community who seem to be successful in helping youth move into directions that are beneficial to their goals, specifically basketball trainers in the Sacramento area. I ask how mentors build long-term supportive relationships and healthy community with the athletes. I also explore how athletes perceive their own goals.

Room 3 Wednesday, 10:30 AM

Sociology

Thesis presentation

Ryan Whithorn

Advisor: Jonneke Koomen

"Fastballs and Fitting In": The Cultural Assimilation Experiences For Latin American Ballplayers in the United States.

Being a professional baseball player in Major League Baseball is not easy, so being able to do so, while being from a foreign country is nothing short of remarkable. MLB is filled with many Latin

American players who have immigrated here for a chance at athletic stardom. My research asks how the experiences of domestic players and international players differ on and off the field. Drawing on semi-structured interviews with eight MLB players, I discuss the cultural assimilation process, barriers such as language and socioeconomic, and the challenges that the public doesn't hear about.

Room 3 Wednesday, 10:50 AM

Sociology

Thesis presentation

Gabriela Santoyo Gutierrez

Advisor: Jonneke Koomen

Childbirth Experiences for Latina Mothers in Oregon

Women of color, including Latinx mothers, face barriers to the healthcare system. My research investigates how Latina mothers experience childbirth in Salem, Oregon. I draw on my in-depth, semi-structured interviews with Latina mothers who described their interactions with hospital staff, familial support, and perceptions of choice. My goal is to empower Latina mothers by centering their voices and experiences in discussions of reproductive justice and creating a space for mothers to feel heard.

Room 3 Wednesday, 11:10 AM

Sociology

Thesis presentation

Erika Ortiz Alvarez

Advisor: Jonneke Koomen

A Gift and A Burden: Being The Language Broker In An Immigrant Household

Children who come to the United States are often forced to adapt to a new environment and culture rapidly. Immigrant children face a number of obstacles during the process of adapting to a foreign culture and language, especially when taking on the role of a translator or 'Language Broker' at a very young age. Drawing on semi-structured interviews with young adults in the Willamette Valley, I explore the lasting impact language brokering might have had on immigrant youth identity and family dynamics. I find that language brokering profoundly shapes identity formation among immigrant children.

Room 3 Wednesday, 11:30 AM

Sociology

Thesis presentation

Claire Mathews-Lingen

Advisor: Jonneke Koomen

Queer Identity and the Queer Family: Growing Up LGBTQ+

My Thesis asks how queer identity is formed and at times supported within the context of a queer family. Queer families present unique contexts for the formation of queer identity with particular opportunities, pressures, and considerations. I draw on queer theory and previous research on queer families. I interviewed queer adult children of queer parents who grew up in the Minneapolis and St. Paul metro area of Minnesota about their identity journeys. I study how their experiences growing up in a queer family impacted their own process with queer identity.

Room 3 Wednesday, 11:50 AM

Sociology

Thesis presentation

Bela Rios Flamenco, Jordan Hitchcock, Jack Moothart, Amber Nakata, Amanda Patton, Morgan Rivest

Advisor: Jonneke Koomen

HELP! Thesis in a Pandemic

This panel aims to provide insight into the Thesis process during multiple crises. We will share and discuss personal experiences, offer insight, and answer questions. We will be covering everything from finding participants, conducting interviews over zoom, time management/navigating extracurriculars, staying motivated, to any other questions students may have. This panel will be aimed primarily at Sociology students, but will be open to students of all majors as well.

Room 4

Room 4 Wednesday, 9:00 AM

Chemistry

Thesis presentation

Elizabeth Larson

Advisor: Cooper Battle

Dual-Loop Quadruplex Folding and Stability as a Function of Stem Length, Loop Length & Coordinating Cation

Quadruplexes are uniquely-folded structures composed of four intertwined strands of DNA. Here, the folding and unfolding pathways of quadruplex-forming DNA sequences with two long unstructured "loop" regions are investigated as a function of coordinating cation and several structural parameters (loop and stem length). These folding behavior and stability assessments refine future sensor design and contribute to the growing body of research illuminating sequence-related effects upon folding behavior in G-quadruplex systems. Quantitative stability studies are accompanied by a three-dimensional installation, modelling folded forms and intermediates through glass sculpture that will be displayed from 04/12-05/12 in the art building.

Room 4 Wednesday, 9:20 AM

Chemistry

Thesis presentation

Keaton Beckmann

Advisor: Andrew Duncan

Antioxidant Activity Determination of Poly (Acetyl, Arginyl) Glucosamine (PAAG)-Caffeic Acid Derivative Conjugates via DPPH Assays

Reactive Oxygen Species (ROS) have the potential to damage our biochemical systems through oxidative stress, which has contributions to cancer, COPD and other DNA damages. My research aims to graft the antioxidant caffeic acid (CA) onto a water-soluble polymer PAAG to target and eliminate different ROS. Measurement of antioxidant effectivity was tested via an assay featuring a stable free radical diphenyl picryl hydrazyl (DPPH). Further investigation was also done on the mechanism of attaching CA onto PAAG through NMR analysis.

Room 4 Wednesday, 9:40 AM

Chemistry

Thesis presentation

Lucy Cort

Advisor: Sarah Kirk

SynThesis of Novel Tetracaine Derivative for Treatment of Retinitis Pigmentosa

Retinitis Pigmentosa (RP) is a genetically inherited eye disease that causes loss of vision over time. The loss of vision is caused by photoreceptor cell death that results from ion channels becoming “stuck” open, leading to an influx of ions in the cell. My senior research is focused on refining the structure of a molecule called tetracaine to optimize its ability to block unregulated ion channels as a result of RP in order to slow the progression of this disease. Specifically, I have modified the tail region to be longer (6 carbons instead of 4) and thus more hydrophobic to allow the molecule to interact more with hydrophobic regions of the channel pore without compromising overall water solubility of the molecule. I also added a chloro substituent on the aromatic ring meta to the ester because previous studies have shown the chloro group to improve channel binding affinity.

Room 4 Wednesday, 10:00 AM

Chemistry

Thesis presentation

Daniel Fang

Advisor: Sarah Kirk

SynThesis of Nitro and Fluorine Tetracaine Derivatives for the Treatment of Retinitis Pigmentosa

Retinitis Pigmentosa (RP) is a degenerative eye disease that affects roughly 1 in 4000 people across the US and can lead to complete loss of vision. In individuals with RP, normally functioning pores known as cyclic nucleotide gated (CNG) ion channels become unregulated. In order to treat this condition, the Kirk lab seeks to synthesize a more optimized and specific form of a tetracaine, which has been shown to be a moderate blocker for CNG channels. By altering the size of the original tetracaine molecule by increasing the length of the carbon tail as well as expanding the chemical makeup of the inner tetracaine structure by incorporating nitro and fluorine substituents, we aim to effectively treat the condition with a drug that is also efficiently delivered via eye drops.

Room 4 Wednesday, 10:30 AM

Chemistry

Thesis presentation

Montana Hunter

Advisor: Chuck Williamson

Cosmetotoxicity: Evaluating Occupational Chemical Exposure Using Silicone Wristbands and Necklaces

This study used silicone accessories to sample cosmetologists’ chemical exposures at hair salons on O’ahu, Hawai’i, using gas chromatography/mass spectrometry (GC-MS). Cosmetologists ($n=22$) wore silicone wristbands and necklaces for seven workdays. Once recovered, organic chemicals were extracted from silicone accessories using ethyl acetate and run through a GC-MS for quantitative and qualitative analysis. Chemicals detected included several compounds commonly found in cosmetic products used by hairdressers as well as health hazards such as TXIB and versalide. The versatility of the silicone accessories in evaluating chemical exposures was also demonstrated by considering a second population, students in an organic chemistry lab.

Room 4 Wednesday, 10:50 AM
Chemistry
Thesis presentation

Miguel Alonso-Rodriguez

Advisor: Cooper Battle

Optimizing Intracellular Delivery of Biomimetic Sensors

The Battle Lab works with designing DNA-based sensors, formed from “quadruplex” structures of four intertwining strands, capable of detecting cancer associated micro-RNA. My specific project is focused on delivering a specific QMB into cancer cells for further study. This includes testing the stability of this folded DNA structure in an environment that better represents the inside and outside of a cell: tissue culture media and fetal blood serum. The overall behavior of this sensor, in the absence or presence of its target, is determined by fluorescence studies.

Room 4 Wednesday, 11:10 AM
Chemistry
Thesis presentation

Robin Pashek

Advisor: Dr. Andrew Duncan

An investigation into the synThesis and functionalization of an NHS ester of trans-ferulic acid derivative to poly (acetyl, arginyl) glucosamine (PAAG)

Primary objectives within the Duncan laboratory have been aimed at covalently attaching insoluble small molecules to the novel biopolymer, poly (acetyl, arginyl) glucosamine (PAAG) in order to solubilize these compounds under physiological conditions. My research is aimed at synthesizing the reactive N-Hydroxysuccinimide (NHS) ester form of the antioxidant trans-ferulic acid (FA) and functionalizing it to PAAG under various synthetic conditions. In the end, an investigation of the antioxidant activity of the PAAG-FA product will elucidate the functionality of PAAG as a functional component of physiological antioxidant drug delivery systems.

Room 4 Wednesday, 11:30 AM
Chemistry
Thesis presentation

Alexander Sanchez

Advisor: Scott Meyer

Optimization of β -lactamase Sequence Enabled Reassembly System for Detection of Cisplatin Damaged DNA

We synthesized a split protein biosensor for the detection of damaged DNA caused by chemotherapeutic drugs (e.g., cisplatin). The proteins' activities were then analyzed by running nitrocefin assays. To test our biosensor, we also synthesized, purified and characterized cisplatin damaged DNA.

Room 4 Wednesday, 11:50 AM
Chemistry
Thesis presentation
Helena Wetzel

Advisor: Cooper Battle

Analyzing the Folding and Unfolding Thermodynamics of DNA Quadruplexes with Long Central Loops

The Battle lab uses quadruplex DNA structures as sensors to detect miRNA in cancer, but our understanding of what makes quadruplexes stable or unstable is limited. Currently, we measure the stability of these quadruplexes using their melting temperature. This is useful for broad comparisons between structures, but not comparisons at a specific temperature, like in the human body. My project looks to evaluate more informative thermodynamic parameters (enthalpy, entropy, and Gibbs Free Energy) to look for trends associated with specific structural changes in quadruplexes. Specifically, I am comparing the multiple methods of analysis that derive these values.

Room 4 Wednesday 1:10 PM

Cinema Studies

Thesis presentation

Andrew Rosebrook

Advisor: Jeanne Clark

The Edge of Greatness: She-Ra Princesses of Power and Our Construction of Evil and Empire

In 2017 American cartoonist Noelle Stevenson was hired by Dreamworks Animation and Netflix to reboot the short lived 80's children's cartoon She-Ra Princess of Power. 2018's She-Ra Princesses of Power radically reimagined the original show from the lens of under-represented creators. It is a testament to the massive advancements in network animation and an indication of the medium's growing discursive nature. It challenges its viewers to see past our common stereotypes of evil to think critically about our construction of fascism in the media and the individuals living under and adjacent to it.

Room 5

Room 5 Wednesday, 9:00 AM

Music

Ensemble: University Chamber Choir

Title: *Miserere mei, Deus* by Gregorio Allegri

Faculty: Christopher Engbretson

Room 5 Wednesday, 9:20 AM

Music

Ensemble: String Quintet

Title: *String Quintet in C Major, D. 956*, IV. Allegretto by Franz Schubert

Faculty: Jean-David Coen

Room 5 Wednesday, 9:40 AM

Music

Ensemble: Woodwind Quintet

Title: *Wind Quintet in G minor*, I. Allegro con moto by Paul Taffanel (1844-1908)

Faculty: Hector Aguero

Room 5 Wednesday, 10:00 AM

Music

Ensemble: University Chamber Orchestra

Title: *Lyric for Strings* by George Walker

Faculty: Hector Aguero

Room 5 Wednesday, 10:30 AM

Music

Ensemble: Dramatic Vocal Arts

Title: excerpts from Marc Blitzstein's *The Cradle Will Rock* and Blitzstein's song *Stay in my arms*

Faculty: Katherine Skovira

Room 5 Wednesday, 10:50 AM

Music

Ensemble: Jazz Collective

Title: *Rumble* by Justin Morell

Soloists: Aidan Gallagher, trombone & Eamon Gover, alto sax

Faculty: James Miley

Room 6

Room 6 Wednesday, 9:00 AM

Computer Science

Thesis presentation

Mason McGrail

Advisor: Fritz Ruehr

Phonetic Transcription and Sign Languages: Developing a New System

Sign languages have historically been insufficiently documented for a number of reasons, one of the greatest being difficulties in transcribing them. This project aims to make a phonetic transcription system for sign languages based on the International Phonetic Alphabet, which is to be more accessible, intuitive, and computer-friendly than the most commonly used systems of transcription today. How this system works will be demonstrated with a human avatar that animates in response to phonetic text input, similar to text-to-speech for oral languages. Examples of words in American Sign Language will be shown, though the system itself is language-agnostic.

Room 6 Wednesday, 9:20 AM

Computer Science

Thesis presentation

Izzy Pfander

Advisor: Fritz Ruehr

Pedagogical Interface for cGENIE Earth System Model

The cGENIE model is an intermediate complexity Earth System Model which includes atmosphere, ocean, and biogeochemistry components. The model has been used in a wide range of geoscience research from climate to ocean plankton ecology topics. To make this powerful tool more accessible to undergraduates, I am creating a self-documented pedagogical user interface for visualizing model output. The interface will include explanations of parameters, functions, and computation behind cGENIE. After completion, this project will be available for Willamette students and on GitHub for a wider audience to use.

Room 6 Wednesday, 9:40 AM

Computer Science

Thesis presentation

Jason Snare

Advisor: Fritz Ruehr

A Machine Learning Web-Application for NBA Wagers

In 2018 the United States Supreme Court struck down a federal ban on commercial sports betting, creating a new industry worth over \$150 billion annually. This project aims to help users identify high value wagers on NBA games. The project leverages deep learning networks to model historic NBA data and predict the outcome of any given matchup. Additionally, the project explores full-stack software development with a web-based user interface to interact with the models and dynamically visualize current team statistics and betting information.

Room 6 Wednesday, 10:00 AM

Computer Science

Thesis presentation

David Vitez

Advisor: Fritz Ruehr

Building a Reusable Game Engine Library

Many video games, regardless of genre, require a similar organizational and mechanical structure to their internal workings. A "game engine" attempts to provide much of that structure in a flexible ready-to-go form, leaving room for customization to suit the needs of a particular game.

Specifically, game engines are software libraries providing frameworks which programmers and designers can use to create multimedia applications. These libraries typically provide management of graphics, sound and music, simulations, and artificial intelligence.

In this report I describe my own efforts to build a small cross platform game engine using the SDL2 (Simple DirectMedia Layer) library.

Room 6 Wednesday, 10:30 AM

Computer Science

Thesis presentation

Jordan Samuel

Advisor: Fritz Ruehr

Learning the Android operating system through game development

Android is the market leader among smartphone operating systems and is a vibrant platform for development of all types of programs. It uses a complex implementation of Linux and Java and has many unique quirks. This project demonstrates a playable game prototype coded in Android's native language without the use of external engines or graphics libraries. This involves the use of custom rendering techniques and low-level control structures that show an in-depth understanding of how the OS works.

Room 6 Wednesday, 10:50 AM

Computer Science

Thesis presentation

Zachary Haroian

Advisor: Fritz Ruehr

Implementing UI & Databases in Java: MTG Deckbuilder

This project explores the real-world implementation strategies used in developing a production-level Java program. The end result is a program that assists users in creating Magic: The Gathering decks. Techniques include database management, user interface design, image caching, and accessibility API implementation.

Room 6 Wednesday, 11:10 AM

Computer Science

Thesis presentation

Adam Bolen

Advisor: Fritz Ruehr

Machine Learning and a Puzzle Game

This project seeks first to implement a falling tile puzzle game and explore machine learning methods in pursuit of optimal play. During implementation, issues of graphical display, action listening, threading, and concurrent data access in Java are addressed. Upon implementation the pursuit shifts to solving the completed game. Using both reinforcement and supervised learning models, the program employs risk assessment methods and evolutionary algorithms to balance evaluation heuristics in aiming to simulate optimal play.

Room 6 Wednesday, 11:30 AM

Computer Science

Thesis presentation

Devin Otto

Advisor: Fritz Ruehr

Creating a 2D Game in Unity's Game Engine

Game design, sound design and visual arts are just some of the important elements that exist within

games that have the potential to bring so much expression of one's creativity to the table and bring joy to others. The focus of this project is to fabricate a 2D video game, utilizing the game engine "Unity". This game will employ common game mechanics like shooting, movement, and enemies, in order to create a piece of work that is both challenging to construct, yet entertaining for a player.

Room 6 Wednesday, 11:50 AM

Computer Science

Thesis presentation

Oscar Wecker

Advisor: Fritz Ruehr

Art through new medium: Motion capture and digital puppetry

This project aims to investigate the potential of the Kinect motion sensor in regards to performance art. Through the use of python and a wrapper library, we are able to motion track images across various points on the body. By doing so, we create digital puppets; clunky beings who exist only on the screen and are guided by the movement of the performer, the interaction of the audience and our program. This project will explore the potential use of these digital puppets as an avenue to combine traditionally a performance based art and the newer technology of motion capture.

Room 6 Wednesday, 1:10 PM

Computer Science

Thesis presentation

Daniel Smith

Advisor: Fritz Ruehr

Guido: Creating a mobile friendly platform for facial recognition masking

Facial recognition is a controversial yet pervasive technology in our society. In this presentation, I will introduce Guido, a platform, based on the Fawkes tool, that allows for pictures taken on smartphones to be obscured from facial recognition algorithms.

Room 6 Wednesday, 1:30 PM

Data Science

Non-Thesis presentation

Jason Snare

Advisor: Haiyan Cheng

Exploring Social Influence Maximization through Graph Theory and Advanced Data Visualization

The growth of social networks has allowed information to spread rapidly through a population, in response marketers have used this to efficiently spread information about their products. The social influence maximization (SIM) problem finds seed nodes to initialize information in order to maximize its spread. This initial stage of the project explored different techniques to transform social network datasets into graphs, and to generate and visualize random networks. Using metrics common to graph theory, we ensured that the topography of our generated social networks and our real social networks were similar, with the goal of aiding future research into the SIM problem.

Room 7

Room 7 Wednesday, 9:00 AM

English

Thesis presentation

Claire Alongi

Advisor: Scott Nadelson

The End of My Shark Days

My collection of short fiction, "The End of My Shark Days", is an exploration of loss (of loved ones, of self), hauntings (both literal and metaphorical), and liminal spaces that plague people throughout their lives. A high-schooler slowly turning into a shark, a washed out medium stuck with the ghost of a founding father, and a young girl chronicling her sister's journey after being struck by lightning are among the stories that exist in this uncanny place between reality and the fantastical.

Room 7 Wednesday, 9:20 AM

English

Thesis presentation

Ryleigh Norgrove

Advisor: Scott Nadelson

Foreground - A Creative Writing Thesis

My project, "Foreground," is a collection of nonfiction essays exploring impersonations, expectations, and defining moments. It blends photography, poetry and interview to articulate the complexities of personal narration, while maintaining a tight grasp on the ethical obligations of traditional news reporting. The stories range from personal to political, homegrown to world-wide, chronicling, among others, an encounter with a fellow climber in the Alps, a stowaway on an international sailing race, and a profile on Ireland's longest running Johnny Cash impersonator.

Room 7 Wednesday, 9:40 AM

English

Thesis presentation

Piper Lehr

Advisor: Scott Nadelson

What Jacob Witnessed

My project, "What Jacob Witnessed," is an LGBT+ coming of age script. It follows the story of an atheist (Drew Cook) and a Jehovah's Witness (Jacob Moore) who get paired together for a school project and end up falling in love with each other. Not only does my script depict the tension between religion and sexuality, but it also discusses the topic of how a broken home life can affect a child, as Jacob's parents are helicopter parents and Drew's are never around.

Room 7 Wednesday, 10:00 AM

English

Thesis presentation

Mackenzie August-McClure

Advisor: Scott Nadelson

Black as in Lonely: A Creative Writing Thesis

My project, "Black as in Lonely," is a collection of short stories and prose poems that revolve around the unifying theme of dissecting my own relationships with Blackness and mental health. These creative pieces all serve to function as working examples of personal explorations of self and identity. The subjects of focus covered in this project include: death and grief, isolation, and childhood trauma. These themes are presented variously in both fictionalized and autobiographical versions to create specific effects.

Room 7 Wednesday, 10:30 AM

English

Thesis presentation

Miles Mitchell

Advisor: Scott Nadelson

Forgive Me Father

My novel, "Forgive Me Father," dives into the perversion of religion and the effects it can take on a young person as they enter into adulthood. It follows the perspective and experience of a serial killer's captive who is being punished for his sexuality and lifestyle as he tries to understand his abductor. Their clash of religious perspectives stems from similar upbringings, and highlights the different paths an individual may find themselves on. Both are on opposing missions of God, attempting to save a soul from damnation.

Room 7 Wednesday, 10:50 PM

English

Thesis presentation

Isabella Richter de Medeiros

Advisor: Scott Nadelson

Camp Venus

This project is an excerpt from an untitled feature-length screenplay about Syd, 12 year old Latinx kid who, feeling excluded from her disingenuous feminist summer camp, finds a mentor in CJ, her lesbian camp counselor. Syd's coming of age is punctuated with elements of magical realism; her body dysphoria, gender and race-related social anxieties, and frustration with the adults in her life all manifest externally. The film explores how gayness and gender nonconformity, particularly in a Latinx context, can exist simultaneously with childhood. Ultimately, Syd's loss of innocence isn't a loss at all, but a gain in understanding of herself.

Room 8

Room 8 Wednesday, 9:00 AM

Women's and Gender Studies

Thesis presentation

Shelby Fenn

Advisor: Leslie Dunlap

Raving of Speculation: Literally and Figuratively Imagining Futures

This project is working to create a dialectic relationship between the literary, filmic, and theoretical genre of science fiction and my personal experiences building and becoming a part of communities that exemplify my idealized future. I aim to challenge assumptions of escapism, adolescence, and euphoria by situating raves as enactments of speculative fiction. Drawing from my interactions with and within the San Francisco rave scene, I argue that by rendering what is “strange” to be familiar and what is “familiar” to be strange, the utility of sci-fi media can foster an unlimited imagination to further transform academic, political, and social spaces.

Room 8 Wednesday, 9:10 AM

Women's and Gender Studies

Thesis presentation

Faye Mearns

Advisor: Leslie Dunlap

Vulnerability and Accountability: Exploring the Boundaries between Denial and Consent

It is no longer enough to think of consent as merely asking for permission. In order for someone to fully consent, without a shadow of coercion looming over them, we must address the ways in which individuals are being pressured by their circumstances to renegotiate their personal boundaries, including pressure by institutions. Once renegotiating boundaries becomes a habit, as opposed to a singular instance, one's recognition of their boundaries and ability to establish them is threatened. This is an investigation of personal boundaries, a discussion of denial as a function of capitalist and race socialization, and an exploration of accountability.

Room 8 Wednesday, 9:20 AM

Women's and Gender Studies

Thesis presentation

Haley Paisley

Advisor: Leslie Dunlap

Karens and Covid-19: A Case Study of White Femininity

White women across the U.S. have come to cope with the Covid-19 pandemic by doing what they do best: throwing public temper tantrums and demanding to speak to the manager. As tempting as it may be to label these spectacular displays as irrational or illogical, these meltdowns are precipitated by a gender, class and racial identity crisis which is not unique to the covid-19 pandemic but is certainly exacerbated by it. Through theory and analysis of these meltdowns, this Thesis argues that these meltdowns are the logical and predictable result of white women's allegiance to white supremacy.

Room 8 Wednesday, 9:30 AM

Women's and Gender Studies

Thesis presentation

Serena Richard

Advisor: Leslie Dunlap

“Mourning the Death of the Life I Imagined Possible”?: Deciding To Have Children in the Midst of a Climate Crisis

The climate crisis has become a reproductive crisis. Many climate concerned people have begun to question: do I want to bring children into a dying world? This discussion is born through the merging of intimate decisions and desires with scientific, physical, and political structures and entities. This paper, and the personal testimonies it offers, looks at interpersonal, existential effects of anticipating extinction on an individual, embodied level: not to place responsibility on individuals for climate solutions, but to understand the crisis in intimate, personal terms—the way people are experiencing it as they plan for themselves and the future.

Room 8 Wednesday, 9:40 AM

Women's and Gender Studies

Thesis presentation

Sweden Smith

Advisor: Leslie Dunlap

The Dynamics of Pregnancy: an Analysis of Black Mothers Agency, Pain, and Consent in the era of COVID-19

The United States has an extraordinarily high maternal mortality rate compared to other industrialized countries at 17.4 per 100,000 mothers passing away in 2018. This high rate is sometimes attributed to the extraordinarily high maternal mortality rate Black women face. We can start to reconceptualize how to care for Black women by first trying to understand their experiences. This paper is an analysis of Black mothers' experiences of agency, pain, and consent in their pregnancy and how COVID-19 has impacted these disparities. Black women's first-hand experiences of pregnancy serve as primary sources and the basis of analysis.

Room 8 Wednesday, 9:50 AM

Women's and Gender Studies

Thesis presentation

Jaz Williams

Advisor: Leslie Dunlap

Observing [non]Conformity

Humans spend ample time confining themselves into the boxes that others scribble onto their life's path. In other words, we conform to what the outer world says is true, is truth, is absolute, finite, unbreakable reality. Some of us seek resistance to that narrative. We actively or inactively nonconform to our alternate route to our own truth. I ask, can these oppositions coexist happily? Are we the creators or resisters to our life experience?

Room 8 Wednesday, 10:30 AM

Physics

Thesis presentation

Tara Hickman

Advisors: Michaela Kleinert and David Altman

Measuring and Optimizing MG-63 Osteosarcoma Osseointegration and Proliferation on Laser Ablated Medical-Grade Titanium

We modified pieces of Ti64AlV medical-grade titanium using laser ablation, to optimize

osseointegration. We predict that these modifications of titanium will lead to a shorter time for recovery and higher bone to implant contact rate for titanium implants. The MG-63 osteosarcoma cell line was chosen to measure cell adhesion to a surface that is altered using the Nd:YVO₄ picosecond pulsed laser. The hydrophobicity of the different patterns will be determined by measurements of the dynamic contact angles of a water droplet on the surface. Fluorescently dyed cells will be grown on ablated samples and counted using a fluorescence microscope.

Room 8 Wednesday, 10:50 AM

Physics

Thesis presentation

Hannah Rarick

Advisor: Prof. Daniel Borrero

Scaling of Finite Amplitude Instability Thresholds in Taylor-Couette Flow

Turbulent flow is an unpredictable and poorly understood phenomenon in fluid dynamics. Subcritical transitions to turbulence exhibit direct transitions to severe spatiotemporal complexity. In order to achieve turbulence through a subcritical transition, finite amplitude perturbations are required to shift from a laminar to turbulent state. The smallest perturbation size to achieve turbulence is predicted to scale like a power law in Reynolds number with exponents ranging from -4 to -1 depending on the hypothesized transition mechanisms. By varying only the outer cylinder Reynolds number, the critical exponent can be calculated to determine which proposed transition mechanisms are correct.

Room 8 Wednesday, 11:10 AM

Physics

Thesis presentation

Jadrian Teunissen

Advisor: Prof. Michaela Kleinert

Using Python to Model Atom Light Interaction

When a photon interacts with an atom, there is a probability that it can be absorbed and excite the atom, or, if the atom is already excited, that the atom releases a photon through stimulated emission. In my project we calculate this probability for two- and three-level atoms. While atoms have more than just three states, we are mainly interested in rubidium, which, to first order, can be approximated as a three-level atom. Additionally, the computation time increases quadratically with the number of levels that are included, making it less and less feasible to include more and more levels.

Room 8 Wednesday, 11:30 AM

Physics

Thesis presentation

Peter Strobel

Advisor: Richard Watkins

Estimating Peculiar Velocities from Redshift and Distance Modulus Measurements

The velocities of galaxies are useful tools in analyzing the structure of large-scale mass distribution in the cosmos. However, determining them can be difficult for multiple reasons. We can measure the velocity of galaxies through the Doppler shift of light; however, this is complicated by the fact that light also has its wavelength stretched by the expansion of the Universe, resulting in a "redshift." Thus

to extract the velocity, we must also know the galaxy's distance, quantified by the distance modulus, which typically has a large error that must be accounted for correctly. In this Thesis, I construct an estimator that, when given redshift and distance modulus values, will account for measurement noise and accurately calculate the distance and velocity of a concerned galaxy.

Room 9

Room 9 Wednesday, 9:20 AM

Environmental Science

Thesis presentation

DeLee, Grace

Advisor: Joe Bowersox

Environmental Gentrification: A Case Study Between New York City and Detroit

This paper studies how environmental racism and redlining have shaped inequality between two cities and how attempts at making these cities greener have led to "green gentrification." It analyzes why environmental gentrification happens and how to combat it. It focuses on the current economic growth of Detroit, an area emerging a hotspot for millennials, and historically multicultural communities in New York, facing new challenges as climate change worsens, leading to more flooding and higher temperatures. My research finds that both case studies conclude that city planning must involve the most vulnerable populations and focus on serving a city for public health reasons and not economic gain.

Room 9 Wednesday, 9:40 AM

Environmental Science

poster presentation

Renaë Wilkinson

Advisor: Joe Bowersox

Connections between socioeconomic status and greenspace distribution in Austin, Texas

Greenspace is unevenly spatially distributed between communities of different socioeconomic statuses in urban areas. I researched the correlations between socioeconomic factors and canopy cover in order to determine the scope of environmental inequity in Austin, Texas (Travis County). Using I-Tree, census data, and previous studies, I found connections between income and greenspace availability, a pattern of redlining, and potential impacts of green gentrification. The higher income bracket had the highest percent canopy cover, and the middle income bracket had the lowest percent canopy cover. However, east Austin, an area of lower income, showed the highest overall need for greenspace.

Room 9 Wednesday, 10:00 AM

Environmental Science

Non-Thesis presentation

Madeleine Hooker

Advisor: Joe Bowersox

The Future of Zena Forest Farm: A Comparison of Varying Harvest Rotation & Thinning Practice Scenarios

What will Zena Forest Farm look like over the next century? How would varying harvest rotations and thinning practices impact the ecosystem & economic services that Zena provides? Utilizing Ecotrust's Forest Planner (2013) and four stands' data, this research visualizes & compares projected management scenarios at Zena. The data suggest that rotational thinning on the mixed woodland stand would maximize carbon sequestration, maintain the lowest acreage of high fire hazard, and create desirable biodiversity outcomes. Further research is needed in strategies, like carbon storage, to offset financial costs and alternative treatments that foster ecological resilience at Zena Forest Farm.

Room 9 Wednesday, 10:30 AM

Environmental Science

Thesis presentation

Izzy Pfander

Advisor: Katja Meyer

Visualizing Ocean Acidification during the End-Permian Mass Extinction

The end-Permian mass extinction occurred ~250 million years ago, causing the extinction of over 80% of marine species. The extinction is coeval with the release of volcanic CO₂, but the role of resulting ocean acidification in the extinction remains unclear. As part of a project that compares geologic evidence and modeled scenarios, I am using the cGENIE Earth-system model to examine the effects of atmospheric carbon injection on ocean chemistry. I am plotting ocean pH, dissolved inorganic carbon, and aragonite saturation state to show how the carbon injection causing the extinction can correspond to ocean acidification in space and time.

Room 9 Wednesday, 10:50 AM

Environmental Science

Thesis presentation

Aidan Smith-Vail

Advisor: Melinda Butterworth

The symbolism and meaning of lawns at Willamette University

Over the last sixty years a strong body of literature has culminated to show that lawns and the way we care for them are unsustainable and most often harmful to the environment, and thus also to humans. My project investigates the larger question of why we have lawns at Willamette, but more specifically attempts to understand what lawns mean to the Willamette community, what place they hold in our lives, and if they hold specific any symbolisms that we can identify and understand better. My research addresses these questions through surveys and interviews with Willamette community members.

Room 9 Wednesday, 11:10 AM

Environmental Science

Non-Thesis presentation

Cullen Burke, Leila Fischer, Grace Shiffrin, Rose Wilkinson

Advisors: Karen Arabas, Joe Bowersox, Dave Craig

The 2021 Oak Salvage Project

The February 2021 ice storm killed numerous Oregon white oaks, a critical biodiversity tree in urban areas and a fast-disappearing component of the native oak savanna managed by the native Kalapuyans. In partnership with the City of Salem and hundreds of local citizens, we are salvaging

cross-sections from downed oaks. The growth rings will enable us to learn about the climate conditions of the past 300 years and to investigate how site conditions contributed to mortality. We will provide an update on the project and discuss research opportunities for students interested in tree rings, urban forestry/ecology, and oral histories.

Room 10

Room 10 Wednesday, 10:30 AM to noon
Psychology Poster Presentations

Caroline Adams

Advisor: Professor Witkow

Examining the Association Between Gossip and School Belonging: Does Gender or Ethnicity Matter?

This study examines the association between gossip and school belonging and the role of ethnicity and gender in the association. A sample of 459 White, Asian, and Latinx 10th graders reported on their experiences with daily gossip and perceptions of school belonging. Students who reported not perpetrating or getting victimized by gossip had greater scores of school belonging than students who perpetrated gossip. Neither gender or ethnicity moderated the relationship between gossip and school belonging. Results indicate that adolescents who are not participating in gossip may have better chances of feeling more connected to their school.

Olivia Brady, Joshua Osuna, Erica Steinberg

Advisor: Dr. Noffle

Factors Influencing Expectations for Volitional Personality Change

Recent research has focused on volitional personality change—people’s agency to change their personality traits outside of (or as part of) normative developmental change. Evidence has demonstrated that most people desire to change some aspects of their personality, and that these goals are strongly influenced by a person’s trait levels. However, little research has investigated what additional factors affect people’s expectations and desires to change. This study explores how life goals, self-esteem, and social-cognitive beliefs about each trait (e.g., the importance and difficulty of change) influence which change goals people pursue, and ultimately whether they’re successful in changing their personality.

Nora Danie

Advisor: Melissa Witkow

The Influence of School Interethnic Climate on Adolescent Body Image

Body Image is a concern for many adolescents that can lead to negative physical and mental health outcomes. By better understanding body image, schools can take action and make environmental adjustments to reduce levels of body image distress for their students. My research looks at the connection between school interethnic climate and body image in tenth grade students. School interethnic climate refers to the balance of status among ethnic groups, and how well different ethnic groups work together cooperatively in a school setting. Results indicate that better school interethnic climate increases levels of self-worth among students, ultimately boosting body image.

Chagall Ford-Roshon

Advisor: Courtney Stevens

Training Protocols for Graphical Literacy Skills Among Undergraduates

This research evaluates three types of online trainings for improving graphical literacy skills. 196 Willamette University and Chemeketa Community College students were randomly assigned to a training condition (with or without scaffolding—beginning with simpler graphs and questions and increasing difficulty—and context—reading descriptive passages before graphical representations), then completed immediate and two-week follow-up online graphical literacy assessments. Analyses showed a significant effect of school and training—the lowest scores for participants without context or scaffolding, and highest for those with both. Results indicate that a structured progression of difficulty and relevant contextual information facilitate graphical literacy improvement.

Maya Hansen-Tilkens

Advisor: Dr. Melissa Witkow

High school GPA and gendered experiences in social functioning

The current study aims to observe whether 10th grade GPA and change in GPA could predict depressive symptoms, school belonging, and coping strategies in the 11th grade. The analysis was run first with the full sample, then separately for boys and girls in order to examine gender differences. Results show that changes in academic performance might predict 11th grade social support seeking, adult support, and school connection, suggesting that the social implications of previous academic performance might impact future social functioning.

Andrew Arzaga, Madison Carlson, Shyla Sato, Maya Hansen-Tilkens

Advisor: Dr. Erik Noftle

Expectations for personality change over a study abroad experience

Previous research has demonstrated that goals for personality change during a sojourn experience may influence actual change, but these findings are mixed (Hudson & Fraley, 2015; Robinson et al., 2015). This study explores relationships between perceived, expected, desired, and actual change in the Big Five traits in two groups of students -- one that studied abroad and one that did not. Do students experience the changes they expected, and do they perceive those changes in the same way they are measured across time? We hypothesize that greater expectations for change will result in greater perceptions of change and greater actual change.

Amy Meyerson

Advisor: Professor Melissa Witkow

Mixed-grade friendships and adjustment in high school students

Using survey data from US high school students, this project explores adjustment outcomes related to mixed-grade friendships, i.e., friendships with students in a different grade in school than oneself. American schools are age-graded, so that a student gets the most exposure to, and time with, those in their direct age group - their grade. However, many students still have close friends in other grades for a variety of reasons, so the outcomes of such friendships warrant more investigation. It was found that high school students with mixed-grade friendships generally experienced more positive adjustment outcomes than those with only same-grade friends.

Joshua Osuna Sola, Erica Steinberg

Advisor: Dr. Erik Noftle

Volitional Personality Change

A burgeoning literature in the field of personality psychology focuses on volitional personality change: one's ability to change one's own personality. The current study will both seek to replicate some of the previous research and address several limitations of the past literature with a large sample (N=237). Specifically, the study will investigate: 1) the associations between existing traits, self-esteem, loneliness, and life satisfaction and expected personality change (i.e., prediction of personality trait change in the near future); 2) the associations between implicit self-theories of personality and expected change; and 3) the associations between social-cognitive components of change and expected change.

Erica Steinberg

Advisor: Erik Noftle

Outcomes of Volitional Personality Change

Recently, research has surged in volitional personality change. Volitional personality change is the idea that people have capacity to direct their personality development. Robust evidence demonstrates that personality changes normatively over the lifespan. Although evidence suggests that goals for change may result in actual personality change, little is known about one's expectations or predictions to change. Two questions investigated are 1) Do expectations for change predict actual personality change? and 2) How do personality changes manifest in informant reports obtained from knowledgeable others? These questions are posed in a 4-year longitudinal study of first years (N=237) at Willamette University.

Room 11

Room 11 Wednesday, 9:00 AM

Exercise and Health Science

Thesis presentation

Vincent Chin

The American Problem: Impediments to an Effective Pandemic Response

This paper addresses the public health reality that the monumental losses accrued during the COVID-19 pandemic in the United States were caused by factors unique to the country. It operationalizes the causes of the American COVID-19 toll into political, economic, and psychosocial categories. Crucially, the causes are then organized and presented with the intent to inform public health practitioners on the potential obstacles in implementing an effective response to future disease outbreaks.

Room 11 Wednesday 9:20 AM

Exercise and Health Science

Thesis presentation

Evan Segimoto

Epiphyseal Fractures in Adolescent Climbers

The inclusion of climbing into the upcoming Olympics has increased the sport's popularity

significantly. The growing popularity has shed light on more unknown injuries explicit to climbing; specifically, epiphyseal fractures in the fingers of adolescent climbers. The goal of this paper is to understand more about epiphyseal fractures, why they occur, and if anything can be done to prevent a further rise in the statistic.

Room 11 Wednesday 9:40 AM

Exercise and Health Science

Thesis presentation

Bella Medina

Evaluating Web Accessibility for a Prosthetics and Orthotics Company

With the access to education, health, information, and finances that the internet provides, it is increasingly being considered a human right in the United States. However, much of the internet remains largely inaccessible to people with an array of mental and physical disabilities. In this paper, the accessibility of a website for a Prosthetics and Orthotics Clinic is evaluated using the Website Accessibility Guidelines (WCAG 2.0), and Web Accessibility Guidelines for Autistic Web Users (Raymakers et al., 2019). Recommendations for improving the accessibility of the website are provided utilizing current research.

Room 11 Wednesday 10:10 AM

Exercise and Health Science

Thesis presentation

Luther Jessie

Preventing Sudden Cardiac Death in Collegiate Athletes: An Examination of Pre-Participation Practices

With cardiovascular disease being a prevalent cause of death within the U.S., there is a call for more understanding and awareness amongst the population. Heart disease is typically associated with older people, but young adults, specifically college athletes experience premature deaths frequently but are often overlooked. Without further investigation into the causes of sudden cardiac death, more athletes are at risk of not being properly screened and protected from a potentially fatal cardiovascular episode. Despite the ongoing efforts globally to get ahead of this phenomenon, the U.S remains uncertain based on conflicting research.

Room 11 Wednesday 10:30 AM

Exercise and Health Science

Thesis presentation

Alicia Hall

Standardizing Occupational Therapy and Addressing Pathology in Music Therapy for MCI Patients

Cognitive health is often recognized as a way to maintain individual sensibility and sense of identity. With an increasingly aging population, cognition becomes difficult to preserve. A common condition that causes cognitive decline is Mild Cognitive Impairment (MCI). MCI limits cognitive processing, memory, and daily functioning. Two forms of rehabilitation methods that are considered to combat MCI symptoms are Occupational and Music Therapy. This analysis reveals ways to prioritize these therapies when considering standardized outcome measurements and the pathology of MCI. These key factors determine how successful these rehabilitation practices can be for the maintenance of cognitive health.

Room 11 Wednesday 10:50 AM

Exercise and Health Science

Thesis presentation

Avi Valdez

Characterizing Post Traumatic Headache to Establish the Most Efficacious Treatment Intervention
Headache has been cited as the most common and persistent symptom secondary to traumatic brain injury. The clinical features of post-traumatic headache (PTH) resemble those of primary headaches, predominantly of migraine or tension-type headache. As a result, these phenotypes of PTH often function as a guide for treatment interventions. However, classification based on clinical features do not always reflect the complexities behind the pathophysiology of PTH, which can be problematic when justifying a treatment approach. The purpose of this paper is to address this gap in our understanding of PTH etiology, methodology for characterizing the disorder, and the currently available treatment therapies.

Room 11 Wednesday 11:20 AM

Exercise and Health Science

Thesis presentation

Chris Flanagan

The Relevance of Bison Rewilding Within a Sustainable Land Management Model

This paper discusses bison rewilding in the context of sustainable land management and environmental health and how it relates to human issues of culture, and meat production sustainability. The paper demonstrates the viability of the reintroduction of bison and even the substitution for cattle in a way in which benefits the land, the longevity of the animal(s) and is economically sustainable. Current models of sustainable land practices are also examined, and strengths and weaknesses are highlighted in an effort to promote a holistic approach to bison husbandry, sustainable land stewardship, environmental awareness and cultural respect.

Room 11 Wednesday 11:40 AM

Exercise and Health Science

Thesis presentation

Gene Perle-Jones

Creating an Athletic Performance Program for Youth in the Salem-Keizer Area

Nearly 80 percent of youth world-wide fail to reach recommended levels of physical activity, this issue is even worse in low-income families, additionally low-income athletes have a lower chance of making it to more advanced levels of sport. I am creating a free development program that utilizes primarily plyometric training in combination with other training modalities. The goal is to help youth become more confident in physical activities to help them lead more active lives, while also giving young athletes more opportunities for affordable athletic development.

Room 11 Wednesday 12:00 PM

Exercise and Health Science

Thesis presentation

Risa Schutz

Sex Education in the US: An Analysis of Minnesota's Sexuality and Health Education Policies

Minnesota requires school-based sex education courses in public schools, the material included in

their curriculum is not fully comprehensive or required to be medically accurate. By examining the contents of Minnesota's sex education classes and comparing policies and requirements to Vermont and New Jersey, the flaws of a disjointed national sex education program in which every state implements their own policies becomes apparent. There are various ways Minnesota can adopt policies and requirements to make school-based sex education.

Room 11 Wednesday 1:10 PM

Exercise & Health Science

Non-Thesis presentation

Emma Blackburn, Ryan Soto, Jonathan Watts

Advisor: Brandi Row Lazzarini

The Effect of Running Stride Length on Joint Angular Motion, GRF, and EMG Muscle Activity

With input from South Salem High School students, we developed a research question regarding running cadence and technique. To investigate how different stride lengths affect ground reaction force, joint angular motion, and EMG muscle activity, the subject ran a set distance and speed, with changes in stride length using a metronome (low, natural, high). We expect that low cadence will have the highest force production, hypothesizing that individuals with longer stride lengths will have greater running success but an increased risk of injury. A creative video format will be utilized to present our process and results.

Room 11 Wednesday 1:30 PM

Exercise & Health Science

Non-Thesis presentation

Eleanore Donahue, Jewel Fleckenstein, Blake Rose

Advisor: Brandi Row Lazzarini

Effects of Ankle Taping and Ankle Bracing on Joint Angular Motion and Ground Reaction Forces During a Lateral Cutting Movement

As a part of a semester-long research video project in collaboration with high school students, we investigated the effects of ankle braces and athletic tape on lower extremity joint angular motion and ground reaction forces during a lateral cutting movement. The purpose of this study is to determine which ankle support optimizes performance while reducing injury risk. We hypothesize that the ankle tape will be most stabilizing to the lower extremity but will hinder change in velocity and ground reaction force. The results of this study will be made into a video and shown to our high school student partners.

Room 11 Wednesday 1:50 PM

Exercise & Health Science

Non-Thesis presentation

Alia Mahmood

Advisor: Michael Lockard

Acute and Longitudinal Effects of a Balance Intervention in Female Artistic Gymnasts

This study examined the efficacy of acute and longitudinal balance training on dynamic balance in female artistic gymnasts. 59 Junior Olympic (JO) gymnasts, levels 3-10, were placed in a control or intervention group. The intervention group completed balance exercises over seven weeks. All

participants were evaluated using a dynamic gymnastics-specific balance test before and after a single balance intervention, both at the beginning and end of the 7-week training. This is the first study to demonstrate the effectiveness of acute and longitudinal balance training on dynamic balance and sport-specific performance in athletes with an existing high level of balance.